second edition

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Aviation

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Dictionary of Aviation

second edition

David Crocker

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Preface

English is the universal language of communication used in civil aviation. This dictionary provides the basic vocabulary of terms used by pilots, cabin staff, maintenance crews, ground staff and travellers worldwide. The terms are those used in everyday work on aircraft, and cover parts of the aircraft, manipulating the aircraft on the ground and in the air, instructions to passengers, conversations with air traffic control, weather, emergencies, etc.

Unlike conventional aeronautical dictionaries, the Dictionary of Aviation defines vocabulary often found in conjunction with the purely technical terms as well as the technical terms themselves. Simple explanations are presented in simple language, making the dictionary ideal for those working towards a private or commercial pilot’s licence, as well as trainee maintenance engineers and more experienced professionals. We also give examples to show how the words are used in context.

We have selected quotations from various specialised magazines to show the words and phrases as they are used in real-life situations. The supplements at the back give further information in the form of tables.

We are particularly grateful to the staff at Qatar Aeronautical College for their help in the production of the first edition of this dictionary. Thanks are also due to Stephen Copeland and Gavin Rowden for specialist advice and helpful suggestions during the preparation of this new edition.

The information contained in this dictionary is not to be regarded as a substitute for formal training in a given discipline.
**Pronunciation Guide**

The following symbols have been used to show the pronunciation of the main words in the dictionary.

Stress is indicated by a main stress mark (') and a secondary stress mark (,).

Note that these are only guides, as the stress of the word changes according to its position in the sentence.

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AAIB abbreviation Air Accident Investigation Branch
AARA abbreviation air to air refuelling area
abbreviate /əˈbrɪvɪeɪt/ verb to shorten a word or a text ○ Air Traffic Control is usually abbreviated to ATC.
abbreviated weather report a shortened weather report
abbreviation /əˈbrɪvɪeɪʃ(ə)n/ noun the short form of a word or text ○ Aeronautical charts use abbreviations and symbols. ○ Km is the abbreviation for kilometre.

COMMENT: Abbreviations can cause confusion. They may range from those which have a very specific meaning as defined by an authoritative body, to others which may come about because of personal usage in note-taking, etc. ICAO approved abbreviations may differ from those used in JARs. AC can mean 'alternating current' or 'altocumulus'. CPL is generally taken to mean Commercial Pilot's Licence but the ICAO definition is Current Flight Plan. Advances in technology have significantly increased the number of abbreviations with which pilots and engineers must be familiar. Abbreviations in this dictionary include those with generally accepted definitions and others with specific ICAO definitions.

ability /əˈbɪlɪtɪ/ noun the power, knowledge or skill needed to do something ○ Strength is the ability of a material to support a load. ○ he has great ability he has good skills or is very clever
able /ˈeɪbl/ adjective skilful and competent ○ to be able to to have the power, knowledge, skill or strength to do something ○ Is she able to carry this heavy suitcase?
able-bodied /ˈeɪbl-ˈbɒdɪ/ adjective referring to a person who has no physical disabilities ○ Physically disadvantaged as well as able-bodied people can gain a PPL.
abnormal /ˈæbər-nɔrəm(ə)l/ adjective not normal
abnormality /ˌæbər-nɔrəl-ətɪ/ noun something that is not normal, expected or correct, and is therefore possibly worrying ○ Any abnormality in engine performance should be checked.
abnormal load /ˈæbər-nɔrm(ə)l ˈloʊd/ noun a load which is heavier than normal
abort /ˈæbərt/ verb 1. to stop something taking place ○ They had to abort the landing because of a violent storm 2. to end something before it has finished
absolute /ˈæbsəluːt/ adjective complete, total ○ absolute necessity something that you cannot manage without under any circumstances ○ absolute silence a condition in which no sound of any kind can be heard
absolute ceiling /ˈæbsəluːt ˈselɪŋ/ noun the maximum height above sea level at which an aircraft can maintain horizontal flight
absolute humidity /ˈæbsəluːt hjuːˈmɪdətɪ/ noun the vapour concentration or mass of water in a given quantity of air
absolute pressure /ˌæbsʌlət 'prɛʃə/ noun a unit of force per unit of area without comparison to other pressure. Aircraft show absolute pressure in inches of mercury on the inlet manifold pressure gauge.

absolute value /ˌæbsʌlət 'væluː/ noun the size or value of a number regardless of its sign. The absolute value of -64.32 is 64.32.

absolute zero /ˌæbsʌlət 'ziərəʊ/ noun the lowest temperature possible, 0 °K, or -273.15 °C.

absorb /əbˈzɔːrb/ verb to take in. Warm air absorbs moisture more easily than cold air. Our bodies absorb oxygen.

absorption /əbˈzɔːpʃən/ noun the act of taking something in. There is absorption of energy by the tyre when the aircraft lands.

AC abbreviation 1. alternating current 2. accumulated (ICAO)

ACARS abbreviation airborne communication, addressing and reporting system

ACAS /əˈkeɪəs/ abbreviation airborne collision avoidance system

ACC abbreviation area control centre

accelerate /əˈkrɛlərət/ verb to increase speed. After start-up, the engine accelerates up to idling speed. The aircraft accelerated down the runway and took off.

acceleration /ˌækəˈleɪʃən/ noun 1. the act of increasing the speed of something or of going faster. Opposite decelerate

acceleration due to earth’s gravity noun the pulling force exerted on a body by the Earth. It has an international standard value of 9.80665 metres per second per second. Abbreviation g

accelerometer /ˌækəˈlɛrəˌmɛtər/ noun an instrument that measures an aircraft’s acceleration

accept /əkˈsept/ verb 1. to be able to take or receive. Some units accept electrical inputs from the autopilot. 2. to take or receive something when it is given to you. She accepted the award on behalf of the whole crew.

acceptable /əkˈseptəb(ə)l/ adjective allowed or approved of, although it may not be perfect. Acceptable level of safety a good enough standard of safety. Acceptable limits the limits generally regarded as correct. There must be a continuous flow of clean oil at an acceptable temperature. The temperature of the oil must be within given maximum and minimum figures.

acceptance /əkˈseptəns/ noun 1. willingness to believe something or agree to something. There is a growing acceptance that safety is the main priority. 2. willingness to do or use something. Acceptance of new technology williness to use new technology

accepted /əkˈseptɪd/ adjective believed or recognised. It is accepted that incorrect use of English played a part in the accident. It is generally accepted that flying is one of the safest forms of transport.

access /əˈkeɪs/ noun a way to find or get at something. To gain access to. To manage to enter a place. Access to information the means to get at, retrieve and use information. To access data, to access information to find, retrieve and use data or information
accessibility /ˈæksesɪˌbɪləti/ noun the ease with which something can be reached or found. Accessibility of components and equipment during servicing enables work to be done more quickly.

accessible /ˈæksesəb(ə)l/ adjective easy to get at. It is a good idea to have a set of emergency charts in an accessible place in the cockpit.

access panel /ˈækses ˈpæn(ə)/ noun a part of the aircraft skin which can be easily removed so internal components can be inspected.

accident /ˈækstɪd(ə)nt/ noun 1. something which happens which seems to have no cause. It was an accident nobody planned that it should happen or deliberately caused it to happen. By accident by chance.

accidental /ˈækstɪˈdent(ə)l/ adjective 1. happening by accident, not deliberate or planned. There is a safety device to prevent accidental retraction of the undercarriage. 2. relating to an accident, or happening as a result of an accident.

accompanied /ˈækmpəˈnɪd/ adjective found together with. Accompanied luggage luggage which belongs to one of the passengers and is carried on the same aircraft.

accomplish /əˈkɑmplɪʃ/ verb to go together with something else. Engine failure is sometimes accompanied by fire.

accomplishment /əˈkɑmplɪʃmənt/ noun 1. an achievement. Charles Lindbergh’s flight across the Atlantic in May 1927 was a great accomplishment. 2. (in physics) work done. Power is measured by units of accomplishment correlated with time.

accordance /əˈkɔrdəns/ noun in accordance with. Fuels must be used in accordance with instructions.

accordingly /əˈkɔndri/ adverb as needed. Check for increasing manifold pressure and reduce power accordingly.

according to /əˈkɔndtrə/ preposition 1. as determined by or in relation to. The force exerted by the pilot on the control column will vary according to a number of factors. 2. as written or said by somebody else. According to the copilot, engine vibration was detected in engine number one.

accompany /əˈkɑmpəri/ verb to go solo with two artificial arms. [Pilot] Mr Skidmore lost both arms in an accident, and is believed to be the first young man, and is believed to be the first woman to accomplish the feat in a single-engined aircraft.
something and consider it carefully to remember requirements the aircraft.

account

said in the instructions as required

account /əˈkaʊnt/ noun 1 to take something into account to remember something and consider it carefully When planning a flight, wind speed and direction must be taken into account. In the event of an in-flight emergency, the aircraft should be landed at the nearest suitably equipped airport, taking into account fuel available. On no account should anybody fly an aircraft without carrying out pre-flight checks.

account for /əˈkaʊnt fɔːr/ verb 1. to make up or constitute the materials used in modern aircraft. 2. to provide the main reason for something. High humidity accounted for the longer take-off run.

accrete /əˈkrɪt/ verb to increase in amount by slow external addition, to accumulate. Ice accretes on the rotor ice builds up on the rotor.

accretion /əˈkrɪʃ(ə)n/ noun increase or accumulation by slow external addition. Ice accretion can cause loss of lift and significantly increase the weight of the aircraft.

accumulate /əˈkjuːmjuːleɪt/ verb to collect and increase. Due to katabatic effects, cold air flows downwards and accumulates over low ground.

accumulation /əˈkjuːmjuːleɪʃ(ə)n/ noun the collection and increase of something. Fire in a toilet could present difficulties due to the confined space and possible smoke accumulation.

accumulator /əˈkjuːmjuːleɪtər/ noun 1. a device for storing energy in hydraulic systems. An accumulator is fitted to store hydraulic fluid. 2. an electric circuit in a calculator or computer, in which the results of arithmetical and logical operations are formed.

accuracy /əˈkjuːrəsi/ noun 1. the state of being correct to check for accuracy to make certain that the result is correct. 2. the ability to find, hit or show things correctly. The accuracy of modern navigational equipment is much greater than older systems.

accurate /əˈkrjʊrət/ adjective 1. correct. Skill in accurate flying can only be achieved by practice. Accurate results which are exactly correct. 2. precise. This watch is very accurate.

ACFT abbreviation aircraft

achieve /əˈʃiːv/ verb 1. to do something demanding. In order to achieve a safe landing in a crosswind, the correct techniques must be used. 2. to obtain. In wind shear conditions, a fly-by-wire system allows the pilot to achieve maximum lift by pulling hard back on the stick without risk of a stall.

achievement /əˈʃiːvmənt/ noun something difficult that somebody succeeds in doing and feels proud about. For most trainee pilots, making their first solo flight is a great achievement.

acid /ˈæsɪd/ noun a chemical substance which reacts with a base to form a salt. Sulphuric acid (H₂SO₄) (Note: An acid turns a litmus indicator red and has a sour taste.)

acidity /əˈsɪdɪti/ noun having an acid content as the acidity of a substance the amount of acid in a substance.

acid-proof /əˈsed pruːf/ adjective able to resist the harmful effects of an acid.

acid test /əˈsed tɛst/ noun a difficult or exacting test of worth or quality. A pilot’s ability to react appropriately in an emergency situation is the acid test of his or her professionalism.

ACMS noun a computer which records information from various aircraft systems during flight. Full form aircraft condition monitoring system.

ACN abbreviation aircraft classification number

acoustic /əˈkʊstɪk/ adjective referring to sound.

acoustic ear muffs /əˌkʊstɪk ˈɛər ˈmʌfs/ plural noun coverings to protect the ears from loud noise. Also called ear protectors, ear defenders.

acquire /əˈkwɔːr/ verb to buy or otherwise obtain. To acquire a new air-
The system is on and working.

Each computer checks data acquisition.

The image of the airline improved after the acquisition of the new aircraft.

NASA is the acronym for National Aeronautics and Space Administration.

SUNSPOT activity can affect the amount of solar radiation.

The actual path of the aircraft over the ground is called its track, which may not be the same as the desired course.

Actuation is the act of buying or otherwise obtaining a name, and is pronounced as a word.

The act of making something start to work or to operate.

The acronym for National Aeronautics and Space Administration.

The act of making a device or a part move.

Actuators are classified as either linear or rotary.

The act of making a device or a part move.

The act of making a device or a part move.

The act of making a device or a part move.

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The act of making a device or a part move.
adaptation
new conditions. Crew flying long-haul routes have to adapt to time changes.

adaptation /ˌædəˈpərəʃən/ noun 1. the act of changing or modifying something for special use. 2. adjustment to new conditions. 3. Adaptation to time changes when travelling west to east takes time.

adapter /ˈædəpərə/ noun 1. a piece of equipment or device which allows a change or modification. 2. a 'T' piece adapter a device for connecting two inputs to one output or vice versa. 3. a device that allows two incompatible devices to be connected

ADC /ei di:ˈsit/ abbreviation air data computer

add /æd/ verb 1. to put figures together to form a sum, to make a total. 2. to put together to make a larger group or a group with different properties. 3. There are only nine chairs, add another one. 4. A substance is added to the fuel to clean fuel injectors.

addition /ˈædɪʃən/ noun 1. a mathematical operation consisting in putting numbers together. 2. Addition is normally taught before subtraction, multiplication and division. 3. The addition sign is +. 4. the act of adding something. 5. With the addition of methanol, the turbine inlet temperature is restored. 6. In addition also in addition as well as

additional /ˈædɪʃənl/ adjective added or extra

additive /ˈædɪtɪv/ noun a chemical substance, often liquid, added to another substance to give it extra qualities. 1. Additives are used in engine oils to prolong the life of the engine. 2. Antifreezing additives are used in radiator coolants.

adequate /ˈædɪkwət/ adjective enough, sufficient. The compressor must provide an adequate airflow through the engine. 2. Adequate fuel enough fuel

ADF abbreviation automatic direction finder

adhere /ədˈhər/ verb to stick as if glued. 2. Clear ice adheres strongly to airframes.

adhesive /ˌædɪˈhīsiv/ noun glue. 1. adhesive having the sticking quality of glue. 2. adhesive tape. 3. Adhesive bonding of aluminium parts is widely employed.

ADI /ˈɛrdiˈæti/ abbreviation attitude direction indicator or attitude director indicator

adiabatic /ˌædɪˈbætɪk/ adjective 1. referring to processes through which heat cannot be lost or gained. 2. referring to a change in temperature in a mass of air, which occurs when the air is compressed or expanded by an increase or decrease in atmospheric pressure and does not involve the air losing heat to, or gaining heat from, its surroundings.

adiabatic compression /ˌædɪˈbætɪk kəmˈprɛʃən/ noun compression caused by atmospheric factors, which makes descending air warm up.

adiabatic cooling /ˌædɪˈbætɪk ˈkuːlŋ/ noun a process in which ascending air is cooled by a decrease in atmospheric pressure without heat transfer.

adiabatic expansion /ˌædɪˈbætɪk ɪkˈspɑnʃən/ noun expansion caused by atmospheric factors, which makes ascending air cool down. 2. Cooling by adiabatic expansion may result in cloud formation.

adiabatic heating /ˌædɪˈbætɪk ˈheɪtɪŋ/ noun a process in which descending air is heated by an increase in atmospheric pressure without heat transfer.

adjacent /ˈdʒɛsənt/ adjective next to or near. 1. Fire extinguishers should be positioned adjacent to the aircraft during all ground-running operations.

adjust /əˈdʒʊst/ verb to change and improve the position or setting of a piece of equipment. 2. The pilot adjusts the throttle or propeller controls. 3. to adjust the seat to move the seat into a position suitable for yourself.
adjust the volume to increase or decrease the volume to improve the sound quality

adjustable /əˈdʒæstəb(ə)l/ adjective designed to be adjusted. An adjustable stop on the throttle control ensures a positive idling speed.

adjustment /əˈdʒæstmənt/ noun 1. a change to improve the setting, position or operation of something. A slight adjustment to the seat will make it much more comfortable to sit in. 2. the act of changing something to improve its setting or position. Maximum system pressure is often controlled by adjustment of the main engine-driven pump.

admit /ədˈmɪt/ verb to allow to enter. Cold air can be admitted to the cabin through adjustable louvres or shutters.

adopt /əˈdɒpt/ verb to choose to use something as standard equipment or to make it standard procedure. A policy of no smoking on all flights has been adopted by many airlines. Widely adopted now in standard use with many companies, institutions and organisations.

adoption /əˈdɒpʃən/ noun the act of using something as standard equipment or making it standard procedure. In spite of the adoption of the axial flow type compressor, some engines retain the centrifugal type.

ADR abbreviation accident data recorder

ADS abbreviation automatic dependent surveillance

ADT abbreviation approved departure time

advance /ədˈvɑːns/ noun 1. a change that improves something. Enormous advances in aircraft design give new prospects for development in aircraft design. 2. in advance of. The Gulf region is three hours in advance of GMT.

advise /ədˈvaɪz/ verb 1. to move forwards, or move something forwards. The throttle lever is moved forwards 2. to make something happen at an earlier time. To advance the ignition to adjust the timing of the ignition so that the spark occurs earlier.

advantage /ədˈvɑːntɪdʒ/ noun a good or beneficial factor. The multi-wheel combination has the advantage of smaller and lighter undercarriage structures. To take advantage of to get benefit from a situation.

advantageous /ədˈvɑːntɪdʒəs/ adjective better. The best. The most advantageous for economy.

advocate /ədˈvɑːkt/ verb to move in a horizontal direction due to convection. Dispersal of hill fog takes place when surface heating lifts the cloud base or drier air is advected.

advect /ədˈvekt/ verb to take advantage of. To take advantage of favourable winds to use tailwinds to increase ground speed and thus save time and money. Opposite disadvantage.

adverse /ədˈvɜːs/ adjective bad or poor. Only in extremely adverse conditions should the crew evacuate the aircraft.

advise /ədˈvaɪz/ verb to take advice of. To take advice of the instructor. The instructor's advice was of great help to the student.

advice /ədˈvaɪs/ noun useful or helpful information. The instructor's advice was of great help to the student.
advisability

pilot. (NOTE: Advice has no plural form.)
advisability /′ad,vairəˈbiləti/ noun 1. the advisability of something; whether something is a good idea or not. 2. Flying manuals often contain guidance on the advisability of flying with a cold.
advisable /′ad,vairəbəl/ adjective recommended, suggested. It is advisable to check the condition of the tyres after each landing.
advise /′ad,vairiz/ verb 1. to inform, to notify. The flight deck advised the cabin crew that descent would start in 20 minutes. 2. to recommend, to suggest. Because of the bad weather, the instructor advised the trainee pilot not to fly. 3. to advise against to recommend or to suggest that something should not be done.
advisory /′ad,vairərəri/ adjective giving advice and information.
advisory airspace /′ad,vairəri′eəspəts/ noun airspace containing advisory routes in which air traffic control provide an advisory service but not full control. Abbreviation ADA.
advisory route /′ad,vairəri′rəuti/ noun a published route for which there is an advisory service. Abbreviation ADR.
advisory service /′ad,vairərəvəri/ noun a service in which Air Traffic Control provides advice and information to assist a pilot in the safe conduct of a flight.
AEEC abbreviation airlines electronic engineering committee.
aerate /′eərət/ verb to put a gas, especially carbon dioxide or air, into a liquid so that bubbles are formed. Aerated fuel causes problems. Opposite de-aerate.
aeration /′eərərəʃ(ə)n/ noun the act of putting a gas, especially carbon dioxide or air, into a liquid. The purpose of the booster pump is to prevent fuel aeration. Opposite de-aeration.
aerator /′eərərətər/ noun a device to put a gas – especially carbon dioxide or air – into a liquid. Opposite de-aerator.
aerial /′eərəl/ adjective 1. happening in the air. 2. done by an aircraft in flight. a. a device to send or receive radio or TV signals. b. Ice-covering reduces the effectiveness of aerials. (NOTE: The US English word with this meaning is antenna.)
aerial display /′eərəldis,pleit/ noun a display of flying skills and aircraft performance.
aerial photography /′eərəl fətrənəri/ noun photography done from an aircraft in the air.
aero- /′eərəu/ prefix 1. referring to the air. 2. referring to aircraft. aero-engine aero-tow.
aerobatic /′eərəbətɪk/ adjective referring to aerobatics. Loops and rolls are aerobatic manoeuvres.
aerobatic aircraft /′eərəbətɪk fə′eərədərəυt/ noun an aircraft which is designed to perform aerobatics.
COMMENT: One of the most famous competition aerobatic aircraft is the Pitts Special which first flew in 1944.
aerobatic display /′eərəbətɪk ′dɪsl/ noun a demonstration, often public, of piloting skill and aircraft performance.
aerobatics /′eərəbətɪks/ noun the art of performing spectacular controlled movements in a flying aircraft for the purposes of entertainment or competition. The Russian pilot gave a great display of aerobatics.
aerobatic team /′eərəbətɪk ′tiːm/ noun a team of pilots and aircraft who perform aerobatics.
aerodrome /′eərdraʊm/ noun any area of land or water designed for the taking off and landing of aircraft. Airports and military air bases or stations are types of aerodrome. All aerodromes are marked on charts. Abbreviation A/D a disused aerodrome an aerodrome which is no longer in use for the purpose of taking off and landing aeroplanes.
aerodrome boundaries /′eərdraʊm, ′bændərs/ plural noun the physical or geographical limits of an aerodrome.
aerodrome circuit /ˈɛərədrəʊm/ noun the pattern and direction of aircraft movement in the air around the aerodrome
aerodrome QFE /ˈɛərədrəʊm ˈkjuːfɛɪ/ noun the barometric pressure setting at which the altimeter reads zero when the aircraft is on the runway
aerodrome QNH /ˈɛərədrəʊm ˈkjuːɛn/ noun the barometric pressure setting at which the altimeter reads aerodrome elevation when the aircraft is on the runway
aerodrome surveillance monitoring indicator /ˈɛərədrəʊm ˌsɜːvɪtʃʊlən tʃɪndɪkətər/ noun same as airport surface detection equipment
aerodrome traffic zone /ˈɛərədrəʊm ˈtræfɪk ˈrɔʊn/ noun an area of protected airspace around an aerodrome, which pilots need permission to enter or to move in. Abbreviation ATZ
aerodynamic /ˌɛərəˈdɑːnəmɪk/ adjective 1. referring to the way in which objects are affected when they move through the atmosphere 2. referring to a smooth rounded shape which moves easily through the air 3. aerodynamic design a streamlined shape that enables something to move easily through the air
aerodynamic braking /ˌɛərəˈdɑːmɑːn ˈbreɪktɪŋ/ noun the braking effect of drag
aerodynamic forces /ˌɛərəˈdɑːmɑːn ˈfɔːrzn/ noun the forces of the air which act on an aircraft in flight
aerodynamic resistance /ˌɛərəˈdɑːmɑːn ˈrɪstɪznəz/ noun same as drag
aerodynamics /ˌɛərəˈdɑːmɑːnɪks/ noun the science that deals with the interaction of moving objects with the atmosphere 1. Aerodynamics is one of the major areas of study for a trainee pilot.
aerodyne /ˈɛərədɑːn/ noun an aircraft that is heavier than air and whose lift in flight results from forces caused by its motion through the air, e.g. a plane or helicopter
aero-engine /ˈɛərəˌɛnʤɪn/ noun an engine used in aircraft 1. Most piston aero-engines are cooled by air.
aerofoil /ˈɛərəˌfɔɪl/ noun a surface which is shaped to produce more lift than drag when moved through the air 2. Wings, ailerons, elevators, fins and propellers are all examples of aerofoils. (NOTE: The US English word is airfoil.)
aeronautical /ˌɛərəˈnɑːtɪk(ə)l/ adjective referring to aeronautics
aeronautical chart /ˌɛərəˈnɑːtɪk(ə)l ˈʃɑːt/ noun a map used in air navigation which may include topographic features, hazards and obstructions, navigational aids and routes, designated airspace and airports
aeronautical engineer /ˌɛərəˈnɑːtɪk(ə)l ˈɛnʤɪnər/ noun an engineer who specialises in the design of aircraft
aeronautical engineering /ˌɛərəˈnɑːtɪk(ə)l ˈɛnʤɪnərɪŋ/ noun the science or study of the design of aircraft
aeronautical fixed service /ˌɛərəˈnɑːtɪk(ə)l ˈfɪkst ˈsɜːvɪs/ noun a radio communications service between fixed points that is designed to enable aircraft to travel safely. Abbreviation AFS
aeronautical fixed telecommunication network /ˌɛərəˈnɑːtɪk(ə)l ˈfɪksɪd ˈtɛlkəməˈneɪʃn ˈnetwɜːrn/ noun a ground-based network of teleprinters that transmits flight plans and similar data between control centres. Abbreviation AFTN
aeronautical information circular /ˌɛərəˈnɑːtɪk(ə)l ˈɪnʃəˈmeɪʃn ˌsɜːkjuˈleə/ noun a notice issued by an aviation authority in which information is given about administrative, technical, safety or operational matters
Aeronautical Information Publication noun a document issued by a state in which information is given about aviation in that country. Abbreviation AIP
aeronautics /ˌɛərəˈnɑːtɪks/ noun 1. the science of aircraft design, construction and operation 2. the theory and practice of aircraft navigation
aeroneurosis noun anxiety and fatigue in airline pilots as a result of long periods of flying
aeroplane noun a power-driven, heavier-than-air craft with fixed wings (NOTE: Many people use the words aeroplane and aircraft as if they had exactly the same meaning. However, aeroplanes, hot-air balloons, helicopters, airships and gliders are all aircraft. The US English is airplane.)
aeroplane performance a description in figures of what a plane can do, including, e.g., its speed, rate of climb, and the length of its take-off run
aerostat noun a hot-air or gas-filled aircraft, e.g. an airship or balloon
aero-tow noun a technique of using a powered aircraft to pull a glider into the air. An aero-tow to 2,000 feet costs $25.
AFCS abbreviation automatic flight control system
AFDS abbreviation autopilot flight director system
affect verb to have an influence on something, or cause a change in something. Humidity and air density are factors which affect the output of the engine. Compare effect
AFI abbreviation assistant flying instructor
AFIC abbreviation assistant flying instructor course
AFIS abbreviation aerodrome flight information service
AFS abbreviation aeronautical fixed service
after adjective positioned closer to the rear of an aircraft. Afterburner noun a system that injects fuel into the hot exhaust gases of a jet engine in order to increase thrust
AFTN abbreviation aeronautical fixed telecommunication network
agent noun 1. a chemical substance which causes a change. If de-icing fluid is used as an anti-icing agent it should be sprayed onto the aircraft before the onset of icing. 2. extinguishing agent a substance used to put out fires. A person who represents a company or arranges something for a company. The agent for British Airways is a travel agent
aggregate noun the total obtained by adding. The aggregate of the capacity of all the fuel tanks is 50 gallons. To add or come together to form a mass or total Ice crystals aggregate to form snowflakes.
AGL abbreviation above ground level
agree verb 1. to have the same idea or opinion about something. The crew agreed with the findings of the investigation. 2. to come to an understanding. After hours of discussion, the cabin staff agreed to call off the planned strike.
agreed adjective generally accepted. The millibar is an agreed unit of pressure.
agreement noun 1. the state of having the same idea or opinion as somebody. We are in agreement. We agree. 2. a document in which the things that two or more people or organisations have agreed to do are written down.
ahead of preposition in front of. Air ahead of a cold front is warmer than air behind a cold front.
Aircraft

AHRS noun a sensor which provides information on the pitch, bank and heading of an aircraft. Full form attitude heading reference system

AI abbreviation attitude indicator

AIAA abbreviation area of intense air activity

AIC abbreviation aeronautical information circular

aid /eɪd/ noun something which helps somebody do something — verb to help

AIDS /eɪdz/ abbreviation 1. airborne integrated data system 2. aircraft integrated data system

aileron /ˈeɪlərən/noun a horizontal control surface hinged to the mainplane, which enables an aeroplane to bank or roll. By rotating the yoke the ailerons are moved and the aircraft rolls into a turn. (NOTE: The word comes from the French 'aile', meaning 'wing'.) — noun a goal or objective — verb to intend or to try to do something — we aim to succeed we intend to succeed

AIP abbreviation Aeronautical Information Publication

air /eər/noun the mixture of gases which forms the Earth’s atmosphere — Air enters the cabin through an inlet.

AIRAC abbreviation aeronautical information regulation and control

Air Accident Investigation Branch /eər ˌeɪskidɪˈɛntrɪvestɪˈɛnt/ noun the department of the CAA of the United Kingdom responsible for establishing the cause of accidents. Abbreviation AAIB

airborne /eəˈbɔːrn/ adjective lifted and kept in the air by aerodynamic forces. Shortly after the aircraft becomes airborne, the undercarriage is retracted.

airborne installation /eəˈbɔːrn ˌɪnstəˈleɪʃən/noun a radio device in an aircraft which operates in conjunction with a ground installation. The airborne installation comprises an antenna, receiver and indicator(s).

airborne weather radar /eəˈbɔːrn ˈweərəˈreɪdər/noun a radar installation in an aircraft to give the flight crew information about the weather along their route. Abbreviation AWR

air-breathing engine /eə ˈɛəriθɪŋ/ noun an engine that burns a mixture of liquid fuel and air. (NOTE: There are four types of air-breathing engines: turbojet, turbo prop, turbopan and ramjet.)

air bridge /ˈeə braid/ noun a link provided by aircraft that carry people and supplies between two places, especially in situations where travel by land is not possible

Airbus /eəbʌs/ a trademark for a large passenger jet aircraft manufactured by aerospace companies from different European countries working together

air conditioner /eə ˈkændər/noun a device which filters and cools the air in a room or in an aircraft. In order to obtain maximum engine power, the air conditioner should be switched off for take-off.

air conditioning /eə ˈkændərɪŋ/noun a system for controlling the temperature of the air in a building or in an aircraft

air-cooled /eə ˈkɔːld/ adjective cooled by means of a flow of air — air-cooled engines piston aero-engines cooled by air, not water

air corridor /eər ˈkɔːrdər/noun a route that aircraft must take through an area in which flying is restricted

aircraft /eəkrɑːft/ noun a machine that is able to travel through the air. Aeroplanes, gliders, balloons, airships, helicopters, etc., are all aircraft. Abbreviation ACFT (NOTE: Aircraft has no plural form.)

aircraft classification number /eəkrɑːft ˈklaɪsəfɪkənzn/ noun a number expressing the relative effect of an aircraft on a pavement for a specified sub-grade strength. Abbreviation CAN

aircraft condition monitoring system /eəkrɑːft ˈkɔndɪʃənˌmɔnɪtərn/ noun full form of ACMS
aircraft configuration

aircraft configuration /'eəkrɔːft kən+fɪgʊ'reɪʃ(ə)n/ noun a particular combination of moveable parts such as flaps and landing gear that affects the aerodynamics of the aircraft

aircraft proximity hazard /'eəkrɔːft prə'nek'sɪmɑtɪ hæzəd/ noun same as airprox

aircraft stability /'eəkrɔːft stæbɪlɪtɪ/ noun the tendency of an aircraft to return to its original attitude after being deflected

aircrew /'eəkrɔːr/ noun the pilot, navigator and other crew members of an aircraft

airfield /'eəfɪld/ noun an area of land given over to runways, taxiways and aprons. When the pressure setting on the altimeter is set to 1013.25 millibars, the pressure altitude of the airfield is known as QNE.

air filter /'eə flɪtə/ noun a device to filter solid particles out of the air in engine and ventilation systems

airflow /'eəfləʊ/ noun 1. the movement of air over the aircraft as it travels through the atmosphere. 2. a current of air flowing through or past an object or body. The compressor must provide an adequate airflow through the engine.

airfoil /'eəfɔɪl/ noun US same as aerofoil

airframe /'eəfrɛm/ noun the body of the aircraft without the engines, instruments and internal fittings. The airframe has to be built to very specific requirements.

airframe icing /'eəfrɛm ərɪnsɪŋ/ noun ice that forms on the aircraft structure as opposed to on components such as carburettors

air gap /'eə gæp/ noun a space between two things. Air gap type spark plug a spark plug with a space between the electrodes, across which the spark jumps

air intake /'eə ɪnteɪk/ noun the front part of a jet engine where air enters

air lane /'eə lɛn/ noun a regular route that aeroplanes fly along

airline /'eəlaɪn/ noun a company which manages air transport services for passengers or goods. Which airline is she working for? Air France or Air Canada? Most airlines do not allow passengers to smoke during flight.

airliner /'eəlɪnər/ noun an aeroplane designed to carry large numbers of passengers. Concorde is the world’s fastest airliner.

airline representative /'eəlɪn rɪ'prɛzəntətɪv/ noun a person who acts on behalf of an airline, or a person who works for an airline. Passengers should assemble in the departure lounge where an airline representative will meet them.

airline security area /'eəlɪn sɪˈkɜːrɪtɪ ərɪə/ noun an area in which measures are taken by an airline to ensure the safety of people and property

Airline Transport Pilot’s Licence /'eəlɪn ˈtrænspoːt ˈpɪləts ˈlɑːns(ə)ns/ the licence that a person must have to be the pilot-in-command or co-pilot of a public transport aircraft. Abbreviation ATPL

airman /'eəmən/ noun a person who is a member of a country’s Air Force

airmanship /'eəmənʃɪp/ noun all-round skill in piloting an aircraft which includes academic knowledge, common sense, quick reactions, awareness, experience, consideration for other people and property. Keeping a careful lookout for other aircraft in the circuit is good airmanship.

I was always told by my airmanship instructor, in an emergency, to find the largest piece of asphalt with the biggest fire trucks. [INTER PILOT]

air mass /'eə mæs/ noun a very large mass of air in the atmosphere in which the temperature is almost constant and which is divided from another mass by a front. Air masses are divided into two
types according to source region, and these are known as polar and tropical air masses.

airpark /'eəpɑ:k/ noun a small airport, usually found near a business or industrial centre

airplane /'eəpleɪn/ US same as aeroplane

air pocket /'eəpɒkɪt/ noun a small area where the air is less dense or where there is a downward air current, and which makes an aircraft lose height suddenly

air pollution /eə pəˈluːʃ(ə)n/ noun pollution of the air by gas, smoke, ash, etc. Solid particles in the air include dust, sand, volcanic ash and atmospheric pollution. Also called atmospheric pollution

airport /'eəpɔːt/ noun a civil aero-drome designed for the take-off and landing of passenger-carrying aircraft for the general public and/or cargo aircraft. London Heathrow is one of the busiest airports in the world. Abbreviation A/P

airport authority /ˌeəpɔːt ɔrˈθɒrəti/ noun the organisation responsible for the running of an airport

airport security officer /ˌeəpɔːt sɪˈfjuərɪtɪ/ noun a person employed by an airport authority to check passengers and baggage for illegal substances or devices, e.g. drugs, guns

airport surface detection equipment /ˌeəpɔːt sɜːfɪs dɪˈtekʃ(ə)n ɪˌkwɪpment/ noun short-range radar equipment that scans the surface area of an airport and tracks the movement of aircraft and other vehicles on the ground

airprox /'eəprɒks/ noun a situation in which aircraft are too close to one another in an area of airspace and there is the possibility of danger to them. Also called aircraft proximity hazard

air-sea rescue /'eə,siːˈreskjuː/ noun a rescue at sea in which aircraft, especially helicopters, are used

airship /'eəʃɪp/ noun a powered, gas-filled balloon which can be steered An airship is classified as a lighter-than-air craft.

airshow /'eəʃəʊ/ noun a public display of aircraft in flight and on the ground, held at an airfield

airspace /'eəspɑːs/ noun the part of the atmosphere that is above a particular geographical area and is subject to the laws of a particular country or controlling authority. The Korean 747 flew into Soviet airspace and was shot down. Maintain a constant airspeed on final approach.

airspeed indicator /'eəspɪdɪd ɪndɪkˈeɪtər/ noun a primary cockpit or flight deck instrument which shows the pilot the speed of the aircraft in relation to the air around it. Airspeed is shown in knots on the airspeed indicator. Abbreviation ASI

air station /'eəˌsteɪʃ(ə)n/ noun a small airfield with facilities for the maintenance of aircraft

airstream /ˈeəstrɪstrəm/ noun the flow of air caused by the movement of the aircraft through the air. Pressure is built up inside the pitot tube by the airstream.

airfield /ˈeəˌfɪld/ noun a place for aircraft to take off and land that has no facilities and is often temporary

air taxi /ˈeəˌtɛksɪ/ noun a small commercial aircraft used for short flights between places not on a regular airline route
**Air Traffic Control**

**Abbreviation** ATC

**Air Traffic Control** is the function of maintaining separation between aircraft operating within the same airspace. It is carried out by air traffic controllers who are responsible for the safe and efficient movement of aircraft. This includes monitoring the position of aircraft, giving instructions, and ensuring that aircraft operate in a secure and orderly manner.

**Air Traffic Control's Main Function**

Air Traffic Control's main function is to maintain separation between aircraft operating within an area of airspace. They ensure that aircraft do not collide or come too close to each other. This is achieved through the use of radar, voice communications, and visual observations.

**Air Traffic Controller**

The term 'air traffic controller' refers to the personnel who operate in the air traffic control tower, on the ground, or remotely. They are responsible for maintaining a safe and efficient flow of traffic, ensuring that flights take off and land safely, and coordinating with other air traffic control centers.

**Air Traffic Control's Job Responsibilities**

- **Flight Preparations:** Controllers provide flight information to pilots before takeoff, ensuring they have all the necessary details for a safe journey.
- **Flight Monitoring:** While in flight, controllers monitor the aircraft's position and progress to avoid any collisions or conflicts.
- **Route Changes:** In case of any unexpected events, controllers may direct the aircraft to change their course to avoid any hazards.

**Air Traffic Control's Tools**

- **Radar:** Controllers use radar to track the position of aircraft in real-time, allowing them to predict movements and make necessary adjustments.
- **Communications:** Controllers communicate with pilots using voice radio, coordinating their movements and providing necessary information.

**Air Traffic Control's Importance**

Air Traffic Control is crucial for ensuring the safety and efficiency of air travel. By maintaining separation between aircraft, controllers help prevent accidents and ensure smooth operations at airports around the world.
alert /əˈlɑːrt/ adjective fully awake, watchful and ready to deal with any situation. The crew must be alert at all times to the possibility of hijacking, bombs and stowaways. ■ noun a signal, warning everyone to be alert. ■ to be on the alert to be watchful and ready for anything that may happen. ■ verb to warn. It is the cabin staff’s responsibility to alert the flight crew if they see smoke coming from an engine.

alignment /aˈlaɪmənt/ noun 1. position in relation to an axis or line. ■ to check the alignment of something to make sure it is in the correct position relative to an axis or line. ■ to maintain alignment with the runway to keep the aircraft on the imaginary extended centre line of the runway. 2. correct position in relation to something else.

allowance /əˈlauəns/ noun 1. consideration for possibilities or changing circumstances. ■ to make allowances for to take into account. ■ When estimating flight duration, make allowances for taxing time. 2. something such as money given at regular intervals or for a specific purpose. ■ a travel allowance to cover hotel and restaurant bills. 3. the amount of something that somebody is allowed to have. ‘…with many four and six seat aircraft, it is not possible to fill all the seats, use the maximum baggage allowance, fill all the fuel tanks and remain within the approved centre of gravity limits.’ [Civil Aviation...]

allow /əˈlau/ verb to enable, to permit or to authorise. An engine should be run at low rpm after flight to allow engine components to cool. Additional fuel is carried to allow for holding en route. Passengers are not allowed to smoke on some aeroplanes.

allowable /əˈlauəb(ə)/ adjective permitted or authorised. maximum allowable weight. maximum allowable pressure.

alleviation /əˈlivɪeʃ(ə)n/ noun a reduction or lessening of the harmful effect of something. Deep, regular breathing may provide some alleviation from stress.

allocate /əˈlækit/ verb to provide something particular for a given purpose. Special seats are allocated to mothers with small children.

allocation /əˈlækʃ(ə)n/ noun the provision of something particular for a given purpose. At the check-in desk, airline staff are responsible for the allocation of seats to passengers. ■ frequency allocation the frequency or range of radio frequencies set aside for a particular use. The frequency allocation for VOR is 108–117.975 MHz.

allowance /əˈlauəns/ noun 1. a long passageway between the seats in the passenger cabin of an airliner. ■ aisle seat a seat which is by an aisle, as opposed to a window seat.

alleviate /əˈlivɪeɪt/ verb to reduce or lessen the harmful effect of something. Anti-icing additives are available to alleviate the problem of icing.

alarm /əˈlɑːrm/ noun 1. fear or worry. ■ If the ammeter shows a high level of charge after start-up, it is quite normal and no cause for alarm.

allocate /əˈlækit/ verb to provide something particular for a given purpose. Special seats are allocated to mothers with small children.

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align /aˈlæjmənt/ verb 1. to position along an axis or line. The nose wheel must be aligned in a fore and aft direction during retraction. 2. to set in a correct position in relation to something else. Aligned white marks on the wheel and tyre indicate that there is no creep.

alignment /aˈlaɪmənt/ noun 1. position in relation to an axis or line. ■ to check the alignment of something to make sure it is in the correct position relative to an axis or line. ■ to maintain alignment with the runway to keep the aircraft on the imaginary extended centre line of the runway. 2. correct position in relation to something else.

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alloy /'əlɔɪ/ noun a mixture of metals ○ an alloy of aluminium and lithium
alot /'ɔlət/ adjective up in the air
alter /'ɔltər/ verb to change, modify or adjust ○ If there is a risk of collision, alter course to the right. ○ If the rate of descent is too low, alter the throttle setting accordingly. ○ The rudder linkage was altered to comply with certification requirements.
alteration /'ɔltərəʃən/ noun 1. a change, modification or adjustment ○ It was discovered that alterations had been made to the log book. ○ As a result of the accident, alterations were made to the design of the carburettor heat system. 2. the act of making changes, modifications or adjustments ○ heading alteration the act of making of heading corrections
alternate adjective /'ɔlətər/ 1. every other ○ A, c, e, and g are alternate letters, as are b, d, f, h, etc. ○ alternate days every other day ○ There are outward flights on alternate days, i.e. on Mondays, Wednesdays and Fridays. 2. US same as alternative ○ noun ○ alternate /'ɔltər ˈtænət/ an aerodrome of second choice to be used if the aircraft cannot be landed at the aerodrome of first choice because of bad weather, etc. ○ The point of no return is calculated before departure to cover the chance that both the terminal airfield and its alternate become unavailable during flight. ○ verb ○ alter /'ɔltər/ to happen in turns ○ Captain Smith and Captain Jones alternate as CFI on a daily rota each captain has one day on duty as CFI followed by a day off, on which the other captain acts as CFI
alternating current /'ɔltərɪntər/ noun an electric current which reverses its direction at regular intervals ○ Resistance to alternating current remains almost constant and is independent of frequency. Abbreviation AC
alternative /'ɔlətərənət/ adjective referring to another or a second possibility ○ A turbine bypass, in the form of an alternative exhaust duct is fitted with a valve. ○ an alternative means of doing something another or different way of doing something ○ noun another choice or possibility ○ In some emergency situations the pilot may have no alternative but to force-land the aircraft as soon as possible.
alternator /'ɔltənətər/ noun a type of generator designed to produce AC power
altimeter /'ɔltɪmɪtər/ noun a radio instrument for measuring vertical distance or altitude ○ altimeter check a routine check to ensure that the altimeter pressure setting is correct ○ altimeter display the display of altitude information, which can be given in analogue or digital form. ○ pointer altitude /'ɔltɪt jʊd/ noun the vertical distance between an aircraft, or a point on a level, and mean sea-level ○ to lose altitude to descend from higher to lower altitude ○ cabin altitude the artificial altitude created in the cabin by pressurisation
also /'ɔlso/ prefix at a moderate or high altitude
altocumulus /'ɔltəkjuːmjuːləs/ noun small white cumulus clouds which form as a layer at moderate altitude, usually meaning fair weather. Compare stratocumulus
altostratus /'ɔltəstrætəs/ noun a uniform layer cloud at moderate altitude
aluminium /'ɔləminəm/ noun a strong, light metal used in the construction of aircraft (NOTE: The US English is aluminium.) ○ COMMENT: In recent years, aluminium has been increasingly replaced by the use of composite materials in the construction of different types of aircraft, from small home-built light aircraft to transport aircraft such as the Airbus A320.
aluminum /ˌɑləˈmənəm/ noun US same as aluminium
AMA abbreviation approach monitoring aid
amber /ˈæmbər/ adjective an orange or yellow colour ○ An amber light flashes on the instrument panel. (NOTE: Amber
is often used to describe the colour of the yellow light in traffic signals.)

ambient /ˈæmbjənt/ adjective referring to the surrounding atmospheric conditions. Fresh ambient air is routed into the cabin. • ambient temperature the temperature outside the aircraft

ambience /ˈæmbjəns/ noun the pressure outside the aircraft

ambiguity /ˈæmbjʊɪdʒɪtɪ/ noun something heard or seen which can be understood in more than one way, thus resulting in possible confusion. • to avoid ambiguity to avoid misunderstanding or confusion. Correct use of R/T phraseology avoids ambiguity.

ambiguous /ˈæmbjʊɪdʒəs/ adjective able to be understood in more than one way. • It is important that R/T transmissions are not ambiguous.

AMD abbreviation amendment

amend /əˈmend/ verb to change, update, improve or correct something. • he amended the entry in his log book he corrected or changed the entry in his log book.

amendment /əˈmendmənt/ noun a change, updating, improvement or correction made, e.g., to a document or procedure. • When a terminal aeronautical mobile service forecast requires amendment, the amended forecast is indicated by inserting AMD after TAF.

ammeter /ˈæmɪtə/ noun an instrument for measuring amperes in order to give the strength of an electric current. • The centre-zero ammeter tells the pilot the status of the aircraft battery.

amp /æmp/ abbreviation ampere

amperage /ˈæmpərdʒ/ noun the strength of an electric current expressed in amperes. • Measuring the amperage of a motor can give a rough estimate of the load on the motor.

ampere /ˈæmpɪər/ noun a unit of electric current equal to one volt flowing through an impedance of one ohm. • a 13-amp fuse. • Current flow is measured in amperes. Abbreviation: amp. • ampere hours number of amperes per hour. • Battery capacity is rated in amperes.

analog /ˈænəlɔɡ/ adjective 1. representing a quantity or signal that varies continuously by means of a physical apparatus such as a dial and pointer. • The electronic centralised aircraft monitor (ECAM) does not have analogue
analyse 18

presentation of engine information. 2. a
analogue display (on a clock) a traditional
display face and hands. Compare digital display

analyse /a'nəlaɪz/ verb to
break down into parts and study very
closely to analyse fuel to separate
fuel into its different parts to find out
what it consists of to analyse a chart
to examine a chart in detail

analysis /a'naləsɪs/ noun breaking
down a substance into its parts in order
to study them closely. At a chart site.
samples of materials are removed for
analysis. (NOTE: The plural form is analyses
a chart analysis

anchor /'æŋkə/ noun a device
connected to and dropped from a boat in
order to prevent the boat from moving
in the water a verb to drop an anchor to
prevent the boat from moving

anemograph /'ænəməgrəf/ noun an
instrument which maintains a continuous
recording of wind direction and speed
on a graph. The anemograph
gives a continuous recording of wind
velocity which is displayed on a chart
and reveals gusts, squalls and lulls.

anemometer /ænə'məʊmətər/ noun an
instrument, usually attached to a building,
with three or four 'cups' which
rotate with the wind thus providing
wind-speed information. The anemograph
rotates

aneroid /'ænərɔɪd/ adjective not contain-
ing or using liquid

aneroid barometer /'ænərɔɪd be-
rəʊmətər/ noun a barometer which uses
an aneroid capsule to sense atmospheric
pressure changes

aneroid capsule /'ænərɔɪd 'keɪpsjuːl/ noun a thin flexible cylindrical box, usually made of metal,
which has most of the air removed from it and which expands and contracts with
changes in atmospheric pressure. The
aneroid capsule in the barometer is
connected to a system of levers which
operate a pointer.

aneroid switch /'ænərɔɪd swɪtʃ/
noun a switch operated by an aneroid
capsule

angle /'æŋɡəl/ noun the difference in
direction between two lines or surfaces
measured in degrees

angle of attack /'æŋɡə(ʊ)l əv ə'tæk/ noun the angle formed between the relative airflow and the chord line of the
aerofoil

COMMENT: The angle of attack is
related to the flight path of the aircraft,
not to the angle the wing makes with
the horizontal. If the angle of attack
becomes too great, the smooth airflow
over the upper surface of the wing will
break down. If no corrective action is
taken by the pilot, there will be a
sudden loss of lift and the aircraft will
stall

angle of incidence /'æŋɡə(ʊ)l əv
'ɪnsɪdəns/ noun the angle formed
between the chord-line of the main-
plane and the horizontal when the air-
craft is in the rigging position

angle of inclination /'æŋɡə(ʊ)l əv
'ɪnklənəns/ noun the angle formed
between a sloping path or surface and a
reference point or line which is either
horizontal or vertical. Between any
two meridians there is an angle of inclina-
tion one to the other which varies
with latitude.

angular /'æŋɡjʊəl/ adjective referring
to or forming an angle. The angular
difference between the direction of
magnetic north and compass north is
called variation.

annotate /'ænəteɪt/ verb to add notes
to an existing document, book, chart,
etc. He annotated his report after he
was asked to give the exact time of the
incident. Variation is annotated east
or west according to the direction of
difference.

annotation /'ænəteɪʃən/ noun the
act of adding notes to a document,
book, chart, etc., or the notes added
announced /əˈnɑːns/ verb to state something publicly or officially  
British Airways announced the departure of flight BA152 to New York.

announcement /əˈnɑːnmənt/ noun a public statement  
The captain made a public address (PA) system announcement asking passengers to remain seated.

annual /ˈænjʊəl/ adjective 1. happening once a year  
2. over a period of one year  
annual departures.

annular /ˈænjʊlər/ adjective shaped like a ring

annunciation /ˈænʌnʃiˈeɪʃən/ noun an announcement or indication on the annunciator panel  
annunciation signals on the annunciator panel indicating the failure of a system

annual inspection an inspection that happens once a year  
annual inspection asking passengers to remain seated.

annunciator /ˈænʌnsɪtər/ noun a device which gives off a sound or light when there is a failure annunciation  
annunciator panel may contain a precise warning.

anode /ˈænəd/ noun a positive pole or electrode  
The positive connector of a battery is usually called the anode and is indicated by the sign +.

anodise /ˈænədaɪz/ anodize verb to coat or cover by using electrolysis  
Anti-corrosion treatment includes the anodising of aluminium parts.

anomalous /əˈnɒmələs/ adjective referring to something unusual, unexpected or otherwise departing from what is the normal order or range  
anomalous instrument reading an unusual instrument reading which may require further investigation.

anomaly /əˈnɒməli/ noun something unusual, unexpected or otherwise not within the normal order or range  
Any anomalies in the localiser will be detected during calibration.

anoxia /ænˈnɒksɪə/ noun a state in which no oxygen reaches the body tissues, resulting in death.  
Hypoxia is a complete lack of oxygen and can, of course, be fatal.

COMMENT: Anoxia is a complete lack of oxygen, the symptoms of which are sometimes difficult to detect.

antenna /ˈæntənə/ noun US same as aerial

anti- prefix against, opposing  
anti-icing  
anticlockwise  
anti-corrosion

anticipate /ənˈtɪspet/ verb to realise what is likely to happen and do what is necessary in readiness  
during take-offs, pilots should anticipate an engine failure.

anticlockwise  
adv verb referring to a circular movement in the opposite direction to the hands of a clock  
Turn the nut anticlockwise to loosen it.  
Opposite clockwise

anti-collision /ˈænti kəˈlɪʒən/ adjective helping to prevent collisions

anti-collision light /ˈænti kəˈlɪʒən laɪt/ noun a flashing white light on an aircraft

anti-corrosion /ˈæntɪ kəˈrɔrəʃən/ adjective protecting against corrosion, especially rust  
an anti-corrosion treatment

anticyclone /ˈæntɪsarkləʊn/ noun an area of high atmospheric pressure, usually associated with fine dry weather in summer and fog in winter  
Winds circulate round an anticyclone clockwise in the northern hemisphere and anticlockwise in the southern hemisphere.

anti-icing /ˈæntiˈɪsɪŋ/ adjective  
preventing icing  
anti-icing additive

anti-icing fluid /ˈænti ˈɪsɪŋ ˈflʌɪd/ noun a fluid which prevents icing
anti-skid /ˌæntiˈskid/ adjective designed to prevent skidding

anvil /ˈænvil/ noun a metal block which ends in a point, has a rounded bottom and a flat top, and on which horseshoes, etc., are made  
A cumulo-nimbus cloud has a characteristic anvil shape.

anvil cloud /ˈænvil klaʊd/ noun a cloud, usually a large dark thundercloud, which has the shape of an anvil.

A/P abbreviation 1. airport 2. autopilot

apart /əˈpɑrt/ adverb separated from one another  
The jets were only 200 feet apart, vertically.

aperture /ˈæpətʃə/ noun an opening  
Any aperture or cut-out in the fuselage structure must be specially strengthened.

APHAZ abbreviation aircraft proximity hazard

APP abbreviation 1. approach 2. approach control

apparent /əˈpærənt/ adjective 1. obvious, clear  
It became apparent that carbon monoxide was entering the cabin.  
from the above, it will be apparent that ... from the above, it will be clear that ... 2. seeming or appearing to be  
an apparent failure of the system  
The ILS showed an apparent deflection to the right.

appear /əˈpər/ verb 1. to come into view  
Another aircraft appeared on the radar screen. 2. to seem to be  
Although air may appear to be still, it is in fact, moving.

appearance /əˈpərəns/ noun 1. an instance of being seen or coming into view  
The appearance of the passenger on the flight deck surprised the crew. 2. the way something looks  
It may be difficult to recognise a particular stretch of coast in an area simply by its appearance.

appendix /əˈpendiks/ noun a section containing additional information, often found at the end of a book, etc.  
Charts are reproduced as an appendix to the map section. (NOTE: The plural form is appendices.)

applicable /əˈplɪkəb(ə)/ adjective 1. relevant or appropriate  
rule 24 is not applicable in this case  
rule 24 cannot be used in this case 2. suitable, necessary, appropriate  
Emergency systems are checked when applicable.

application /əˈplɪkeɪʃ(ə)n/ noun 1. a formal request, often on paper, for employment  
application form a form to be filled out by a person looking for a job, and sent back to the organisation offering the job 2. the act of putting a substance onto something  
the application of a coat of paint the covering of something with a coat of paint 3. the act of using something, e.g. an ability, to carry out a task  
When an accident occurs, the application of knowledge and skills is important.

apply /əˈpləri/ verb 1. to apply for a job  
formally ask for employment  
He applied for the post of chief engineer but was not successful. 2. to put on  
apply a coat of paint  
Apply a plaster to the skin. 3. to use something to carry out a task  
Apply the same method as in the example. 4. to be relevant or relate to  
The rules which apply to the measurement of wind velocities on isobaric charts apply equally to contour charts. (NOTE: applying – applied)

appreciable /əˈprɪʃəb(ə)/ adjective 1. possible to measure  
Appreciable weakening may be permitted without risk of failure. 2. considerable, large in size or amount  
there is an appreciable difference between statute miles and nautical miles

appreciate /əˈprɪʃɪt/ verb 1. to understand or recognise the importance or significance of something  
The map reader is in a position to appreciate the relative values of the features seen on the ground. 2. to increase in value  
The value of the building has appreciated by 100% in 10 years. Opposite deprecate 3. to be thankful or grateful for something  
The student appreciated the extra help given by the instructor.

appreciation /əˈprɪʃəʃ(ə)n/ noun 1. understanding  
It is essential to have...
an appreciation of the basic gas laws. 2. an increase in value ○ There has been an appreciation of 100% in the value of the building in 10 years. Opposite depreciation 3. thankfulness, gratitude ○ After gaining her private pilot’s licence, the newly-qualified pilot showed her appreciation by sending a letter of thanks to her instructor.

approach /əˈprəʊtʃ/ noun 1. a path towards something ○ The approach to the terminal was blocked by an overturned lorry. 2. the descent of an aircraft towards the place where it intends to land. Abbreviation APP 3. a way of achieving or doing something ○ to take a different approach to a situation to deal with or to manage a situation in a different way • verb 1. to move nearer in place or time to something ○ The aircraft is approaching a danger area. ○ nightfall is approaching it will soon be dark 2. to have a particular mental attitude towards something ○ He approaches his studies with great enthusiasm. 3. to speak to or get in touch with somebody ○ You must approach the chief flying instructor regarding your request for a week’s holiday.

approach control /əˈprəʊtʃ kənˈtrəʊl/ noun a control station in an air traffic control centre that guides an aircraft while it is making its approach

approach monitoring aid /əˈprəʊtʃ mənˈtərɪŋ eɪd/ noun an instrument or system that helps an air traffic controller to track the position and movements of an aircraft during its approach. Abbreviation AMA

approach path /əˈprəʊtʃ pæθ/ noun the course taken by the aircraft in preparation for landing

approach plate noun a document issued by an aviation authority which provides detailed information about how to land at a given airport in very poor visibility

approach to land /əˈprəʊtʃ t oˈlænd/ noun the final stage of the flight when the aircraft is manoeuvred into position, relative to the landing area, in preparation for landing ○ on the approach to land, the aircraft reduces speed and height

appropriate /əˈprəʊpriət/ adjective suitable or needed ○ appropriate action the action that is needed to deal with the situation

appropriately /əˈprəʊpriətli/ adverb in a way that it is suitable or necessary ○ to adjust the mixture appropriately to adjust the mixture to suit the conditions

approval /əˈprəʊv(ə)/ noun permission or agreement ○ with the captain’s approval with the permission of the captain ○ to meet with the approval to be approved by ○ The management’s plans for restructuring the airline met with the approval of the shareholders.

approve /əˈprəʊv/ verb 1. to allow or agree to something ○ The air traffic controller approved the emergency landing. 2. ○ to approve of to believe something to be right or good ○ Nearly everybody approved of the new colour scheme for the furnishings. ○ he doesn’t approve of women being airline pilots he believes that it is wrong for women to be airline pilots

approx /əˈprəʊks/ same as approximate, approximately

approximate adjective /əˈprəʊsɪmət/ not exact, around or about ○ an approximate distance of 60 nm about 60 nautical miles • verb /əˈprəʊksɪmɪt/ to close to, to be around (NOTE: Approximate can be shortened to approx or APRX (ICAO).) approximately /əˈprəʊksɪmətli/ adverb not exactly, around or about ○ Approximately 2,000 people work in the airport. (NOTE: Approximately can be shortened to approx or APRX (ICAO).)

approximation /əˌprəʊksɪməˈʃ(ə)n/ noun a calculation which is not exact but near enough, a rough estimate ○ an approximation of aircraft height a rough estimate of aircraft height

apron /ˈeɪprən/ noun an area of tarmac, concrete, etc., outside a hangar for parking aircraft (NOTE: The US term is ramp.)

APRX abbreviation (ICAO) 1. approximately
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north of which lies the Arctic region the Earth at latitude 66°32N, to the Arctic Circle across a gap prevents spark plugs from arcing.

Arctic air flew over the Arctic.

Arctic area a surface

Arctic air cold air from the Arctic the Arctic Circle a parallel running round the Earth at latitude 66°32N, to the north of which lies the Arctic region the Arctic the area of the Earth’s surface around the North Pole, north of the Arctic Circle The aircraft flew over the Arctic.

area a defined part of a surface, a region area forecasts a weather forecast for a region rather than, e.g., an aerodrome

area control service an area that provides air traffic control services to flights within the area for which it is responsible

area navigation a method of navigation that permits aircraft to operate on any desired flight path within the area covered by ground-based navigational aids, self-contained navigational aids or a combination of the two. Abbreviation RNAV

argument 1. a factor QNH is the pressure at station level reduced to sea level using arguments of station height and an international standard atmosphere. 2. a verbal disagreement to have an argument to disagree openly and verbally with somebody The investigation revealed that there had been an argument between the commander and the copilot about the advisability of continuing with the final approach to land. 3. a reason One of the arguments in favour of building the new terminal is the increase in opportunities of employment for the local residents.

arid adjective very dry arid terrain desert an arid, sub-tropical climate a hot, dry climate

arrange verb to come into being, to happen, to show up or to appear Should any problems arise, report back to me immediately. (NOTE: arising – arose – arisen)

arm a device similar in function to a human arm, operating as a lever 2. the horizontal distance from a reference point to the centre of gravity The principle of the arm is used in weight and balance calculations for an aircraft. verb to make ready for action or use Door-mounted escape slides are armed before flight.

armature the rotating coils of an electric motor or dynamo Secondary windings are wound over the primary windings and the whole assembly is known as an armature.

ARR arrangement arrival

arrangement a plan A series of dipoles are arranged in a circle.

arrest verb to stop or to prevent something from happening to
arrest the spread of a fire to stop the fire spreading. 2. to hold somebody for breaking the law. 3. to arrest was unexpected.

arrester /aˈrestə/ noun a device or substance which prevents or stops something from happening

arrival /əˈrɛv(ə)r/ noun the act of reaching somewhere. Abbreviation

ARR = Gulf Air announce the arrival of flight GF147 from Abu Dhabi flight GF147 from Abu Dhabi has just landed

arrivals /əˈrɛv(ə)lz/ noun the part of an airport that deals with passengers who are arriving

arrive /əˈrɪv/ verb to reach somewhere. the flight from Tokyo arrived at 8.30 the flight from Tokyo landed at 8.30

arrow /ˈærəʊ/ noun a painted or printed sign which points to something. Non-return valves are marked with an arrow which shows the direction of flow.

arrow convention /ˈærəʊ kənˌvɛnʃən/ noun an agreed method of using arrows when drawing wind triangles

article /ˈɑrtɪkl/ noun an object, an item. loose articles things which may move during flight and cause problems

artificial //ərtɪˈfɪʃ(ə)l/ adjective not natural, made by humans. The small needle indicates cabin altitude or the artificial altitude created by the pressurisation system.

artificial horizon /ərtɪˈfɪʃ(ə)l ˈhɔrɪzn/ noun an instrument that displays the degree of pitch or bank of an aircraft relative to the horizon

ascend /əˈsend/ verb to rise, to go or move upwards. Hot air ascend. In ascending order in order of number or rank with the smallest or less important at the bottom and the largest or more important at the top. Opposite descend

ascent /əˈsɛnt/ noun a rise, a slow upward movement. the forced ascent of air over high ground. In a stable atmosphere where the ascent of air is forced, precipitation is mostly light and occasionally moderate.

certainty /əˈsɜrtni/ noun the act of holding somebody for breaking the law. He was arrested at the airport.

ascertain /əˈsɜrt/ verb to find out, to make certain. During pre-flight checks, control surfaces should be moved by hand to ascertain that they have full and free movement.

ASA abbreviation airspeed indicator

AASMI abbreviation aerodrome surface movement indicator

aspect /ˈæspekt/ noun 1. a part of a problem or subject. Vertical motion is an important aspect of meteorology. 2. the view from a particular position. The aspect of the runway on final approach helps the pilot to judge height and progress.

aspect ratio /əˈspes ˈrɛʃ(ə)r/ noun the ratio of the length of an aircraft’s wing to the average distance between the front and back edge of the wing. (NOTE: Aircraft that operate at low speeds, for example gliders, need a high aspect ratio and have long narrow wings. Supersonic aircraft need a low aspect ratio, which is created by swinging the wings back.)

asphyxiation /əˈsfɪkʃ(ə)n/ noun unconsciousness or death caused by lack of oxygen. Fire may result in the cabin being filled by smoke causing asphyxiation.

ASR /æsˈɛr/ abbreviation 1. airport surveillance radar 2. altimeter setting region

assembly /əˈsembli/ verb 1. to put a number of parts together. The parts are made in different countries but the plane is assembled in France. 2. to gather together. Passengers should assemble in the departure lounge where an airline representative will meet them.

assembly /əˈsembli/ noun 1. something that is made up of smaller parts. 2. the act of putting parts together to make a whole. Final assembly of the A320 takes place in France.

assess /əˈses/ verb to check, estimate or find out. Cabin crew must assess if
assessment

their exits are usable. 1 to assess a situation to consider all aspects of a situation

assess\ment /ə'ses\mənt/ noun a judgement on a situation based on careful thought. 2 The captain’s assessment of factors such as aircraft damage, passenger-load, fire, etc., will affect the decision on whether to evacuate the aeroplane or not.

assign /ə'sain/ verb to set apart beforehand or allocate for a specific purpose. 2 assigned seats seats selected beforehand for particular people. 3 Crew sit in their assigned seats. 4 Individual carriers assign codes to aircraft.

assist /ə'sist/ verb to help. 1 If you have any difficulty, cabin staff will assist you. 2 When evacuating the aircraft, hand signals by cabin staff assist in directing passengers to the exits.

assistance /ə'sist\ns/ noun help. 2 to require assistance to need help. 3 If a pilot requires assistance, they should contact ATC. 4 to provide assistance to give help.

associate /ə'səs\is\t/ verb to come with or be linked to something else. 2 Turbulence is often associated with strong winds. 3 The airport authority has to overcome a lot of problems associated with its plans to build a new terminal.

association /ə'səs\io\ns/ noun 1 a group of people who organise themselves into an official body with common objectives and a code of conduct. 2 British Air Line Pilots Association. 3 in association with together with. 4 Rain-ice occurs only rarely over the British Isles and is usually found in association with warm fronts.

assume /ə'sjuːm/ verb 1. to take as true before there is proof. 2 I assume that she’s ill because she’s not at work today – but I may be wrong. 3. to suppose. 4 for our studies we will assume that the earth is a perfect sphere we know that the Earth is not a perfect sphere but it helps if we accept, for the time being, that it is assuming (that) accepting or supposing that. 5 Assuming that the return flight from the point of no return to A is made on three engines, calculate the distance from D to the point of no return. 6. to take on, to undertake the duties of somebody. 7. The copilot assumed control of the aircraft after the captain was taken ill during the flight. 8. to take a particular bodily position. 9. The correct technique of using the escape slides is to assume a sitting position.

assumption /ə'samp\ʃ\n/ noun an understanding or belief. 2 The one-in-sixty rule is based on the assumption that one nautical mile subtends an angle of one (at a distance of 60 nautical miles).

asymmetric /ə'sɪm\trɪk, /ə'sɪm\trə\k/ adjective not identical or equal on each side of an imaginary central dividing line. Opposite symmetric

asymmetric flight /ə'sɪm\trɪk 'flæt/ noun a condition in which one engine, displaced from the aircraft’s centre-line is not working.

asymmetric power /ə'sɪm\trɪk 'pəʊə/ noun power on one side of the aircraft’s centre line only.

asynchronous /ə'səŋkronəs/ adjective 1. not happening at the same time or rate. 2 An asynchronous orbit is a 24-hour orbit which enables a satellite to remain overhead one part of the Earth’s surface. 2. not in frequency or phase.

asynchronous computer /ə'səŋkronəs kəmp\'juːtə/ noun a computer which does not process information according to the internal clock.

ATA /et ti: 'et/ abbreviation actual time of arrival.

ATC /et ti: 'st\n/ abbreviation 1. air traffic control. 2. air traffic controller.

ATCC abbreviation air traffic control centre.

ATCRU abbreviation air traffic control radar unit.

ATD /et ti: 'dɪ\n/ abbreviation actual time of departure.

ATFM abbreviation air traffic flow management.
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**ATIS** abbreviation Automatic Terminal Information Service

**ATM** /ætˈtiː/ abbreviation air traffic management

**atmosphere** /ætˈmæsfɪər/ noun 1. a mixture of gases in a mass surrounding the earth. The surrounding atmosphere moves with the earth. 2. a unit of measurement of pressure

COMMENT: The main gases found in the atmosphere are nitrogen and oxygen. The atmosphere contains less than 1% carbon dioxide and argon, and also traces of hydrogen, helium, krypton, neon, ozone and xenon.

**atmospheric** /ætˈmæsfɪərɪk/ adjective referring to the atmosphere

**atmospheric attenuation** /ætˈmæsfɪərɪk əˈtenjuəʃən/ noun the weakening of a radio signal as it passes through the air

**atmospheric pollution** /ætˈmæsfɪərɪk pəˈluːʃən/ noun same as air pollution

**atmospheric pressure** /ætˈmæsfɪərɪk ˈpreʃər/ noun normal air pressure on the surface of the earth

**atmospheric refractio** /ætˈmæsfɪərɪk ˈrɪfregʃən/ noun change in direction of waves due to variations in temperature, pressure and humidity, particularly at lower altitudes

**atom** /ætˈɒm/ noun the smallest unit of a substance which can take part in a chemical reaction. An atom consists of a nucleus and electrons.

**atomic** /əˈtɒmɪk/ adjective referring to atoms

**atomisation** /ætˈɒmɪzaʃən/, **atomize** /ætˈɒmɪz/ verb to reduce liquids to a fine spray. The fuel must be atomised or vaporised to combine with the air to permit combustion.

**attenuate** /əˈtenjuət/ verb to lose power or strength. A wave becomes attenuated or loses strength as range increases.
attenuation /'ætənuːʃən/ noun 1. loss of strength. Atmospheric attenuation is negligible until the upper end of the UHF band when it increases rapidly to limit the highest usable frequency to about 10 GHz.

attenuative /'ætənuːtəv/ adjective becoming weaker. Rain has an attenuative effect.

attitude /'ætɪtjuːd/ noun 1. the position of the aircraft in the air in relation to the horizon. Angle of attack will vary with changes in engine speed and aircraft attitude. Nose down attitude is at a lower level than the tail 2. a way of thinking and feeling about or of behaving towards something or somebody. He has an excellent attitude towards his training programme. He is positive and motivated in his training programme.

attitude heading reference system /'ætɪtjuːd,hedɪŋ 'refərəns/ systems. full form of AHRS. A flight instrument that gives the pilot information about the position of the aircraft in the air in relation to the horizon. In light aircraft, the attitude indicator is situated on the instrument panel, directly in front of the pilot. Pitch, bank.

COMMENT: The attitude indicator is sometimes referred to as the ‘artificial horizon’. In instrument flight training, the attitude indicator is the primary reference instrument. It is positioned on the instrument panel directly in front of the pilot.

attract /'ætraktn/ verb 1. to cause to draw near. If two magnets, with unlike poles are brought together, they will attract each other. To attract attention. 2. to cause people to want to have or do something. Attraction /'ætrakʃən/ noun 1. a force that draws things towards something. The strength of the magnetic force will depend, amongst other things, on the magnitude of attraction at the magnetic source. 2. a quality that causes people to want to have or do something. The attraction of flying was the factor which made him decide to train as a pilot.

attractive /'ætræktɪv/ adjective 1. referring to something you feel you would like to have. After long talks, the prospective buyer made an financially attractive offer for the aircraft. 2. nice to look at.

ATZ abbreviation aerodrome traffic zone.

audible /'ɔːdɪbl/ adjective possible to hear. The fire detection system should contain an audible warning device.

aural /'ɔːrəl/ adjective referring to hearing. The aural and visual alerts will continue until the crew take action to cancel them. (Note: Aural is sometimes pronounced /'ɔːrəl/ to show the difference with oral.)

authorise /'ɔːθəraɪz/ to allow officially, to give permission. A signature is required to authorise the repair.

authorised /'ɔːθəraɪzd/ adjective officially allowed, permitted. Aircraft with a maximum authorised weight of 12,500 lb or less. An authorized person a person who has been given power to act and perform particular tasks or duties.

authoritative /'ɔːθərətɪv/ adjective in the manner of somebody with authority, in a commanding way. A crew must act in an authoritative manner. Crew must give firm instructions or orders.

authority /'ɔːθərɪti/ noun 1. complete control or power over something. While boarding, the captain has the authority to ask an unruly passenger to leave the aircraft. 2. an official or gov-
embraces the ability of an electronic surveillance system which has been made less dependent on direct human control or management.

automated systems systems which have been made less dependent on direct human control or management.

automatic /əˈtəʊmɪk/ adjective 1. done without needing to think o In the early stages of training, student pilots have to think about the use of the flying controls, but after a while these actions become automatic. 2. which works by itself without the need of an operator o The normal activation method is automatic.

automatic dependent surveillance /əˈtəʊmɪtɪk dɪˈpɛndənt sɔrˌveɪləns/ an electronic surveillance system that uses data that aircraft provide automatically via a datalink and is able to identify and track the aircraft.

automatic direction finder /əˈtəʊmɪtɪk dəˈrekʃən fændə/ a radio navigation instrument that receives signals from non-directional radio beacons o The needle on the ADF indicator points toward the selected radio signal. Abbreviation ADF

automatic landing /əˈtəʊmɪtɪk ˈlændɪŋ/ noun automatic flight control system capable of landing an aircraft ‘hands-off.’ Abbreviation autoland

automatic mixture control /əˈtəʊmɪtɪk ˈmɪkstʃər kɔnˈtrəʊl/ noun a subsystem in a piston engine which adjusts the flow of fuel to balance changes in air density

automatic pilot /əˈtəʊmɪtɪk ˈpɑːlət/ noun full form of autopilot

Automatic Terminal Information Service /əˈtəʊmɪtɪk ˈtɜːmɪnəl ɪnˈfɔrmeɪʃən sɜrvɪs/ noun a recording of information played continuously on a specified radio frequency which gives pilots the current weather, runway in use, etc. o Students listen to the ATIS to practise their language skills. Abbreviation ATIS

automation /əˈtəʊməˈʃən/ noun the automatic operation or automatic control of a piece of equipment, a process, or a system o Automation has speeded up baggage handling. o Automation of throttle control has removed the need for pilots to monitor airspeed so closely. o It is possible that the alternate source might provide a reduced level of automation.

autopilot /əˈtaʊpələt/ noun a system which automatically stabilises an aircraft about its three axes, restores the original flight path following an upset and, in some systems, causes the aircraft to follow a preselected airspeed, altitude or heading. Full form automatic pilot. Abbreviation A/P

auxiliary /ɔˈzɪləri/ adjective secondary, which is used when necessary to help or substitute for something else

auxiliary gearbox /ɔˈzɪləri ˈgɛəbəks/ noun a gear box which allows main engine power to be used for secondary systems

auxiliary power unit /ɔˈzɪləri ˈpɔːərjuːnt/ noun a small jet engine used to generate electrical power for air-conditioning, etc., when the aircraft is parked on the ground. Abbreviation APU

auxiliary rotor /ɔˈzɪləri ˈrəʊtər/ noun the tail rotor of a helicopter

availability /əˈveɪərəblɪti/ noun the fact of being available o The status of an airport is determined by the availability of suitable navigation aids.

available /əˈveɪərəbl/ adjective ready for immediate use o On a multi-engine aircraft, all the fuel must be available for use by any engine.

average /əˈveɪərədʒ/ adjective referring to an average o For load sheet purposes, an average weight of the passengers and crew members may be used. n noun the total divided by the number of items added. o The average of 1, 3, 5, 9, 10 and 15 is 8 (1+5+9+10+15 = 40 ÷ 5 = 8). n verb to reach a particular figure as
an average of Brake temperatures average around 500°C during normal operations.

**avert** /əˈvɜːrɪ/ verb to avoid. To avert a collision, he changed direction.

**AVGAS** /ˈeɪvəɡɛs/ abbreviation aviation gasoline

**aviation** /əˈviːʃən/ noun flying an aircraft. **Wind speeds in aviation are usually given in knots.**

**aviation gasoline** /əˈviːʃən ˈɡæsəlizn/ noun fuel used in piston-engined aircraft. **Abbreviation AVGAS**

**aviation law** /əˈviːʃən ˈlɔː/ noun the laws relating to flying

**aviation routine weather report** /əˈviːʃən ˈrʌtɪn ˈweðər ˈrɪpt/ noun a weather report issued regularly at intervals of an hour or half an hour describing weather conditions at an airport. **Abbreviation METAR**

**aviator** /əˈviːətər/ noun a person who flies aircraft

**avionics** /əˈviːonɪks/ noun electronic communication, navigation, and flight-control equipment of an aircraft. **The trainee engineer is doing an avionics course.** Full form **aviation electronics**

**avoid** /əˈvɔːrd/ verb 1. to prevent something from happening. **She just managed to avoid an accident.** 2. to keep away from something. **Avoid flying close to any person or vessel.**

**Cumulonimbus clouds and thunderstorms should be avoided by as great a distance as possible.**

**avoidance** /əˈvɔːrdəns/ noun an act of avoiding something. **Avoidance of thunderstorms is recommended** it is recommended to keep away from thunderstorms

**await** /əˈweɪt/ verb to wait for. **Await instructions from the flight deck.**

**aware** /əˈweər/ adjective knowing and being conscious of something. **The pilot should be aware of the positions of all other aircraft in the circuit.**

**awareness** /əˈweərns/ noun the state of being aware or conscious of something. **Safety awareness** the state of being familiar with and prepared for any situation in which safety is important

**AWR** abbreviation airborne weather radar

**axial** /ˈæksɪəl/ adjective referring to an axis

**axial flow compressor** /ˈæksɪəl fləʊ/ noun a compressor in which the flow of air is along the longitudinal axis of the engine. **In spite of the adoption of the axial flow type compressor, some engine retain the centrifugal type.**

**axis** /ˈækstəs/ noun 1. an imaginary line around which a body rotates. **The Earth rotates around its own axis.** 2. An aircraft moves around three axes – vertical, longitudinal and lateral. **Pitch, roll, yaw** 2. a horizontal or vertical scale on a graph, often referred to as the X axis, the horizontal axis, and the Y axis, the vertical axis. **The plot shows the effect of airspeed on lift with airspeed shown on the horizontal axis and lift on the vertical axis.** (Note: The plural form is axes.)

**axle** /ˈæksəl/ noun a shaft on which a wheel is mounted. **Unequal tyre-pressures, where two wheels are mounted on the same axle, will result in one tyre carrying a greater share of the load than the other.** (Note: The wheel either turns round the axle or is fixed to the axle.)

**azimuth** /əˈziːməθ/ noun the horizontal angle or direction of a compass bearing. **Where precision approach radar is installed, the controller can inform the pilot if they depart from either the extended central line in azimuth or height or both.**
back /bæk/ verb (of the wind) to change direction in an anticlockwise direction. Opposite veer
backup /ˈbækəp/ adjective, noun a second or third system, instrument or computer disk available to be used if the first one fails. The backup system or the backup failed as well. Backup generators are driven by the engine.
backward /ˈbækwəd/ adjective directed towards the back. A backward movement.
backwards /ˈbækwədz/ adverb towards the back. Unlike most aircraft, the C130 can move backwards using its own power. (NOTE: The US English is backward.)
backwash /ˈbækwɔʃ/ noun a backward flow of air produced by an aircraft propeller or jet engine.
baffle /ˈbafl/ noun a metal plate for preventing the free movement of sound or liquids. Integral fuel tanks can be strengthened by fitting baffle plates.
baggage /ˈbægdʒ/ noun luggage, cases and bags which you take with you when travelling. One passenger had a huge amount of baggage. She lost one piece of baggage. (NOTE: The word luggage is also used in British English.)
baggage ball an area where arriving passengers pick up their baggage. Carry-on baggage small bags of limited size and weight that passengers are allowed to take with them into the cabin of an aircraft.
baggage allowance /ˈbægdʒələns/ noun the weight of baggage each air passenger is allowed to take free. There is an accompanied baggage allowance of 18 kilos.

balance /ˈbælsən/ noun 1. a state in which weight, force or importance are evenly distributed. The propelling nozzle size is extremely important and must be designed to obtain the correct balance of pressure, temperature and thrust. 2. the act of staying steady.
verb 1. to be opposite and equal in weight, force or importance to something else. The pressure exerted by the weight of the atmosphere above the level of the bowl balances a column of mercury in the tube. 2. to stay steady, especially when resting on the centre of gravity. ‘...balance refers to the location of the centre of gravity along the longitudinal axis of the aeroplane’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet]
ball /bɔl/ noun in an inclinometer, the round object which indicates if a turn is coordinated. To step on the ball to correct a skid or a slip by putting pressure on the rudder on the side to which the ball in an inclinometer has moved during a turn. If the ball has moved to the left, the turn can be corrected by putting pressure on the left rudder, and vice versa.
balloon /ˈbɔlən/ noun a large bag inflatable with hot air or gas to provide lift, but without power. Balloons are sent into the upper atmosphere to col-
lises an aneroid capsule mechanically
mon type of barograph is that which uti-
el equal to 1,000 millibars.
the pilot pitch and bank information.
ground over which the aircraft flies
solid bar of aluminium.
ology
limits within a radio system
is reduced to one kilohertz to minimise
noise or interference.
The sharp setting means the bandwidth
is increased when the aircraft banks, turns
or pulls out of a dive. • noun (of an air-
craft) a rotating or rolling movement
around its longitudinal axis to a particu-
lar angle. • An attitude indicator gives
the pilot pitch and bank information.

bar /bɑ:/ noun 1. a long, straight, rigid
piece of metal. • The part is made from
a solid bar of aluminium. 2. (in meteo-
rology) a unit of atmospheric pressure
equal to 1,000 millibars. • millibar
barograph /ˈbɑrəɡraf/ noun an instrument
for measuring and recording
atmospheric pressure. • The most com-
mon type of barograph is that which uti-
lises an aneroid capsule mechanically
connected to a pen.

barometer /ˈbɑrəmətər/ noun an instrument
for measuring the atmos-
pheric pressure
barometric /ˈbɑrəmətrɪk/ adjective
referring to a barometer. • barometric
pressure atmospheric pressure as indi-
cated by a barometer
barometric tendency
ˈbɑrəmətrɪk ˈtɛndənsi noun the amount of change in pressure with
increase in altitude
barrel roll /ˈbɑr(ə)l rəʊl/ noun a
manoeuvre in which an aircraft turns
completely over sideways while flying
along

barrier /ˈbɑrəri/ noun 1. something
such as a wall that prevents the move-
ment of something else. • Elevation of
the ground over which the aircraft flies
can be a dangerous barrier to flight. 2.
something that prevents a person from
making progress. • His medical prob-
lems were a barrier to his successful
completion of the course.

base /beɪs/ noun the bottom part or
lowest part. • verb to develop or develop
something from something else. • The
operation of the auxiliary power unit is
based on the gas turbine engine. • The
principle of vapour cycle cooling is
based upon the ability of a refrigerant
to absorb heat.

base leg /ˈbeɪs leɡ/ noun the part of
the airfield traffic circuit flown at
approximately 90° to the direction of
landing, followed by the final approach.

leg

basic /ˈbeɪsɪk/ adjective referring to
the most important but often simplest
part of something, from which every-
thing else is derived. • This chapter pro-
vides a basic understanding from which
the study of meteorology can develop.

basic principle a central or fundamen-
tal idea or theory

basic area navigation /ˈbeɪsɪk ˈbeɪərɪə
ˈnævərɪəl ˈneɪʃ(ə)n/ noun a standard
of performance for navigation that
requires an aircraft to remain within 5
nautical miles of the centreline of its
course for 95% of the time

basis /ˈbeɪsɪs/ noun the central and
most important part of something from
which everything else is derived. • The
basis of air navigation is the triangle of
velocities. (NOTE: The plural form is
bases.)

bat /beɪt/ noun an object shaped like a
table-tennis bat used by a person on the
ground to guide an aircraft when it is
taxiing or parking

batser /beɪtsmən/ noun some-
body who uses a pair of bats to guide an
aircraft when it is taxiing or parking

battery /ˈbeɪtəri/ noun a chemical
device that produces electrical current. •
This piece of equipment is powered by 2
batteries. • charger

bay /beɪ/ noun 1. a space or area in
the structure of an aeroplane where equip-
ment can be located. • To avoid damage
to the wheel bay, the nose wheel must be
aligned in a fore and aft direction during retraction. 2. a part of the coast that curves inwards o the Bay of Bengal

bayonet fitting /'beɪnənt 'fɪtɪŋ noun a means of attaching something to something, in which an object with two side pins is inserted into a L-shaped slot in another object on some light-bulbs o Magnetic chip detectors are of the bayonet type fitting and can be removed and replaced very quickly.

beacon /'biːkɒn/ noun a light or radio signal for navigational purposes. o If the aircraft turns towards the beacon, signal strength will increase.

beam /biːm/ noun 1. a long thick metal bar used as a support o A beam is designed with a breaking load of 12 tons but when a three ton load is applied repeatedly, the beam may fail. 2. a shaft of light or radiation travelling in one direction, as from a cat’s headlights. o The electron gun produces a stream of fast-moving electrons and focuses them into a narrow beam.

beam sharpening /'biːm 'ʃæpənɪŋ noun the process of making a radio or light beam narrower. o Any system employing beam sharpening is vulnerable to side lobe generation at the transmitter.

bear /beər/ verb 1. to carry or to hold. o The undercarriage has to bear the weight of the aircraft on the ground. o rain-bearing cloud a cloud carrying moisture which can fall as rain. 2. to bear something in mind to keep in mind. o It should be borne in mind that it should be remembered o Bearing in mind that she hadn’t flown for three weeks, the student pilot’s landings were very good. 3. to be able to deal with something without becoming distressed or annoyed. o He can’t bear the noise. (NOTE: bearing – bore – borne) o he can’t bear the heat the heat is too much for him

bearing /'berɪŋ/ noun 1. the angle, measured in a clockwise direction, of a distant point, relative to a reference direction o To plot a position line from the non-directional radio beacon, it is first necessary to convert the relative bearing to a true bearing and then calculate the reciprocal. 2. a device containing steel balls or needles which allows free rotation of one component around another

Beaufort scale /'bɔːfɔt skɛrəl/ noun scale from 1–12 used to refer to the strength of wind. o Wind speeds can be estimated by using the Beaufort scale of wind force.

belly flop /'beli flɒp/ noun same as belly landing

belly landing /'beli 'lændɪŋ/ noun an emergency landing of an aircraft when the wheels have not come down

belt /belt/ noun 1. a long, relatively narrow area o high-pressure belt long narrow area of high pressure o precipitation belt a long narrow area of rain, snow or hail o rain belt long narrow area where rain falls. o The cirrus cloud can be 900 miles ahead of the surface front with a rain belt as wide as 200 miles. 2. a loop of strong material connecting two pulleys or wheels, one driving the other

belt-driven /'belt 'drɪv(ə)n/ adjective (of a wheel) moved by a belt linked to another wheel which, in turn, is moved by a motor or an engine o Aircraft generators are belt-driven or shaft-driven.

belt-driven generator /'belt 'drɪv(ə)n ˈdɪɡənərətər/ noun a generator whose pulley is turned by a belt attached to an engine-driven pulley

bend /bend/ noun a curve o verb to curve from a straight shape (NOTE: bending – bent) o to bend downwards to curve down from a horizontal position o to bend upwards to curve up from a horizontal position o The wings support the weight of the aircraft and they bend upwards in flight.

bending load /'bendɪŋ laʊd/ noun a load that causes a structure to bend

Bernoulli’s principle /bɜːnəˈluːlɪz 'prɪnsɪpl/ noun o lift

beware /'bɜːw /verb to be careful or to watch out for. o Beware of carburettor icing. o Beware of other aircraft in the circuit.
biplane.

The radio horizon extends beyond the visible horizon. It is beyond his understanding he cannot understand it at all, it is too difficult for him to understand.

bi- /'baɪ/ prefix 1. two 2. twice

biannual /'bɛ[j]njuːəl/ adjective happening two times a year  a biannual inspection an inspection done twice every year.

bill /bil/ noun US same as note noun 4

bimetallic /'baɪmɛtlɪk/ adjective made of two metals

bimetallic strip /ˌbaɪmɛtlɪk 'strɪp/ noun a strip made of two separate metals with different rates of expansion, joined together side by side so that when the strip is heated, it bends and makes, or breaks, electrical contact.

Circuit breakers use a bimetallic strip as the sensing element.

binary /'baɪnərɪ/ adjective referring to a number system used in computers that only uses the digits 0 and 1. Logic gates work with binary data. Computers only process binary information.

biplane /'baɪplɛn/ bi-plane noun an old aeroplane design with two pairs of wings, one above the other. Most of the aircraft used in the 1914–18 war were biplanes.

bird strike /'baɪstrɪk/ noun a collision between a bird and a plane or an aircraft that is flying.

black box /'blæk 'bɒks/ noun same as flight data recorder (NOTE: It is often called the black box, although it is not black.)

blade /blɛd/ noun a flattened part of a propeller or rotor. Blade tip the end of the blade, furthest from the centre of rotation. Turbine blade a flat part in a turbine, which has an aerodynamic effect on the air.

blade angle /ˈblɛd ˌæŋɡəl/ noun the angle between the blade axis and the axis of rotation. With a variable pitch propeller, the blade angle may be changed in flight.

blade slip /ˈblɛd slɪp/ noun a loss of propulsive power from a propeller caused by the difference between geometric and effective pitch.

blade twist /ˈblɛd tɹɪst/ noun 1. a reduction in propeller blade angle from root to tip. 2. the unwanted variation in propeller blade pitch from root to tip caused by aerodynamic loads.

blank /ˈblind/ adjective 1. with nothing written, printed or drawn on it 2. a blank sheet of paper 3. a blank form a form without the details filled in. 4. (of a TV, computer or video screen) with nothing appearing on it. 5. When he returned to his computer, the screen was blank.

bleed air /ˈblɪd ɛə/ noun compressed air from the engine compressor used for cabin pressurisation or to drive other services.

Bleed air from the right engine can power items normally powered by the left engine.

bleed screw /ˈblɪd skrʌ/ noun a small screw in highest point of a hydraulic system to allow for the removal of air or vapour.

blind transmission /ˌblaɪnd ˈtrænzmɪʃən/ noun a transmission from one station to another in a situation where two-way communication cannot be established but where it is believed that the called station is able to receive the transmission.

block /blɒk/ noun a large mass of something. 1. verb 1. to prevent something such as a fluid from passing freely through a pipe or channel. 2. At high altitude, any water condensing out of the fuel could freeze and block the filters.

Blockage was caused by ice. To prevent a course of action. 3. The government blocked attempts to prevent the building of the new airport.

blockage /ˈblɒkɪdʒ/ noun 1. a collection of something blocking a pipe, narrow channel, filter, etc. 2. Ice crystals may form to cause a blockage of the fuel filter. 2. the state of being blocked.

The blockage was caused by ice.

blow /blaʊ/ noun 1. an impact. 2. a disappointment. 3. The news of her failure in the examination was a severe blow.

Bleed air to the state of being blocked. 2. (of a TV, computer or video screen) with nothing appearing on it.
a fuse) to break, as it should, when the circuit is overloaded (NOTE: blowing – blow – blown). blow-back /bləʊ ˈbæk/ noun a sudden movement of fluid in the opposite direction to the general flow. A sudden release of pressure may cause a blow-back.

blower /ˈblaʊə/ noun a device for blowing air. Air for combustion is obtained from a blower.

board /bɔːd/ noun 1. a flat, square or rectangular piece of wood or other material. 2. on board on an aircraft. The flight plan records the call sign and the number of people on board. verb to get on to an aircraft. In an emergency, many passengers only remember the entrance by which they boarded the aircraft.

boarding gate /ˈbɔːdɪŋ ɡeɪt/ noun the door through which passengers leave the terminal building to get on to an aircraft. Boarding gates 1 – 10 are on the left.

boarding pass /ˈbɔːdɪŋ pɔs/ noun a temporary pass, issued at the check-in desk, which allows the holder to board the aircraft. Boarding passes must be shown at the gate. (Note: The plural form is boarding passes.)

boarding steps /ˈbɔːdɪŋ steps/ plural noun stairs used by passengers and crew to get on board an aircraft. Passengers had to wait in the aircraft for 15 minutes before the boarding steps were put in position.

boarding time /ˈbɔːdɪŋ taɪm/ noun the time the passengers are due to board the aircraft. Boarding time is at 13.30 hrs.

body /ˈbɒdi/ noun 1. the whole of a person or an animal. 2. the main part of a person, but not the arms or legs. 3. the main part of an aeroplane, system, etc. The body of an aircraft is also called the 'airframe'. A flow-control valve consists of a body and a floating valve. 4. a large mass of liquid or gas. The body of air is a large quantity of air behaving in a particular way. 5. an object. Acceleration is the rate of change of velocity of a body.

boil /bɔɪl/ verb to heat a liquid until it changes into gas. Water boils at 100°C. The boiling point of water is 100°C.

bolt /bɔːlt/ noun 1. a metal rod with a head, which screws into a nut. The two halves of the wheel are held together by bolts. 2. a bolt of lightning one electrical discharge of lightning verb to attach with a bolt. Aircraft wheels are constructed in two halves which are bolted together.

bond /bɔnd/ noun the power that holds surfaces together, when they are joined using heat, cold, chemicals or glue. The de-icing boot breaks the bond between the ice and the outer skin. verb to join surfaces together normally using heat, cold, chemicals or glue. The skin is bonded to the internal members by the redux process.

boom /bʊm/ noun in some aircraft, a spar that connects the tail to the fuselage.

boost /bʊst/ noun an increase or improvement. The improvement in a country’s economy often gives a boost to the airline industry. verb 1. to make or to help something increase. An oil pump boosts engine oil pressure. 2. to increase. The instructor’s comments boosted the student pilot’s confidence.

booster /ˈbʊstər/ noun a device which increases the force or amount of something.

booster pump /ˈbʊstər pʌmp/ noun a centrifugal pump often positioned at the lowest point of a liquid fuel tank to ensure positive pressure in the supply lines to the engine. Fuel is fed through a filter and a booster pump. The purpose of the booster pump is to prevent fuel aeration.

boot /bʌt/ noun one of a set of flat, flexible tubes bonded to the leading edge or wings and other surfaces which, when pressurised with fluid, break up ice. The boots on the leading edge of the wings were damaged by hail.
bottleneck /'bot(ə)nlək/ noun a buildup of air traffic causing delays in taking off or landing
bound /baund/ adjective □ bound for on the way to □ an aircraft bound for Paris □ the Copenhagen-bound flight the flight on the way to Copenhagen □ outward bound leaving home, especially for another country
boundary /'baundəri/ noun □ a physical or imaginary limit between two areas □ The boundary between two air masses is called the frontal surface.
boundary layer /'baundri lər/ noun the layer of fluid next to the surface over which it is flowing and, because of friction, travelling more slowly than layers further from the surface
bowser /'bauzər/ noun a mobile fuel tank for refuelling aircraft □ It is important to prevent the possibility of an electric spark by earthing the aircraft and the bowser.
Boyle’s Law /'bɔːlz ˈlɔːr/ noun a scientific principle that states that the volume of a given mass of gas, whose temperature is maintained constant, is inversely proportional to the gas pressure
brace /breiz/ verb □ to strengthen a construction using cross-members and/or wires □ Early aircraft were of the braced type of construction. □ to take a protective body position in preparation for a crash landing □ The cabin-crew will repeat the ‘brace’ order and brace themselves. □ to brace yourself to quickly prepare yourself mentally and physically for what is shortly to happen
brace position /'brɛst pə,ζɪʃ(ə)n/ noun the position that a person is recommended to adopt before impact in a crash, protecting the head with the arms and bringing the legs up underneath the chest
bracket /'brækt/ noun □ a metal support, often triangular or L-shaped □ component bracket a metal device to attach and support a component □ a range of frequencies within a band of radio frequencies □ Terminal VOR is in the frequency bracket 108–112 MHz.
briefing /ˈbriːʃɪŋ/ noun a short meeting to enable instructions and basic information to be given
British Isles /ˈbrɪtɪʃ ˈaɪlz/ plural noun the islands which make up Great Britain and Ireland. The climate of the British Isles is affected by the Atlantic Ocean.
British thermal unit /ˈbrɪtɪʃ ˈθɜːm(ə)rnl/ noun the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit. Abbreviation Btu
brittle /ˈbrɪtl/ adjective having a tendency to break easily, like thin glass
brittle /ˈbrɪtl/ noun a lamp bulb
broadcast /ˈbstrækst/ verb to transmit, often to a large number of people, a radio signal or message which requires no answer. The cabin crew can use the public address system to broadcast messages to passengers only. (NOTE: broadcasting – broadcast) noun a transmission of information relating to air navigation that is not addressed to a specific station or stations
broadly /ˈbrɔːdlɪ/ adverb widely or generally broadly speaking generally speaking
brush /brʌʃ/ noun 1. a tool that has lengths of hair or wire fixed into a handle and is mainly used for painting or cleaning 2. a small, replaceable block of carbon which rubs against the surface of a commutator in a generator or electric motor. At high altitude, the air becomes drier and this causes a greatly increased rate of wear on the brushes.
buckle /ˈbʌkl/ noun a metal part of a belt used for joining the two ends together verb to bend out of shape because of heat or force Overheating will make the battery plates buckle.
buffet /ˈbuːfıt/ noun a shaking movement of the aircraft caused by the break-down of the airflow over the upper surface of the wing. Large aircraft use a stick shaker to supplement the natural stall warning of buffet. verb to push around with great force, as by water or wind. The storm buffeted the coast. The aircraft was buffeted by strong crosswinds as it made its final approach to land.
COMMENT: Buffet is a warning to the pilot that the smooth airflow over the wing is breaking down and that he should take corrective action to prevent a stall.

b/bf/ suffix
buffeting /ˈbuːfɪtɪŋ/ noun an irregular shaking of a part or the whole of an aircraft during flight, usually caused by strong winds
buffet speed /ˈbuːfɪt spɪd/ noun the speed at which buffet is first noticed
bug /bʌɡ/ noun a fault in computer software which causes the program to operate incorrectly
build up /bɪld ˈAp/ verb to form by accumulation. In icing conditions, ice builds up on the leading edges. (NOTE: building up – built up) noun a build-up of static electricity
build-up /bɪld ˈAp/ adjective a build-up area an area which is full of houses, shops, offices, and other buildings, and with very little open space
bulb /bʌlb/ noun 1. a glass ball inside a lamp that gives electric light. If a lamp does not work, the bulb may need replacing. 2. something shaped like a lamp bulb. The most common type of hygrometer is the wet and dry bulb thermometer arrangement.
bulkhead /ˈbʌlkhɛd/ noun a dividing partition across the structure of the fuselage separating one compartment from another for reasons of safety or strength. A fireproof bulkhead is provided to separate the cool area of the engine from the hot area.
**bulletin** /ˈbʌltin/ noun a short report or information on a situation. A terminal aerodrome forecast bulletin may consist of forecasts for one or more aerodromes.

**BUMF** mnemonic

**burble** /ˈbɜːbl/ noun a break in the flow of air around an aircraft’s wing, which leads to turbulence

**burst** /ˈbɜːst/ noun 1. a minor explosion caused by increased pressure. The risk of tyre burst through overheating is increased by hard application of the brakes. 2. a very short period of activity followed by no activity. The ground installation transmits a code in two short bursts. a **burst of energy** a very short period of energy. **verb** to explode because of increased pressure or puncture. Metal debris on the runway may cause a tyre to burst. (NOTE: bursting – burst)

**busbar** /ˈbʌsbaːr/ noun an electrical conductor used to carry a particular power supply to various pieces of equipment. Complex busbars are thick metal strips or rods to which input and output connections are made.

**button** /ˈbʌt(ə)n/ noun a little round disc which you push to operate something, e.g. to ring a bell

**Buys Ballot’s Law** /ˌbʌɪz ˈbɔːltz/ noun a rule for identifying low pressure areas, based on the Coriolis effect

**COMMENT:** In the northern hemisphere, if the wind is blowing from behind you, the low pressure area is to the left, while in the southern hemisphere it is to the right.

**buzz** /ˈbz/ verb to fly low in an aircraft over people or buildings, or to fly across the path of other aircraft

**bypass** /ˈbaɪpaːs/ noun 1. an alternative pipe, channel, etc. A turbine bypass in the form of an alternative exhaust duct is fitted with a valve. 2. same as shunt
C symbol /sɪmbəl/ noun 1. Celsius 2. centigrade
cabinet /ˈkeɪbɛn/ noun 1. a passenger compartment in an aircraft 2. Air enters at the front of the cabin and leaves at the rear.
cabin attendant /ˈkeɪbɛn əˈtɛndənt/ noun member of the flight crew who looks after passengers, serves food, etc. 1. If you need something, press the call button and a cabin attendant will respond within a few minutes. Also called flight attendant
cabin compressor and blower system /ˈkeɪbɛn kəmˈpresər ənˈbleʊər ˈsɪstəm/ noun part of the air conditioning system for the cabin
cabin crew /ˈkeɪbɛn kruː/ noun airline staff who are in direct contact with the passengers and whose in-flight responsibilities include: ensuring correct seating arrangements, serving food and attending to the general well-being of passengers, etc.
cabin environment noun the conditions inside the aircraft cabin, including the temperature, the space, the colour scheme, the seating arrangements, etc.
cabin pressure /ˈkeɪbɛn ˈpreʃər/ noun the pressure of air inside the cabin which allows people to breathe normally at high altitudes
cabin pressurisation /ˈkeɪbɛn ˈpreʃərəˌziʃən/ noun the maintenance of an acceptable atmospheric pressure in an aircraft while flying at high altitude 1. At 35,000 ft (feet) passengers can breathe freely because of cabin pressurisation.
cable /ˈkeɪbl/ noun 1. thick metal wire 2. control cables thick metal wire linking the pilot’s cockpit controls to control surfaces such as the elevators and ailerons 3. a thick metal wire used for electrical connections 4. Earth return is by cable to the negative pole of the battery.
cabotage /ˈkeɪbəteɪdʒ/ noun the right of a country to operate internal air traffic with its own airlines and not those of other countries
calculate /ˈkælkjʊleɪt/ verb to find out an answer to a problem by working with numbers 1. The total flight fuel can be calculated by multiplying the time of the flight by kilograms of fuel per hour.
calculation /ˈkælkjʊleɪʃən/ noun an act of finding out an answer to a problem by working with numbers
calculator /ˈkælkjʊleɪtə/ noun an electronic machine for making calculations 1. Students are not allowed to use calculators in the examination.
calibrate /ˈkælɪbreɪt/ verb to adjust the scale or graduations on a measuring instrument or gauge 1. The international standard atmosphere is used to calibrate pressure altimeters.
calibrated airspeed /ˌkælɪbretɪd ˈɛəspɪd/ noun indicated airspeed corrected for instrumentation and installation errors. Abbreviation CAS
calibration /ˌkælɪˈbreɪʃən/ noun the adjusting of the scale or graduations
call button  

The international standard atmosphere is used for the calibration of instruments.

The correct amount of opening to the shape of each cam is designed to give the ends of which bear onto a non-rotating plate with cams on it similar to a small wing fitted close to and closes valves in a piston engine.

The aircraft’s callsign is ‘College 23’. VOR stations transmit a two or three letter aural Morse callsign. The aircraft’s callsign is ‘College 23’.

The fuel pump consists of a rotor assembly fitted with several plungers, the ends of which bear onto a non-rotating plate with cams on it similar to a small wing fitted close to and closes valves in a piston engine.

The nose of an aircraft and designed to increase its horizontal stability. The red and green wing tip navigation lights must be at least 5 candela. (NOTE: It is usually written cd with figures.)

canada /ˈkænədə/noun a unit to measure the brightness of a light. The red and green wing tip navigation lights must be at least 5 candela. (NOTE: It is usually written cd with figures.)

canopy /ˈkænpə/ a transparent cover, typically on some fighters, light aircraft and gliders, designed to slide backwards and forwards or hinge upwards to allow pilots to enter or leave an aircraft. A covering to protect people in a life raft. The canopy should be erected to provide protection from the weather.

cantilever /ˈkæntɪlɪvər/ a beam fixed and supported at one end only. The mainplanes or wings are of cantilever design.

cap /ˈkæp/ a top or lid. The mainplanes or wings are of cantilever design.

cam /kæm/ an oval or egg-shaped wheel which, when rotating, converts circular motion into reciprocating motion. In a piston engine, the shape of each cam is designed to give the correct amount of opening to the valve.

CAMFAX /ˈkæmfaɪks/ the civil aviation meteorological facsimile network.

camplate /ˈkæmplət/ a rotating or non-rotating plate with cams on it. The fuel pump consists of a rotor assembly fitted with several plungers, the ends of which bear onto a non-rotating camplate.

camshaft /ˈkæmfʃeft/ a rotating shaft carrying cams, which opens and closes valves in a piston engine. As the camshaft rotates, the cam will transmit a lifting force.

canard /ˈkænərd/ a small wing fitted close to the nose of an aircraft and designed to increase its horizontal stability.
time to build up a larger charge, or capaci-
capacitive /kəˈpæsɪtɪv/ adjective referring to the ability of a system of conductors and insulators to store an electrical charge. Overspeed is usually a fault in the constant speed drive unit which causes the generator to over-speed and damage the capacitive loads on the aircraft.
capacitor /kəˈpæsɪtər/ noun a system of conductors and insulators which store electrical charge (NOTE: A capacitor is used in a circuit to store energy for a short while.)
capacity /kəˈpæsɪtɪs/ noun 1. the ability to do something easily. Energy is the capacity for performing work. 2. the amount of something which a container can hold. Each cylinder has a capacity of 0.5 litres. battery capacity the amount of electrical energy a battery can store and deliver expressed in ampere hours. The ability of an ATC system, in a given area, to provide a normal service, expressed in numbers of aircraft... a 500 to 600 seat ultra-high capacity type aircraft is now being studied by Airbus Industrie and Boeing’ [Flight International 17 May 1996]
capillary /kəˈpæləri/ noun a very fine or narrow tube
capillary action /kəˈpæləri ˈækʃən/ the process by which a liquid rises up a narrow tube
 capsule /ˈkepsjuːl/ noun a small closed container
captain /ˈkeptɪn/ noun the person in charge of an aircraft. The captain asked all passengers to remain seated until the aircraft had come to a stop.
captive /ˈkeptɪv/ adjective not free to move
captive balloon /ˈkeptɪv bɑˈluːn/ noun a balloon which, when in flight, is attached to the ground by a long cable
 carbon /ˈkɑrbən/ noun 1. a non-metallic element, which is a component of living matter and organic chemical compounds and is found in various forms, e.g. as diamonds or charcoal. 2. a black material with good electrical properties carbon brush /ˈkɑrbən b्रʃ/ noun a small, replaceable, carbon block found in electric motors, generators and alternators, which provides the passage of electric current
 carbon deposits /ˈkɑrbən dɪˈprɛzəz/ plural noun residues of burnt oil deposited in the combustion chamber, etc., in the course of the combustion process. Carbon deposits on a spark-plug electrode may cause misfiring.
carbon dioxide /ˈkɑrbən ˈdɑʊər/ noun a colourless, odourless, non-toxic gas found in the atmosphere, and also used in fire extinguishers and fizzy drinks. Carbon dioxide can be solidified at low temperature to produce dry ice. Symbol CO₂
carbon fibre /ˈkɑrbən ˈfaɪbr/ noun a thin, light and very strong strand of pure carbon which can be combined with other materials to make them stronger
carbon monoxide /ˈkɑrbən ˈmɒnəksaɪd/ noun a colourless but poisonous gas from incomplete combustion found in the exhausts of spark ignition engines. Symbol CO
 carburation /ˈkɑrbjuˈreɪʃən/ noun the process of mixing fuel with air in a carburettor. Carburation must ensure that rapid and complete burning will take place within the cylinder.
carburettor /ˈkɑrbjʊrətər/ noun a device for mixing air with fuel in the right quantities before combustion. Most carburettors are installed so that they are in a warm position.
carburettor heat /ˈkɑrbjʊrətər hit/ noun a system for keeping the carburettor and associated components free of ice
carburettor icing /ˈkɑrbjʊrətər ˈaɪsɪŋ/ noun a process by which, under particular conditions, ice forms in the venturi tube of the carburettor cardioid /ˈkɑrdɪəɪd/ adjective shaped like a heart. The cardioid polar dia-
carousel

/ˈkærəs/ noun a rotating platform from where arriving passengers can pick up their baggage. Baggage from flight AC123 is on carousel No 4.

carriage /ˈkaːrɪdʒ/ noun the act of carrying. Regulations require the carriage of life rafts when flying over water.

carrier /ˈkærɪər/ noun 1. a person or organisation that carries people or goods from one place to another. Individual carriers assign codes to aircraft. The aircraft was carrying 120 passengers. (NOTE: carrying – carried)

carrier wave /ˈkærɪər w۵rv/ noun a radio signal that is transmitted continuously at a constant amplitude and frequency. Amplitude modulation has only one pair of usable sidebands each at about one sixth of the signal strength of the carrier.

carry /ˈkærɪ/ verb to take somebody or something from one place to another. The aircraft was carrying 120 passengers. (NOTE: carrying – carried)

cartridge /ˈkætrɪtrɪdʒ/ noun a removable unit for an air filter. Cabin air filters normally consist of a casing, housing a replaceable filter cartridge.

CABS abbreviation 1. calibrated airspeed. 2. controlled airspace

case /ˈkeɪs/ noun 1. an outer covering, housing or jacket. Cooling air is directed through passages in the engine case to control engine case temperature. 2. an example, situation or circumstance. In some special cases, e.g. for landing and take-off, wind directions are measured from magnetic north.

casing /ˈkeɪsɪŋ/ noun a cover that encloses a piece of equipment, etc. Annular and outer air casing form a tunnel around the spine of the engine.

CAT /ˈkeɪt/ abbreviation clear air turbulence

catastrophe /ˌkətəˈstrefi/ noun a very bad event or accident, a disaster. The recent air catastrophe off the Nova Scotia coast. Although the family were not at home when it happened, the crash which destroyed their house was a catastrophe for them.

catastrophic /ˌkətəˈstrɒfɪk/ adjective terrible, disastrous. In a catastrophic accident where many persons may be disabled, those who show signs of life should be rescued first.

categorise /ˈkætərɪzaɪz/ verb to put into groups, classes or categories. Figure 2 categorises the types of wave by frequency band. Aircraft can be categorised by weight, number of engines, role, etc.

category /ˈkætərɪɡiəri/ noun an official class or group. Load factors vary depending on the category of aircraft.

cathode /ˈkæθəd/ noun a negative electrode or terminal. The cathode is a metal cylinder fitted with an internal heater.

cathode ray tube /ˈkæθəd ˈreɪ tjuːb/ noun a high-vacuum tube in which cathode rays produce an image on a screen such as a TV screen. Electroni indicating systems show engine indications, systems monitoring and crew alerting functions on one or more cathode ray tubes or liquid crystal displays mounted in the instrument panel. Abbreviation CRT

cause /kəʊz/ noun something that makes something else happen, a reason. If the ammeter shows a high state of charge after start up, it is quite normal and no cause for alarm. ■ verb to make something happen. Air in the fuel line can cause an engine to flame-out or stop.

cautIon /ˈkɔːʃ(ə)n/ noun 1. advice or a warning to be careful. If a problem occurs in the spoiler system, a master caution light illuminates. 2. care. Proceed with caution.

cavitation /ˈkeɪvəteɪʃ(ə)n/ noun the formation of vapour-filled cavities or holes in liquids and gases, caused by low pressure or high speed. Most reservoirs are pressurised to provide a positive fluid pressure at the pump inlet and thus prevent cavitation and the formation of bubbles.

cavity /ˈkeɪvəti/ noun a hole. De-icing fluid flows into the cavity in the
navigation by using the stars in the sky throughout the cloud. When the downdraughts have spread the central part of a thunder cloud may cease.

Celestial navigation by using the stars in the sky is referred to as celestial navigation. The plane of the great circle passes through the centre of a sphere. The centre of a circle is the point at which a perpendicular line drawn from the centre of a circle to the circle is called the radius. The radius of a circle is a straight line drawn from the centre of a circle to any point on the circumference of the circle.

Central Flow Management Unit (Brussels) is a central agency in Brussels that is responsible for air traffic management throughout the area controlled by the ECAC.

centrifuge /senfri'jugɞ/ noun a device which uses centrifugal force to separate or remove liquids. noun a device which uses centrifugal force to separate or remove liquids.
work to be authorised to fly
craft which have the necessary paper-
air-
craft is certified for aerobatic flight.

authorised person may require produc-

lar facts are true

cial document which states that particu-
lar, some ... certificate of airworthiness.

C of A

aircraft.

CFI abbreviation chief flying instructor
CFMU abbreviation Central Flow Management Unit
CFRP abbreviation carbon fibre reinforced plastic
chalk $/kæl/$ noun a soft white lime-
stone rock that may be used in powder
form or as a shaped stick for writing

with $Oil$, which is trapped in the
defects, is absorbed by the chalk thus
indicating their positions.

chamber $/tʃeɪmbr/$ noun a small
enclosed compartment

chandelle $/fæn'del/$ noun a steep
climbing turn in which an aircraft
almost stalls as it uses momentum to
increase its rate of climb

channel $/tʃæn(ə)l/$ noun a special
frequency band for the transmission of
radio signals $\circ$ The system operates on
VHF communications between 118 and
135.95 MHz giving 360 channels at 50
kHz spacing.

character $/kærɪkta/$ noun 1. a qual-
ity or set of qualities which make some-
thing different and separate from some-
thing else $\circ$ The circulation of the
atmosphere is zonal in character. 2. an
individual letter, number or symbol
used in printing and writing

characterise $/kærɪktaɪza/$, char-
acterize verb $\circ$ to be characterised by
to have qualities or features which make
it different and separate from other
things $\circ$ The stratosphere is character-
ised by a temperature structure which is
steady or increases with height.

characteristic $/kærɪktaɪstɪk/$
adjective typical of a class or group of
things $\circ$ a characteristic feature a nor-
mal feature of the thing in question $\circ$
noun a feature or quality making some-
thing different or separate from some-
thing else $\circ$ Air masses have distinct
characteristics which can be used to
separate them on a chart. $\circ$ handling
characteristics features of an aircraft
that make it different from other aircraft
when handling it $\circ$ summer character-
istics climatic conditions which are typ-
ical of summertime

charge $/tʃɑːdʒ/$ noun 1. an amount of
electricity $\circ$ Friction causes a charge of
static electricity. $\circ$ The battery was so
old, it would not take a charge. $\circ$ a high
level of charge a high amount of elec-
tricity 2. money demanded or paid for
the providing of a service $\circ$ overnight
parking is free of charge it costs noth-
ing to park overnight $\circ$ verb 1. to pass
electrical current through something
and thereby make it electrically active $\circ$
An installed battery becomes fully charged by the aircraft generator. 1. charged particles atmospheric particles which have either a positive or negative electrical charge 2. to take money for a service 3. We do not charge for overnight parking.

charger /ˈtʃærədʒər/ noun 1. battery charger device for putting an electrical charge into a battery. 2. turbocharger

cart /ˈtʃært/ noun a map for navigational purposes 1. significant weather chart a weather chart with important weather information marked on it

check /tʃek/ noun an examination to make certain that something is as it should be 1. safety check 2. check made on the undercarriage and airframe after the pilot reported a heavy landing. 3. run a verb to examine something in order to find out if it is correct 4. It is the pilot’s responsibility to check that the aircraft is airworthy.

‘European Union (EU) airports may be empowered to carry out safety checks on foreign airlines’ [Flight International 1–7 May 1996]

check in /tʃek ɪn/ verb to register by giving in your ticket, showing your passport and giving your baggage at an airline desk before a flight 1. Passengers should check in two hours before departure. 2. The check-in is on the first floor. 3. check-in time time at which passengers should check in

check-in counter /tʃek ɪn ˈkɔntər/ noun counter where passengers check in

checklist /tʃekˈlɪst/ noun a list of items, often in booklet form, to be checked in a given sequence 1. Before every flight, the pilot should perform pre-flight checks using a checklist. 2. chemical referring to chemistry 3. chemical reaction 1. noun a substance used in or made by a chemical process 2. a chemical such as anti-ice for propellers

chemistry /ˈkemɪstri/ noun 1. the science of chemical substances and their reactions 2. the nature of something 3. The basic chemistry of fire can be illustrated by the three sides of a triangle representing fuel, oxygen and heat. 4. chief adjective most important, main 1. the chief factors the most important factors

chief flying instructor /ˈtʃɪfɪˈɪnstər/ noun the senior rank of flying instructor. Abbreviation CFI

choke /tʃəʊk/ noun a valve in a carburettor, which controls the amount of air combining with fuel 1. to block a tube, etc., making a liquid unable to move 2. a choked nozzle a blocked or partly-blocked nozzle 3. stop breathing because you have inhaled water or smoke

choke tube /tʃəʊk tuːb/ noun same as venturi 1. Increase in rpm increases the speed of air passing through the choke tube or venturi.

chopper /ˈtʃəʊpər/ (informal) noun same as helicopter 1. verb to transport something or somebody by helicopter, or to travel by helicopter

chord /ˈkɔrd/ noun the shortest distance between the leading and trailing edges of an airfoil

chute /ˈʃʊt/ noun same as parachute (informal)

circle /ˈsɜːk(ə)l/ noun a line forming a round shape, or a round shape formed by objects or people 1. They stood in a circle on the tarmac. 2. great circle direction an imaginary circle on the surface of the Earth which lies in a plane passing through the centre of the Earth

circuit /ˈsɜːkɪt/ noun 1. a complete route around which an electrical current can flow 2. the pattern of take-off,
circuit board

climb-out, turn onto crosswind leg, turn onto downwind leg, turn onto base leg, turn onto final approach and landing. When carrying out practice landings at an aerodrome, the pilot should keep a sharp lookout for other aircraft in the circuit.

**circuit board** /ˈsɜːkɪt bɔrd/ noun an insulating board which holds components connected into an electrical circuit.

**circuit-breaker** /ˈsɜːkɪt ˈbreɪkər/ noun a small protective device in the circuit which blows or breaks before a dangerous overload of current arises.

**circuitry** /ˈsɜːkɪtrɪ/ noun a system of electrical circuits. In an anti-skid braking system, circuitry is employed which can detect individual wheel deceleration.

**circular** /ˈsɜːkjuːlər/ adjective shaped like a circle. Anodes are circular plates with centre holes. Semicircular shaped like a half-circle. noun a document distributed to a large number of people. noun an aeronautical information circular.

**circular slide rule** /ˈsɜːkjuːlər ˈslaɪd rʊl/ noun a calculating device on which all manner of conversions and complex calculations can be made to assist in flight planning.

**circuit board** 44

equal to one 360th part of the circumference of a circle is called one degree.

**circumstance** /ˈsɜːkəmstəns/ noun a condition which affects something in a given situation. In some circumstances, under certain circumstances in some particular situations.

**cirro-** /ˈsɜːrəʊ/ prefix high altitude, i.e. above 20,000 feet.

**cirrostratus** /ˈsɜːrəʊstrətəs/ noun a layer cloud in a mass of separate clouds which are formed of ice crystals.

**Civil Aviation Authority** /ˌsɪvl əˈviːʃən əˈvɔrəti/ the organisation which licences operators, aircraft and employees for non-military, especially commercial aviation. Abbreviation CAA.

**Civil Aviation Publication** /ˌsɪvl əˈviːʃən ˈpʌblɪkeɪʃən/ noun a book, etc., published by the Civil Aviation Authority, each publication having its own reference number. The procedure for obtaining a bearing can be found in CAP 413. Abbreviation CAP.

**clad** /klad/ verb to protect by covering. Alloys can be protected from corrosion by cladding the exposed surface with a thin layer of aluminium.

**clamshell door** /ˈklæmʃɛl dɔːr/ noun the hinged part of a thrust reverser. Clamshell doors are hydraulically or pneumatically opened, and direct the exhaust gases forwards to produce reverse thrust.

**classification** /ˌklæsɪˈfɪkeɪʃən/ noun the act of putting things into groups or classes because they possess particular common features. Classification of aircraft consists of a multi-level diagram with each category divided into sub-categories. A full
classification of layer cloud is given in the table.

classify /klæsifə/ verb to group items so that those with similar characteristics are in the same group  
Precipitation is classified as light, moderate or heavy according to its rate of fall.  
The weather associated with visibility reductions by particles suspended in the atmosphere is classified either as fog, mist, haze, or smoke.

clear /klər/ adjective 1. referring to conditions in which it is easy to see, e.g. with no cloud or fog: a clear sky  
a sky with no cloud or fog  
a clear winter night: a night with no fog, mist or other conditions which might impair visibility  
2. possible to easily see through  
the runway, the runway is clear: nothing is on the runway  
keep the exits clear: do not put anything and do not stand in front of the exits  
away from: easy to hear  
clear of cloud either above or below: keep clear of (or) keep away (from)  
The explanation is very clear  
understood  
is it clear? do you understand?  
verb 1. to remove a blockage or some other unwanted effect which prevents a system from working correctly  
A heater element is fitted to clear the detector of ice  
2. to disappear  
In winter frost and fog are slow to clear  
3. to make sure that it is all right to do something  
clear it with the CFI  
makesure that the CFI agrees with the request  
to officially ask people to quickly leave a given area or place  
to clear the building to quickly leave the building  
...the principles of weight and balance should have been learned by all pilots during their initial training, but it is clear that, afterwards, some forget  
[Civil Aviation Authority, General Aviation Safety Sense Leaflet]

COMMENT: On 27th March 1977 two Boeing 747s collided on the runway at Los Rodeos airport Tenerife in poor visibility, resulting in 575 deaths. A KLM 747 commenced take-off while a Pan Am 747 was still taxing towards it on the same runway. There was clearly a breakdown in communications, perhaps a misunderstood radio call. The Pan Am aircraft had been asked by the controller, who was unable to see either aircraft due to low cloud, 'Are you clear of the runway?' The KLM aircraft had already commenced the take-off roll without clearance. It is possible that the KLM pilot mistook the call to the other aircraft thinking that he was 'clear to take off'.

clear air turbulence /klər ə 'tərbjʊləns/ noun turbulence encountered in air where no cloud is present  
(NOTE: CAT is often associated with the jet stream.)

clearance /klərəns/ noun 1. a space made to allow for the movement of hardware relative to other hardware  
clearance between rocker arm and valve tip  
2. official permission  
Obtain clearance for IFR flight  
3. the disappearance of something unwanted, often rain, fog or snow  
Low temperatures caused a delay in the clearance of fog.

clearance limit /klərəns 'lɪmɪt/ 
the point to which an aircraft is allowed to proceed when granted an air traffic control clearance  

clear ice /klər ˈaɪs/ noun ice which is glass-like rather than white  

clear pass /klər ˈpɑs/ noun an exam result which is in no doubt  

clear to land /klər tə 'leɪnd/ noun air traffic control permission to land

climate /ˈklæmət/ noun weather conditions particular to a given area  
Mediterranean climate  
tropical climate  
temperate climate  
a type of climate which is neither very hot in summer nor very cold in winter  
continental climate  

climatic /kləmətɪk/ adjective referring to climate or weather conditions particular to a given area  
The aircraft forward speed and altitude as well as climatic conditions will influence the value of thrust.

climatic zone /kləmətɪk zɔʊn/ noun one of the eight areas of the Earth which have distinct climates  

COMMENT: The climatic zones are: the two polar regions (Arctic and Antarctic); the boreal zone in the northern hemisphere, south of the Arctic; two temperate zones, one in
climatology

the northern hemisphere and one in the southern hemisphere; two subtropical zones, including the deserts; and the equatorial zone which has a damp tropical climate.

climatology /klima'tələdʒi/ noun
the science of the study of climate. Although pilots do not need to be experts in climatology, they should have a good understanding of the factors which produce changes in the weather.

climb /klaim/ noun
the act of increasing altitude by use of power. Fine pitch enables full engine speed to be used during take-off and climb. Opposite 
descent a verb to increase altitude by use of power. After take-off, the aircraft climbed to 3,000 ft. Opposite 
descend

climb-out /klaim'aʊt/ noun
a flight after take-off from 35 feet to 1,500 feet during which undercarriage and flaps are retracted. Turn right after climb-out.

clockwise /'klɔkwaɪz/ adjective, adverb
describing a circular movement in the same direction as the hands of a clock. A clockwise direction. The relative bearing indicated is measured clockwise from the nose of the aircraft. Opposite 
anticlockwise

clog /klog/ verb
prevent movement of fluid through a pipe, etc., because of a build-up of solid matter. Most filters allow unfiltered fluid to pass to the system when the filter becomes clogged.

close /klɔuz/ verb
shut. Close the door.

closure /'kləʊʒə/ noun
the act of closing or shutting. The voltage regulator is turned on by the closure of the generator control relay.

cloud /klaʊd/ noun
a mass of water vapour or ice particles in the sky that can produce rain.

COMMENT: The most important types of cloud are the following: altocumulus, cloud formed at about 12,000 feet as a layer of rounded mass with a level base; altostratus, cloud formed as a continuous layer between 6,000 and 20,000 feet usually allowing the sun or moon to be seen from the surface; cirrostratus, layer cloud at about 20,000 feet; cirrostratus, layer cloud at about 20,000 feet; cirrus, cloud made of ice crystals at 25,000 – 40,000 feet appearing as hair-like formations; cumulonimbus, cloud formed as a towering mass and often associated with thunderstorms; cumulus, cloud formed in rounded masses with a flat base at low altitude, resulting from up currents of air; nimbostratus, thick dark layer cloud at low altitude from which rain or snow often falls (nimbus = rain cloud); stratus, cloud similar to cirrostratus but more compact; stratocumulus, a layer of connected small clouds at low altitude.

cloud base /'klaʊd beɪs/ noun
the bottom part of a layer of cloud. In general, the lower the cloud base, the less heat is lost by the earth.

cloud ceiling /'klaʊd ,siːlɪŋ/ noun
the height above the ground or water of the base of the lowest layer of cloud.

cloud group /'klaʊd grʊp/ noun
a collection of different cloud types which have similarities, e.g. stratus clouds.

cm abbreviation centimetre

co- /'kəʊ/ prefix
together, co-axial having the same axis co-located having the same location,

coalesce /'kəʊəlɛs/ verb
to join together to form a large mass or number. The moisture in the air coalesces into large water droplets.

coalesscence /'kəʊəlɛsəns/ noun
the act of joining together to form a larger mass or number. Coalescence of water vapour in the atmosphere forms larger droplets of water.

coast /'kɑʊst/ noun
an area where the land meets the sea. Valentia is situated on the coast of south west Ireland.

coastal /'kɑʊstəl/ adjective
referring to the coast. Coastal area an area near a coast. Land and sea breezes occur in coastal areas.

coastal refraction /'kɑʊstəl refrækʃən/ noun
change in direction of waves when a signal crosses a coastline from sea to land.

coastline /'kɑʊstlaɪn/ noun
the outline of a coast seen from a distance or...
on a map. It is normally easy to identify a coastline or island.

cocoon /ˈkau̯n/ noun a thin covering of a substance such as paint. The coats of paint on a large aircraft significantly increase its weight. It is necessary to have a master cock for each engine.

coating /ˈkoʊtɪŋ/ noun 1. a thin layer of a substance. There are two coatings on the inside of CRT screens. 2. the act of covering with a thin layer of a substance. It is necessary to have a master cock for each engine.

cockpit /ˈkɒkpɪt/ noun the forward area in an aircraft from where the aircraft is controlled by the pilot. In the case of an in-flight oil loss, a warning indicator will light in the cockpit.

‘...in the cockpit of the future there will be two animals, a pilot and a dog. The pilot will be there to feed the dog, and the dog will be there to bite the pilot if he tries to touch anything’ [NYT News Service]

code /ˈkɔd/ noun 1. a system of numbers, letters or symbols used to represent language which has to be learned and decoded in order for the receiver to understand the meaning. 2. a series of pulses by which an aircraft transponder replies to a signal from the ground.

codeshare /ˈkɔdʃeər/ noun a codeshare deal an agreement between airlines regarding connecting flights. The two airlines have entered into a codeshare deal for flights between Dubai and Bangkok.

codeshare partner /ˈkɔdʃeər,ˈpɑtner/ noun an airline which has an agreement with another airline regarding connecting flights.

codesharing /ˈkɔdʃeərɪŋ/ noun 1. a procedure which allows travellers to use connecting flights between one airline and another partner airline for worldwide destinations. 2. an arrangement by which two airlines sell seats on the same flight using their own flight numbers.

coefficient /ˈkau̯tʃ(ə)nt/ noun a mathematical quantity placed before and multiplying another.

C of G abbreviation centre of airworthiness.

C of A abbreviation certificate of airworthiness.

coiled wire /ˈkɔldˈwaɪər/ noun a length of wire twisted round and round. A coiled wire connects the terminal to earth.

coincide /ˌkəʊnˈsaɪd/ verb to happen at the same time and/or in the same place. When the aircraft heading is directly into wind or down wind, track and heading coincide.

coincident /ˌkəʊˈɪnsɪdənt/ adjective happening at the same place or at the same time. The Earth’s true north and magnetic north poles are not coincident.

cold front /ˈkɔldˌfrʌnt/ noun an advancing mass of cold air, moving under and lifting warmer air. A cold front brought rainy, windy conditions to the country.

collapse /ˈkəlp/ noun a sudden and complete fall. The collapse of a company the end of the existence of the company. 1. to fall suddenly and completely. 2. The magnetic field will reach a maximum in one direction, collapse to zero and reach a maximum in the opposite direction. 2. to fold or to close suddenly and unintentionally. 3. the undercarriage collapsed (of an apparatus) the undercarriage could not support the aircraft and broke or retracted on its own. 4. to faint. The passenger collapsed the passenger fell and became semi-or fully unconscious because of some medical problem.

‘...as the aeroplane slid off the runway, the left landing gear collapsed’ [Pilot]
collect /kəˈlekt/ verb 1. to gather over a period of time ○ Any given object will usually collect ice more quickly at high speed. 2. to take something or to pick something up from a place

collection /kəˈlekJən/ noun 1. a number of things brought together ○ a collection of vintage aircraft 2. an act of being collected by somebody ○ The documents are in the office awaiting collection.

collide /kəˈlaɪd/ verb to bump or to crash into something ○ The aircraft left the runway and collided with a fire truck.

collision /kəˈlɪʒən/ noun a crash between two objects, two vehicles, etc. ○ If there is a risk of collision, alter course to the right. ○ collision avoidance the prevention of collisions by taking measures beforehand to ensure that they do not happen.

column /ˈkʌləm/ noun 1. a body of fluid or solid with a tall, narrow shape ○ Torricelli first demonstrated that the atmosphere has weight by showing that it can support a column of liquid. 2. a vertical section of a table in a document ○ Column four of the table shows the totals of the other three columns.

combat /ˈkɒmbæt/ verb to fight against ○ Fire extinguishers are provided to combat fire.

combat aircraft /ˈkɒmbæt ˈeɪskrɪft/ noun aircraft designed for warfare

combination /ˌkɒmbəˈneɪʃən/ noun two or more things brought together to form one ○ The combination of wind direction and wind speed is called velocity.

combine /kəˈbʌm/ verb to bring two or more things together to make one ○ The stabilising channels for ailerons and elevators are combined. ○ Thrust and lift combine to overcome drag and gravity.

combustible /kəmˈbʌstəb(ə)/ adjective burning or igniting easily ○ combustible materials materials which will catch fire easily, e.g. wood, paper, etc.

combustion /kəmˈbʌstʃən/ noun burning, especially that which takes place in an engine ○ The heat generated by combustion is considerable.

combustion chamber /kəmˈbʌstʃən ˈtʃæmər/ noun the part of the cylinder in a piston engine where the ignition of the fuel/air mixture takes place.

combustor /kəmˈbʌstər/ noun the part of a jet or gas-turbine engine that burns fuel to produce power. It consists of the fuel injection system, the igniter, and the combustion chamber.

command /kəˈmɑːnd/ noun an order ○ the command to evacuate the order to leave the aircraft in an emergency ○ in command having responsibility for and authority over ○ verb to order something to be done ○ The captain commanded the evacuation of the aircraft.

commander /kəˈmɑːnər/ noun a pilot in control of, and responsible for, the aircraft and its contents during flight ○ the commander of an aircraft the member of the flight crew specified by the operator as being the commander

commence /kəˈmɛns/ verb to start to do something ○ commence the evacuation start getting people out of the aircraft

commercial /kəˈmɜːrli/ adjective referring to a business activity ○ commercial aviation flying as a business enterprise

commercial aircraft /kəˌmɜːrli ˈeɪskrɪft/ noun aircraft used to carry cargo or passengers for payment.

Commercial Pilot’s Licence /kəˌmɜːrli ˈpɪlətz ˈlaɪsns/ noun the licence that a person requires to be pilot-in-command of public transport aircraft certified for single-pilot operations. Abbreviation CPL

common sense /ˈkɒmən ˈsens/ noun ordinary good sense ○ You should use your common sense as well as follow the rules if a passenger feels unwell.

comms /kɒmz/ abbreviation communications
communicate /'kəmjuːnikaɪt/ verb to make contact with somebody in order to pass information ○ The cabin attendants should communicate with the captain.

communication /'kəmjuːneɪʃən/ noun the act of passing information to somebody usually, but not always, by using language ○ Two methods of communication are available to crew members – language and hand signals.

communication link /'kəmjuːneɪʃənz/kaɪn/ noun a telephone or radio connection, as between the ground crew and flight deck while an aircraft is preparing for departure

communications /'kəmjuːneɪʃənz/kaɪn/z/ plural noun a system of passing information ○ satellite communications ○ VHF communications are allocated the frequency bracket 118–137 MHz; Abbreviation: communications

commutator /'kɒmjʊteɪtər/ noun a device containing metal bars connected to the coils of a generator to produce electrical current ○ As the power output required is DC not AC, a commutator is fixed at one end of the armature.

compact /'kɑːmpekt/ adjective small, close together, or not taking much space ○ The annular system, as used on modern aircraft, provides a compact system, and, for the same output and mass flow, a shorter system. ▲ verb 1. to make smaller or more dense by pressing 2. to compress, by driving over with heavy machinery ○ When taxing on grass, aircraft wheels compact the earth as the aircraft moves over it.

compaction /'kɑːpækʃən/ noun the act of pressing things together to form one, or of compressing something to make it hard ○ The speed of impact when the aircraft passes through a snowstorm causes compaction of snowflakes into a solid mass on leading edges and air-intakes.

comparable /'kʌmpərəbl/ adjective possible to compare equally with something else ○ Titanium is non-magnetic and has an electrical resist-

compensate /'kəmpenset/ verb 1. to make up for the loss of something ○ The floor covering may be designed to compensate for temperature, pressuri-

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compensation

sation and bending loads.  2.  The fall in air temperature increases the air density, and so compensates to some extent for the loss of the thrust due to atmospheric pressure.  2.  to give money to a person or organisation to make up for a physical or financial loss.  The company paid out $2 million in compensation to the families of those who lost their lives in the tragedy.

compensation  /kəmˈpænsəʃən/ noun money paid to an individual or organisation to replace or make up for physical or financial loss.  The company paid out $2 million in compensation to the families of those who lost their lives in the tragedy.

compilation  /ˈkɒmplɪˈkeɪʃən/ noun the putting together of suitable information.  The manual is a compilation of materials used by each of the instructors.

compile  /kəmˈpaɪl/ verb to put together a number of pieces of information.  Aviation routine weather reports are compiled half-hourly or hourly at fixed times.

complement  /ˈkɒmpləment/ verb to fit in with and improve the performance of something.  Ultra-sonic detection is used to complement other methods of flaw detection.

complementary  /ˌkɒmpləˈmen(t)ərɪ/ adjective the fact of fitting in with and improving the performance of something.  SSR is complementary to the primary radars used by ATC.

complete  /kəmˈplɪt/ adjective 1.  containing all the parts it should contain.  The centre section can be constructed either as a complete unit or as two separate units.  2.  to finish or make whole.  The number of revolutions for the crankshaft to complete a full cycle is always two.  2.  to complete the work to continue until the work is finished.  2.  to fill in information.  2.  to complete the flight plan to fill in the required information in the flight plan.

completion  /kəmˈplɪʃ(ə)ʃən/ noun the satisfactory finishing of a task.  It is important to carry out an inspection of an aircraft after completion of de-icing operations.

complex  /ˈkɒmplɛks/ adjective complicated and therefore possibly difficult to understand.  Of all the pre-departure activities, route planning is one of the most complex.  1.  a whole made up of many different parts.  A cumulonimbus cloud complex is a collection of cumulonimbus clouds forming a system.  2.  a building made up of many different parts.  The terminal three complex is the main building and associated buildings which together make up terminal three.

complexity  /ˈkɒmplɛksɪtɪ/ noun the condition of being complex, or a complication.  Up-to-date design does not necessarily mean structural complexity.

complicate  /ˈkɒmplɪkɪt/ verb to make more difficult.  Map reading is often complicated by seasonal variations.

complicated  /ˈkɒmplɪkɪtɪd/ adjective not easy to understand.

complication  /ˈkɒmplɪˈkeɪʃən/ noun a difficulty or problem.  The complication with the Mercator’s projection is that great circle directions must be converted to rhumb line directions by the application of conversion angle before they can be plotted.

comply  /kəmˈplaɪ/ verb to be or do what is required by an instruction or law.  Equipment and furnishings of modern jet transports must comply with safety regulations.  Passengers must comply with the no-smoking signs.  (Note: complying – complied)

component  /kəmˈpəʊnənt/ noun 1.  a part of an aircraft, aircraft system or piece of equipment.  The undercarriage is made up of a number of different components.  2.  one part of a force such as wind which consists of a number of different parts.  A substance which forms part of a compound.

compose  /kəmˈpəʊz/ verb to make something from a number of parts.  The atmosphere is composed of a mixture of gases.

composite  /ˈkɒmpəzɪt/ adjective referring to something made up of a number of different parts.
material. The flight crew route flight plan is a composite document which serves as a navigation log. A composite material used in aircraft manufacturing is necessary to combine the reinforcing glass fibres with special glue or resin. (NOTE: The word composite was originally an adjective, but through frequent usage the term composite material has been shortened to composite.)

'Canadian Aerospace Group (CAG) is working with Pratt & Whitney Canada on a turboprop-powered version of its Windeagle all-composite light aircraft' [Flight International 16–22 July 1997]

COMMENT: Composites are used in the construction of many modern aircraft, from gliders to aircraft such as the Airbus A320, because they are strong and lighter than metals. Compound wound generator comprised of a number of components, while others believe it should be used in an opposite sense: a tank, pipes, a filter, a pump and a carburettor comprise the fuel system. It is sometimes used in its passive form: the fuel system is comprised of a number of different parts.}

Concentrate /ˈkɒnsentrɪt/ verb 1. to collect in a particular place rather than spread around. Most of the mass of air is concentrated at the lowest levels of the atmosphere. 2. to give attention and thought to something in particular. This chapter concentrates on charts. to concentrate hard to give all one’s thought and attention to something.

Concentration /ˈkɒnsəntrēʃən/ noun 1. the fact of being collected in a particular place rather than spread around. The maximum concentration of ozone is between 20 and 25 km above the Earth’s surface. 2. the act of giving attention and thought to something.
the early stages of training, instrument flying requires great concentration on the part of the student pilot.

**concentric** /konˈsɛntrɪk/ adjective having the same centre / concentric circles circles of different diameters but with the same centre point

**concept** /ˈkɒnsɛpt/ noun an idea or abstract principle ○ The concept of open skies is not one with which everybody agrees. □ a complicated concept an idea or series of ideas or principles which are difficult to understand

**concern** /ˈkɒnɜːn/ noun 1. serious interest ○ a matter for concern something which must be taken very seriously 2. responsibility ○ Attention to the welfare of passengers is the concern of the cabin crew. ○ Safety is everybody’s concern. ○ this is no concern of ours this is nothing to do with us □ verb 1. to cause somebody to feel worried ○ this report concerns me enormously I am not at all happy about this report 2. to be about or to be the subject of ○ If there is serious vibration, the crew should shut down the engine concerned. ○ this report concerns me this report is about me 3. to be of interest and relevance to ○ the regulations concern all employees the regulations apply to all employees

‘…the correct storage and handling of cargo and especially dangerous goods is an area which is of considerable concern to the Federation’ [INTER PILOT]

**concrete** /ˈkɒnkrɪt/ noun a substance made of cement, sand and water used in the construction of buildings, roads, etc. ○ Rock, sand and concrete reflect only 10–20% of radiation.

**condensation** /ˌkɒndənˈseɪʃ(ə)n/ noun the process by which vapour changes into liquid ○ If the air becomes saturated, further cooling results in condensation. Opposite evaporation

**condensation trail** /ˌkɒndənˈseɪʃ(ə)n trel/ noun same as vapour trail

**condense** /ˈkɒndəns/ verb 1. to change from vapour to liquid form ○ The most common type of hygrometer is one in which a surface in contact with the atmosphere is cooled until moisture begins to condense on the surface. Opposite evaporate 2. to remove unnecessary parts from a text to make it shorter ○ The synoptic code condenses information without loss of sense.

**condenser** /ˈkɒndənsər/ noun an electrical capacitor ○ The condenser prevents spark plugs from arcing.

**condition** /ˈkɒndɪʃ(ə)n/ noun 1. the present state of something ○ although the aircraft is old, it is in good condition the aircraft is old but well cared for 2. the state of the surrounding atmosphere ○ In a high relative humidity condition, the evaporation rate is low. ○ abnormal weather conditions unusual or unfavourable weather ○ adverse weather conditions bad weather 3. circumstances ○ something on which another thing depends ○ on condition that only if ○ the flight will depart on condition that the weather improves the flight will depart only if the weather improves

**conducive** /kənˈdjuːsɪv/ adjective favourable, which allows something to happen more easily ○ Atmospheric conditions conducive to the formation of ice are detected and these operate a warning system.

‘…when refuelling, ensure the aircraft is properly earthed. The very low humidity on a crisp, cold day can be conducive to a build-up of static electricity’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

**conduct** /kənˈdʌkt/ noun /ˈkɒndʌkt/ 1. a manner or way of doing something ○ The captain is responsible for the safe conduct of the flight. 2. behaviour ○ The investigation found that the flight attendant’s conduct was unacceptable. □ verb 1. to organise and do something; to carry out ○ Crew will conduct area checks. ○ Security conducted a search of the building. 2. to allow something such as electricity, heat etc. to pass through ○ Water conducts electricity.

**condensation** /ˌkɒndənˈseɪʃ(ə)n/ noun the process by which heat or electricity passes through a substance ○ Heat is transferred to the layer of air next to the Earth’s surface by conduction.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>conductive</td>
<td>adjective referring to the ability of a substance to allow heat or electricity to pass through</td>
</tr>
<tr>
<td>conformity</td>
<td>noun the ability of a material to allow heat or electricity to pass through</td>
</tr>
<tr>
<td>conductor</td>
<td>noun a substance through which heat or electricity can pass</td>
</tr>
<tr>
<td>cone</td>
<td>noun a solid body with a base in the shape of a circle, and with sides which narrow to a point</td>
</tr>
<tr>
<td>configuration</td>
<td>noun the pattern or way in which things are arranged</td>
</tr>
<tr>
<td>confined</td>
<td>adjective limited, small in a confined space</td>
</tr>
<tr>
<td>confirm</td>
<td>verb to agree that something is correct, or to repeat it to remove any uncertainty</td>
</tr>
<tr>
<td>connect</td>
<td>verb to join</td>
</tr>
<tr>
<td>connecting</td>
<td>adjective shaped like a cone or the nose of Concorde has a conical shape</td>
</tr>
<tr>
<td>combustion</td>
<td>noun a second aircraft which a passenger should arrive on time to catch, and which will take</td>
</tr>
<tr>
<td>connecting</td>
<td>adjective shaped like a cone or the nose of Concorde has a conical shape</td>
</tr>
<tr>
<td>conjunction</td>
<td>noun in conjunction with working or operating together with</td>
</tr>
<tr>
<td>connection</td>
<td>noun an engine part that connects the piston to the crankshaft</td>
</tr>
<tr>
<td>congestion</td>
<td>noun a situation where there are too many people or vehicles in a confined space for them to</td>
</tr>
<tr>
<td>conform</td>
<td>verb to correspond to required standards</td>
</tr>
<tr>
<td>conformal</td>
<td>adjective representing angles, bearings, etc., correctly</td>
</tr>
<tr>
<td>conical</td>
<td>adjective shaped like a cone or the nose of Concorde has a conical shape</td>
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<tr>
<td>connection</td>
<td>noun 1. the point at which things are joined; 2. a link or feature that makes things</td>
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**Comment:** Cross-checking of certain flight instruments is used to confirm readings from other instruments, e.g., the airspeed indicator and vertical speed indicator confirm pitch information from the attitude indicator.
a second aircraft to arrive at a final destination. *Follow the ‘Flight Connection’ signs.*

**connector** /ˈkɒnˈnektə/ noun a device which connects two or more things. *A connector is used to connect two lengths of wire together.*

**consecutive** /ˈkɒnˈsektɪv/ adjective following one another without a break. *4, 5 and 6 are three consecutive numbers.*

**consequence** /ˈkɒnˈsɛkwəns/ noun the result of an action. *The accident was a consequence of the pilot’s actions.*

**consequently** /ˈkɒnˈsekwəntli/ adverb therefore, as a result. *She was late, consequently she missed the start of the examination.*

**conserv** /ˈkɒnsərv/ verb to avoid using unnecessarily. *Release the brakes when necessary and conserve main system pressure.*

**consider** /ˈkɒnsɪdər/ verb to think carefully about something. *If the aircraft is low on fuel, the commander should consider diverting to the nearest suitable airport.*

‘...many purchasers of flight simulators would argue that, when considering the major manufacturers, there is little to choose between them’ [Civil Aviation Training].

**considerable** /ˈkɒnsɪdərəbl/ adjective a lot of, quite large. *The required range of trim change is considerable. (NOTE: Considerable does not mean that something should be thought about, as the meaning for the verb consider might suggest.) a considerable amount of fuel* a lot of fuel, a large amount of fuel.

**distance** a long distance.

**consideration** /ˈkɒnsɪstərʃən/ noun 1. something important to remember and to think carefully about. *to take into consideration* to remember to include when thinking about something, solving a problem or making a calculation.

**consist** /ˈkɒnsɪst/ verb to consist of to be made up of. *Layer cloud names consist of a prefix, according to height of base, and a suffix according to shape.*

**consider** /ˈkɒnsɪstənt/ adjective always reacting or behaving in the same way. *Human hair responds in a consistent manner to changes in the relative humidity.*

**constant** /ˈkɒnʃənt/ adjective unchanged. *the temperature of the gas remains constant* the temperature of the gas stays the same.

**consistent performance** performance which maintains a particular standard.

**consolidate** /ˈkɒnʃəldeɪt/ verb to make more solid or strong. *Revision of the subject helps to consolidate it.*

**consolidation** /ˈkɒnʃəldeʃən/ noun 1. a process by which something is made more solid or strong.

**constant speed drive unit** /ˈkɒnʃənt spiːdˈdraɪv dʒɜːntɪ/ noun a device fitted to aircraft with constant speed propellers. Abbreviation CSDU

**constant speed propeller** /ˈkɒnʃənt spiːd prəˈplɛr/ noun a propeller with a control system which automatically adjusts pitch to maintain selected rpm.

**constant speed unit** /ˈkɒnʃənt spiːdˌdʒɜːntɪ/ noun a device that automatically keeps a propeller at a speed set by the pilot. Abbreviation CSU.
constituent /ˈkɒnstrɪtʃʊnt/ noun any one of the various parts that make up a whole. Water, whether in the form of vapour, liquid or ice, is a very important constituent of the atmosphere.

constitute /ˈkɒnstrɪtjuːt/ verb to make up, to form. Oxygen and nitrogen together constitute most of the atmosphere.

constrain /ˈkɒnstrɛin/ verb 1. to prevent somebody from being completely free or from doing something they want to do. The airline was constrained in its purchase of new aircraft by lack of financial resources. 2. to force somebody to do something. Lack of financial resources constrained the airline to cancel the purchase of new aircraft.

constraint /ˈkɒnstrɛint/ noun something that reduces freedom of action. The number of landings per 24-hour period is subject to constraint.

constrict /ˈkɒnstrɪkt/ verb to make something narrower, especially to make the flow of gas or liquid more difficult by narrowing the passage through which it flows. In the carburettor venturi, the flow of air is constricted.

constriction /ˈkɒnstrɪkʃən/ noun the act of constricting, or a place where something is particularly narrow. A thermometer has a constriction in the base of the tube between the bulb and the beginning of the scale.

construct /ˈkɒnstrʌkt/ verb 1. to put together. The table on page 4 can be used to construct the low level forecast for the route. 2. to build. to construct an aircraft to manufacture or build an aircraft. Wings are constructed of light alloy pressed ribs and an outer skin.

construction /ˈkɒnstrʌkʃən/ noun 1. the act of putting things together, or the way in which something is put together. The basic construction of the lead-acid cell consists of a positive electrode and negative electrode. 2. a building. The construction of the home-built aircraft took two years.

consume /ˈkɒnsmjuːz/ verb 1. to use up in a given time. Drag must be overcome with thrust, which requires engines, which in turn consume fuel. 2. to eat. consumption /ˈkɒnsməpsʃən/ noun 1. the amount used up in a given time. Fuel consumption is higher in bigger, more powerful engines. 2. the process of using up fuel or other resources. 3. the amount eaten. The act of eating.

contact /ˈkɒntækt/ noun 1. touch. in contact with touching. The air in contact with the Earth’s surface cools. 2. to be in contact with to communicate with e.g. by telephone or radio. to be in visual contact to see. to make contact to communicate. to lose contact to stop communicating. ATC lost contact with the aircraft. A person who can be contacted in order to get something done. I have a contact in Madrid who can help. I know somebody in Madrid who can help. 4. an electrical connection. Dirty contacts were the cause of the problem.

contact breaker /ˈkɒntækt breɪkər/ noun a mechanically operated switch which is timed to break the primary circuit when maximum current is flowing.

contact flight /ˈkɒntækt flæt/ noun a method of navigation for aircraft in which the pilot or crew use no navigational aids, but find their way by observing visible features of the ground.

contact number /ˈkɒntækt nʌmbər/ noun a telephone number where information can be obtained.

contain /ˈkɒntɛin/ verb to hold, to have inside. Most clouds contain some super-cooled water droplets. The booklet contains details of the airline’s flight schedule.

container /ˈkɒntɛnər/ noun a box, bottle, etc., which holds something else. A smoking fire in a waste container could become very active due to pressure changes during ascent.

contaminate /ˈkɒntəˌmɪneɪt/ verb to make something impure, harmful or dangerous. If contaminated air enters...
contaminated fuel /ˈkɒntɪmɪtɪd/ noun fuel which contains an unwanted substance, such as water, and is therefore dangerous to use

contamination /ˈkɒntɪmeɪʃən/ noun a process by which a liquid, gas or object is made unusable because impurities or foreign matter are allowed into or onto it. A situation in which fuel becomes unusable because an unwanted substance such as water gets into it is nuclear contamination damage done to an object, person or substance because of contact with nuclear radiation.

content /ˈkɒntent/ noun the amount of a substance that is contained within something, often expressed as a percentage. The stratosphere is a layer in which the water vapour content is low. The moisture content of the atmosphere is an enormous contrast between the surface and at altitude is cold in contrast to air at altitude.

continent /ˈkɒntɪnent/ noun one of the seven great land masses of the Earth

Comment: The seven continents are: Asia, Africa, North America, South America, Australia, Europe and Antarctica.

continental /ˈkɒntɪnent(ə)l/ adjective referring to a continent.

continental climate /ˈkɒntɪnent(ə)l ˈklaɪmət/ noun the type of climate found in areas where there is no effect from the sea.

contingency /ˈkɒntɪnˈdʒənsi/ noun something which might happen in the future and therefore must be planned for.

contingency reserve fuel /ˈkɒntɪnˈdʒənsi rɪˈfjuːəl/ noun fuel which would only be used in an unusual situation such as a diversion.

continuity /ˈkɒntɪnjuəti/ noun continuing. Continuity of precipitation continuing rain, snow or hail.

contour /ˈkɒntʊər/ noun the shape of something.

contour chart /ˈkɒntʊər tʃɑːt/ noun chart which shows areas of high and low ground.

contour gradient /ˈkɒntʊər ˈɡreɪdiənt/ noun steepness of change in elevation.

contour line /ˈkɒntʊər laɪn/ noun a line on a map or chart joining points of equal elevation.

contract /ˈkɒntrækt/ verb to become smaller in volume. Liquids will expand or contract as a result of temperature changes. Opposite expansion.

contraction /ˈkɒntrækʃən/ noun the decrease in volume of a substance brought about by cooling. Due to contraction, the length of a mercury column shortens. Opposite expansion.

contrail /ˈkɒntreɪl/ noun same as vapour trail.

contrast /ˈkɒntrɑːst/ noun 1. the amount of light and dark in something seen. Contrast and colour enable a pilot to identify ground features. 2. the difference between two things. There is an enormous contrast between the performance of the two aircraft. In contrast to when compared with. Air at altitude is cold in contrast to air at the surface.

contribute /ˈkɒntrɪbjuːt/ verb to give or provide as part of the whole. Exhaust gases contribute to engine power. Although the weather was bad, pilot error contributed to the accident. Pilot error was partly responsible for the accident.

contribution /ˈkɒntrɪˈbjuːʃən/ noun 1. the part that something plays in making or causing something. The differences in the effect of solar radiation on land and sea make the biggest contribution to weather and climate. 2. the act of contributing or something, especially money, that is given or provided.

contributor /ˈkɒntrɪbjuːtə/ noun a person or thing that contributes to something. There are other factors which cause the division of the lower atmosphere into two layers but the ozone effect is a major contributor.
control /kənˈtraʊl/ noun 1. the authority or ability to direct somebody or something 2. a crowd control the management of the movements of large numbers of people 3. checking or examining a verb to direct, to manage or to make a machine, system, procedure, etc., work in the correct way a The purpose of the centrifugal switch is to control the starting and ignition circuits. (Note: The word control in English is used in a different way to similar words in other languages. In English, the verb check is more often used to mean 'look at and verify' while control is used in the sense of 'to make something work in a particular way': the yoke and rudder pedals are used to control the movement of the aircraft. Note also: controlling – controlled.)

control area /kənˈtraʊl əˈriə/ noun the airspace above a particular area on the ground, which is controlled by a particular authority. Abbreviation CTA

control column /kənˈtraʊl kələm/ noun the main hand control used by the pilot to control the aircraft in roll and pitch

controlled airspace /kənˈtraʊld ˈkɒstəps/ noun airspace which is governed by rules and regulations which pilots must comply with. Abbreviation CAS

controller /kənˈtraʊlə/ noun 1. a device which ensures that something operates in the correct way a the propeller speed controller 2. a person who manages systems to ensure the smooth operation of procedures

controls /kənˈtraʊlz/ plural noun or automatic devices that are used to control a machine, a system, etc., or to make a machine, a system, etc., work in a correct way a the pilot at the controls of the aircraft the pilot who is operating the flying controls

control surfaces /kənˈtraʊl ˌsɜːfərs/ plural noun moveable aerofoils, usually on the wings and tailplane, which can be operated from the cockpit by the pilot, thus changing aircraft attitude

control tower /kənˈtraʊl ˈtaʊər/ noun a tall building on an airfield from which air-traffic controllers organise incoming and outgoing aircraft by speaking to their pilots by radio

control zone /kənˈtraʊl zəʊn/ noun a designated ATC area. Abbreviation CTR

convection /kɑnˈvɛkʃən/ noun the process by which hot air rises and cool air descends a Heat is transferred from the Earth’s surface upwards largely by convection.

convective /kɑnˈvɛktɪv/ adjective referring to convection, or something which is affected by the vertical circulation of air a convective movement movement caused by warm air rising and cool air descending

convective clouds /kɑnˈvɛktɪv kloʊdɪz/ plural noun clouds formed as a result of warm moist air rising and condensing at altitude

convenience /kɑnˈvɪniəns/ noun 1. personal comfort and benefit a Reading lights are provided for passengers’ convenience. b at your convenience when it is least troublesome for you 2. ease of understanding a For convenience we will assume that the Earth is round. 3. usefulness, or easiness to use

convenient /kɑnˈvɪniənt/ adjective 1. useful a The circular slide rule has a convenient scale for converting weights and volumes. 2. suitable and unlikely to cause problems a We must arrange a convenient time and place for the meeting.

convention /kɑnˈvɛnʃən/ noun 1. an idea which because of long usage has become normal and accepted a By convention, wind direction is the direction from which the wind blows. 2. a meeting involving large numbers of people and long discussions in order to arrive at an agreed course of action often outlined in a public statement a the Tokyo Convention

conventional /kɑnˈvɛnʃənl/ adjective usual or familiar to most people a Every pilot must know the conventional symbols used for depicting the various ground features on charts.
converge /ˈkənvərʒ/ verb to come together at a particular point.  
Meridians converge towards the poles.  
An aircraft on converging courses aircraft on courses which may eventually be too close to each other if no corrective action is taken.  
Opposite diverge
convergence /ˈkənvərʒəns/ noun the fact of coming together at a particular point.  
The inter-tropical convergence zone is the zone in which the trade winds from the two hemispheres approach each other.  
There is convergence of meridians of longitude at the north and south poles.  
Opposite divergence
converse /ˈkənvərs/ noun the opposite.  
The converse of a port is starboard.
convert /ˈkənvərt/ 1. verb to change to a different system or set of rules.  
The conversion of km into nm is not difficult.  
2. conversion course flying training which enables and qualifies a pilot to fly a different aircraft type.
convert /ˈkənvərt/ verb to change to a different system or set of rules.  
How do you convert degrees C into degrees F?
converter /ˈkənvərter/ noun a device which alters the form of something.  
A backup converter converts the alternating current power into direct current.
convertible /ˈkənvərtaəb(ə)l/ adjective possible to change easily, e.g. to fit in with a new system or set of standards.  
The statute mile, unlike the nautical mile, is not readily convertible into terms of angular measurements.
convey /ˈkənvε/ verb to carry or move from one place to another.  
A large number of tubes convey the cooling medium through the matrix.  
Buses are used to convey passengers from the aircraft to the terminal building.
cooler /ˈkələr/ noun a device for cooling.  
A self-contained system, consisting of an oil tank, pump, filter, cooler, and oil jets, lubricates the auxiliary power unit.
cooling /ˈkələn/ noun the action of making something cool.  
The cooling of the oil by the airflow.  
adj. adjective reducing the temperature of something.
cooling medium a substance which reduces the temperature of another substance or material.
coordinate /ˈkɔrədeɪn/ verb 1. to bring together the various parts of a procedure or plan to ensure that the operation works correctly.  
It is the task of air traffic controllers to coordinate the movement of traffic in and out of a terminal.  
2. to make different parts of the body work well together.  
During a hover, helicopter pilots must be able to coordinate movements of both hands and feet.
coordinated flight /ˈkɔrədeɪnɪd/ noun flight. especially during turns, in which the horizontal and vertical forces acting on the aircraft are in balance.  
In coordinated flight, the ball in the turn coordinator will be in the centre.
coordinate Universal Time /ˈkɔrədeɪnət, ˌjuːnɪˈveɪərs(ə)l ˈteɪnm/ noun time used in aviation based on the 24-hour clock format.
GMT
coordinates /ˈkɔrədeɪnəts/ plural noun values used to locate a point on a graph or a map.  
The airfield can be seen on the map at coordinates B:12.
The Coriolis force acts at a right angle to wind direction and is directly proportional to wind speed. It is named after G. G. Coriolis, a French engineer who died in 1843.

COMMENT: The Coriolis force explains the Coriolis effect in the various parts of a rotating mass perpendicular to its motion and towards the axis of rotation. The Coriolis force explains why wind patterns are clockwise in the northern hemisphere and anti-clockwise in the southern hemisphere.

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**corrosion**  noun, 2. to be destroyed by a slow chemical process such as a rust.  
**corrosion protection** noun action and/or measures taken to prevent corrosion such as rust.

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<td>corrode</td>
<td>to be destroyed by a slow chemical process such as rust.</td>
</tr>
<tr>
<td>corrosion</td>
<td>noun the destruction of a material by chemical processes.</td>
</tr>
<tr>
<td>corrosion protection</td>
<td>noun action and/or measures taken to prevent corrosion such as rust.</td>
</tr>
</tbody>
</table>

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Aluminium will not corrode easily.

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For level flight, lift must counter the force of gravity. Abbreviation: CDI.

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Some people find it helpful to use, the coupling is sealed by a dust cap.
cross-pointer indicator /kraʊ/ noun 1. a display with crossing horizontal and vertical bars to indicate aircraft position in relation to the glideslope.
cross-section /ˈkruːs ˌsɛkʃən/ noun a view of an object seen as if cut through ○ The diagram is a cross-section of a turbojet engine.

crosswind /ˈkruːswind/ noun a surface wind which blows at an angle to the landing or take-off heading ○ On some aircraft, crosswind take-offs should be made with full aileron deflection in the direction from which the wind is blowing.

COMMENT: A crosswind landing is one of the most difficult exercises for a student pilot. The final approach is usually made with the aircraft yawed into wind, while tracking the extended runway centreline. Just before touchdown, the pilot aligns the aircraft with the direction of flight using the rudder pedals. Correct timing for the alignment and accurate airspeed are required to achieve positive contact with the runway surface otherwise the aircraft may depart the runway to one side.

crosswind component /ˈkruːsˌwɪnd kəˈpəʊnənt/ noun that part of the wind force acting at an angle to the direction of flight

crosswind leg /ˈkruːswind leg/ noun part of the airfield traffic circuit flown at approximately 90° to the direction of take off and climb out, followed by the downwind leg

CRT /ˈsɪ tɪzi/ abbreviation cathode ray tube

cruise /kruːz/ noun the main part of the flight between top of climb after take-off and descent for landing ○ verb to fly the main part of the flight between top of climb after take-off and descent for landing ○ We are cruising at 500 kt.
○ Cruising speed, cruising power and cruising altitude are selected to give maximum engine efficiency and prolong engine life.

cruising altitude /ˈkruːzɪŋ ,ˈɛltɪtjuːd/, cruising level noun the altitude at which most of a flight is flown en route to a destination, from top of climb to top of descent ○ Our cruising altitude will be 35,000 feet.

cruising power /ˈkruːzɪŋ ,ˈpaʊə/ noun engine power used to give required speed from top of climb to top of descent usually giving fuel economy and long engine life ○ Cruising power is about 2,300 rpm.

cruising speed /ˈkruːzɪŋ spɪd/,

cruise speed noun the speed selected from top of climb to top of descent, usually giving fuel economy and long engine life ○ The cruising speed is 110 knots.

cruising weight /ˈkruːzɪŋ wɛt/ noun the weight of an aircraft in flight, consisting of its weight when empty, the weight of its payload, and the weight of the fuel that it has left

crush /kruːʃ/ verb to damage by pressure ○ Excessive load on the beam may crush the core.

crystal /ˈkrɪstəl/ noun a regular geometric shape formed by minerals, or as water freezes

CSDU abbreviation constant speed drive unit

CSU abbreviation constant speed unit

CTA abbreviation control area

CTOT abbreviation calculated take-off time

CTR /ˈkɑːtrəʊl/ abbreviation control zone

cubic /ˈkjuːbɪk/ adjective measured in volume, by multiplying length, depth and width ○ cubic centimetres (cc) the usual unit used to measure the capacity of an internal-combustion engine ○ The engine has a capacity of 2,000cc. Abbreviation cc ○ cubic foot, cubic inch, cubic metre, cubic yard the volume of a cube whose edge measures one foot, inch, metre or yard, respectively

cumuliform /ˈkjuːməlɪfɔrm/ adjective which develop vertically ○ cumuliform clouds such as cumulonimbus

cumulonimbus /ˈkjuːmələnɪbəməs/ noun a dark, low cumulus – type of cloud associated with thunderstorms ○ A cumulonimbus has a characteristic anvil shape. Abbreviation CB

cumulus /ˈkjuːmələs/ noun big, fluffy, white or grey cloud heaped or piled up, which develops at low altitude ○ Cumulus clouds may develop because
of thermal activity resulting from the warming of the surface. Grey cumulus often develop into cumulonimbus clouds which form only in an unstable atmosphere and, as the name suggests, often build vertically for great distances. Also called heap cloud current, present, actual, happening at the moment. Current weather conditions present weather conditions the position now. Current position the position now. An electrical supply alternating current, direct current. Curvature a curved shape. Curvature of the Earth the curving of the Earth’s surface due to the spherical form of the Earth. Customary normal or usual. It is customary for the senior cabin supervisor to introduce herself to passengers at the start of a flight. Customs an official department of government concerned with movement of people and freight across national borders. Customs aerodrome an aerodrome, usually near a border or coast, with customs facilities. Customs duty the duty payable on a carton of cigarettes. Cycle a series of actions which end at the same point as they begin. With the piston engine, the cycle is intermittent, whereas in the gas turbine, each process is continuous. Life cycle of the thunderstorm cell the process of formation, development and decay of a thunderstorm. Cyclic referring to or happening in a cycle. Off-shore and on-shore wind patterns are cyclic. Cyclone a system of winds rotating inwards to an area of low barometric pressure. These areas of low pressure are called hurricanes in the Atlantic Ocean, cyclones in the Indian Ocean and Bay of Bengal, and typhoons in the China Sea. Also called low, depression. Cyclonic referring to air movement, which turns in the same direction as the Earth and which, when seen from above, is anticlockwise in the northern hemisphere and clockwise in the southern hemisphere. In winter the sub-tropical high retreats and gives way to cyclonic pressure patterns which produce cool unsettled conditions with rain at times. Cylinder a device shaped like a tube, in which a piston moves. Smaller aircraft have a static hydraulic system similar to a car, with a master cylinder and individual brake cylinders at each wheel. Cylinder block the casing containing the cylinders in an internal combustion engine. Cylinder head the removable top part of a piston engine cylinder containing plugs, inlet and exhaust connections and valves. Cylindrical with the shape of a cylinder. The modern jet engine is basically cylindrical in shape.
D abbreviation danger area
DA abbreviation danger area
DAAIS abbreviation danger area activity information service
DACS abbreviation danger area crossing service
DADC abbreviation digital air data computer
DADS abbreviation digital air data system
DALR abbreviation dry adiabatic lapse rate
damage /'deɪmɪdʒ/ noun harm that is caused to something ○ If the temperature rises it can cause serious damage to the engine. ○ verb to cause harm to something ○ Small stones around the run-up area may damage propellers.
damage tolerance /'deɪmɪdʒ ˌtɒlərəns/ noun the ability of a material or structure to withstand or resist damage ○ The structural efficiency of bonded and machined structure is not achieved at the expense of damage tolerance.
dampen /'dæmpən/ verb 1. to decrease or reduce ○ An accumulator is fitted to store hydraulic fluid under pressure and dampen pressure fluctuations. 2. to make slightly wet
damper /'dæmpər/ noun a device to decrease or reduce something ○ A yaw damper is used for rudder control.
D & D abbreviation distress and diversion cell
danger area /'deɪndʒər ˈɛərɪə/ noun airspace of a particular length, width and depth, within which at particular times there may be activities which are dangerous to the flight of the aircraft. Abbreviation D, DA
danger zone /ˈdeɪndʒər ˈzɔn/ noun an area where danger exists
data /ˈdeɪtə/ noun 1. information made up of numbers, characters and symbols often stored on a computer in such a way that it can be processed ○ Airspeed information is supplied from an air data computer. ○ meteorological data information about weather conditions stored on a computer 2. information ○ recorder
datum /ˈdeɪtəm/ noun a reference or base point of a scale or measurement, e.g. mean sea level
datum shift trim system /ˌdeɪtəm ʃɪft ˈtrɪm ˈsɜːtʃ ɪnˈstɪtʃ əm/ noun a trim system which varies the incidence of an all-moving tailplane without moving the cockpit controls ○ In some aircraft, the datum shift is operated automatically.
dB abbreviation decibel
DC abbreviation direct current
DCL abbreviation departure clearance
de- /deɪ-/ prefix undo, remove or stop ○ deactivate ○ depressurise
deactivate /diəˈtæktɪv/ verb to turn off a system or a piece of equipment thus stopping it being ready to operate ○ On some aircraft nose wheel steering must be deactivated prior to retraction.
dead reckoning /ˌded ˈrekənɪŋ/, ded reckoning noun navigation using calculations based on airspeed, course, heading, wind direction and speed, ground speed, and time ○ In the early stages of practical navigation, the student pilot navigates by using dead reck-
result of the fire. Damage was done to the aircraft as a pump helps to de-aerate the fuel before it enters the engine.

(de-aeration /di: eə'reif(ə)n/ noun the process of removing gas from a liquid such as fuel. Partial de-aeration of fuel takes place in the pump.

decomposer /di: kom'poʊzər/ noun a device to remove gas from a liquid

de-aerator /di: eə' reitə/ noun a device in the lubrication system to remove air bubbles from oil

deal /diəl/ noun a great deal a large amount of, a lot of. A great deal of damage was done to the aircraft as a result of the fire. To verb to manage or control. A computer can deal with the constant inputs required to control an unstable aircraft.

debris /ˈdɪbriəs/ noun scattered broken pieces. Before running up the engine, check that the aircraft is on firm ground and that the area is free of stones and other debris. The aircraft exploded in mid-air, spreading debris over a wide area of the countryside.

decal /diˈkel/ noun picture, letters or digits printed on adhesive paper, which is transferred onto a surface and may be peeled away. A red decal with AVGAS 100LL in white letters indicates the type of fuel to be used.

decelerate /diˈsɛlərət/ verb to slow down. Reverse thrust and brakes help to decelerate the aircraft after landing. Opposite accelerate.

deceleration /diˈsɛlərəˈeif(ə)n/ noun. Anti-skid braking systems units are designed to prevent the brakes locking the wheels during landing, thus reducing the possibility of wheel skid caused by the sudden deceleration of the wheel. Opposite acceleration.

decibel /ˈdesəbəl/ noun a unit for measuring the loudness of a sound. Abbreviation dB

decal /ˈdɛsɪməl/ noun a decimal fraction. A fraction as expressed in the decimal system. 0.50 is a decimal fraction that is equal to 1/2. A correct to three places of decimal or to three decimal places correct to three figures after the decimal point. 2.754 is correct to three decimal places. 2.7 is correct to one decimal place.

decimal notation /ˈdɛsɪməl ˈnəʊtərɪ/ noun the method of writing a number in the decimal system. The fraction 3/4 can be written as 0.75 in decimal notation. Prices and number are normally written using decimal notation. He finds it difficult to understand how the computer works because it uses binary not decimal notation.

decimal place /ˈdɛsɪməl ˈpleɪs/ noun the position of a number to the right of the decimal point

decimal point /ˈdɛsɪməl ˈpɔɪnt/ noun the dot (.) used to separate a whole number from a decimal fraction.

COMMENT: The decimal point is used in the USA and Britain. In most European countries a comma (,) is used to show the decimal, so 4.75% in Germany is written 4.75% in Britain.

decimal system /ˈdɛsɪməl ˈsɪstəm/ noun system of counting based on the number 10 and using the digits 0–9.

decision /ˈdeksən/ noun the act of deciding or of making up one’s mind. To make a decision to choose a course of action. The decision to evacuate the aircraft was made by the captain.

decision height /ˈdeksən ˈhæt/ noun the altitude at which, during an ILS landing approach, a pilot must decide whether to land or carry out a missed approach. The pilot waited until she was at decision height before initiating the missed approach procedure. Abbreviation DH.

COMMENT: An ILS approach generally has a decision height of 200 ft (60 m) above ground level.

deck /dɛk/ noun the floor of a ship or aircraft.
decode /ˈdɪkəʊd/ verb to change coded information into readable form. Incorrectly spaced information pulses can result in failure by the ground station to decode the aircraft information.

defcoder /ˈdɪkəʊdə/ noun a device used to decode signals from the air traffic control radar beacon system.

deduce /ˈdedʒəs/ verb to work something out in the mind using information provided. Sometimes, it is possible to estimate the depth of the layer of mist or fog from the ground observations and hence to deduce the ground range from any height.

defect /ˈdefekt/ noun a fault or error. Low oil pressure or excessive temperature indicate the development of a possible defect.

defective /ˈdefektɪv/ adjective faulty or not operating correctly. Loss of supply pressure is caused by either a defective booster pump or lack of fuel.

define /ˈdefain/ verb 1. to give an exact explanation, as in a dictionary: it is not easy to define the word; it is difficult to say exactly what the word means. 2. to set the limits of something. Cloud tops are very difficult to define.

definite /ˈdef(ə)nɪt/ adjective referring to something which is not in doubt, which is certain. Using a time scale on the track, the pilot should be prepared to look for a definite feature at a definite time. Opposite indefinite.

definition /ˈdefɪnɪʃ(ə)n/ noun an exact explanation of what a word or expression means. The definition of a year is the time taken for a planet to describe one orbit around the sun. By definition understood by the use of the word itself. A sphere is, by definition, round.

deflate /ˈdɪflət/ verb to allow air to escape from something, so that it becomes smaller or collapses. Opposite inflate. Inflate a tyre to allow the air to escape from a tyre.

deflation /ˈdɪfləʃ(ə)n/ noun the act of allowing air to escape from something, so that it becomes smaller or collapses. Deflation of a tyre is done by depressing the valve.

defect /ˈdɪflɛkt/ 1. to cause an object to move away from a central or neutral position. 2. to move a moving object, gas or liquid away from its intended path. In an open-cockpit aircraft, the windshield deflects the airflow over the pilot's head.

deflection /ˈdɪflɛkʃ(ə)n/ noun 1. movement away from a central or neutral position. 2. Full deflection of the ailerons is sometimes needed on take-off to counteract a crosswind.

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degrees Fahrenheit (70°F) 3. a unit of measurement of an angle equal to 1/360th of a circle – each degree is divided into 60 minutes and each minute into 60 seconds. Make a turn to the right at a bank angle of 30°. • an angle of 90° a right angle. 4. a unit of direction as measured on a compass. • east = 090° • west = 270°

degrees true /dɪˈtruː/ noun degrees of direction measured from true north, not magnetic north. Also called true degrees. Symbol °T
dehydration /dɪˈhɛdrəˈʃən/ noun an unwanted and sometimes dangerous loss of water from the body. Dehydration can be avoided by drinking plenty of water.
de-ice /dɪˈaɪs/ verb to remove ice. The ground crew de-iced the aircraft prior to take-off.
de-icer /dɪˈəsər/ noun a device or substance used to remove ice. De-icer spray should be checked to make sure it is not harmful to light aircraft wind-screens.
de-icing /dɪˈaɪsɪŋ/ noun the removal of ice. • adjective referring to the removal of ice. 
de-icing fluid. de-icing.
deray /dɪˈleɪ/ noun a period after the expected time that you have to wait before something happens, the length of time by which something is late. • verb 1. to make late, to cause to be late. Take-off was delayed because of fog. 2. to put something off until later. He delayed telling her the news until they had landed.
delayed-action /dɪˈleɪd əˈkʃən/ adjective in which there is an unusual passing of time between stimulus and response. The door is fitted with a delayed-action lock which operates one minute after the power has been switched off.
deliver /dɪˈlɪvər/ verb to provide, to give. The motor will continue to run but will deliver only one-third the rated power. The pump can deliver fuel at the rate of 2,000 gph.
density error /ˈdendəsti/, ərə/ noun a correction to airspeed to give true airspeed

DEP abbreviation departure message

depart /dɪˈpɑrt/ verb to leave ○ The flight departs at 0200 GMT. Opposite arrive
department /dɪˈpɑrtmənt/ noun a separate part of a complex whole, especially of an organisation
departure /dɪˈpɑrtʃər/ noun 1. the act of leaving ○ departure time the time when an aircraft becomes airborne 2. the distance between two meridians at any given latitude
departure lounge /dɪˈpɑrtʃər ˈlaundʒ/ noun a room at an airport where passengers wait to board their aircraft
departure point /dɪˈpɑrtʃər ˈpɔint/ noun a place on the map representing the place from which a flight begins
departures /dɪˈpɑrtʃərz/ noun the part of an airport that deals with passengers who are leaving
depend /dɪˈpend/ verb 1. to be controlled or affected entirely by something ○ Whether or not an object can be seen by aircrew at a given distance will depend on factors such as size, shape and colour of the object. ○ If an aircraft ditches in the sea, early rescue depends on rapid location of survivors. 2. to rely on ○ Pilots depend on air traffic controllers to help them conduct a safe flight.
dependable /dɪˈpendə(b)əl/ adjective reliable, trustworthy ○ Mercury barometers have largely been replaced by precision aneroid barometers which are smaller, simpler to use, and more dependable.
dependent /dɪˈpendənt/ adjective relying on or unable to do without something ○ The height indicated by an altimeter is dependent on the pressure which is set on the sub-scale.
deploy /dɪˈpleɪ/ verb to come into action, to become ready to be used ○ Slide rafts are door-mounted and automatically deploy and inflate when the door is opened in the armed position.
deposit /dɪˈpɔzɪt/ noun a layer of collected matter on a surface ○ A deposit of ice crystals causes the aircraft surfaces to change their aerodynamic characteristics. ○ Wheel brakes should be inspected for snow or ice deposits.
depreciate /dɪˈpriːʃeɪt/ verb to decrease in value ○ The aircraft depreciated by 100% over the 5 year period. Opposite appreciate
depreciation /dɪˈpriːʃeɪʃən/ noun a decrease in value ○ There was a depreciation of 100% in the value of the aircraft over the 5 year period. Opposite appreciation
depress /dɪˈpreʃ/ verb to push down ○ Switches on the control columns instantly disengage the autopilot when depressed.
depression /dɪˈpreʃən/ noun 1. an area of low atmospheric pressure ○ In the northern hemisphere, the wind blows anticlockwise round a depression and clockwise round an anticyclone and vice versa in the southern hemisphere. ○ deep depression area of very low relative atmospheric pressure 2. a lower area on a surface, which is often difficult to see ○ A depression on the wing surface must be investigated in case it is an indication of more serious structural damage.
depressurisation /dɪˈpreʃəraɪzəˈzeɪʃən, depresəˈreɪʃən/ depresurization noun a loss, especially sudden, of cabin pressure ○ Emergency oxygen must be available in the event of depressurisation.
depressurise /dɪˈpreʃəraɪz/, depressurize verb to lose pressure suddenly, or to cause to lose pressure ○ The aircraft began to depressurise at 20,000 feet.
depth /dɛpθ/ noun the distance from the top surface of something to the bottom ○ The troposphere's depth is variable in temperate latitudes.
derive /dɪˈrɛv/ verb to get or to obtain ○ Performance data is derived from flight tests. ○ Kepler derived the laws which relate to the motion of planets in their orbits.
descend /drˈsend/ verb to lose altitude, usually in a planned manoeuvre. The aircraft descended to 10,000 feet the pilot reduced altitude until the aircraft was at 10,000 feet. Opposite climb, ascend

descent /drˈsent/ noun a planned loss of altitude. The descent from cruise altitude took 40 minutes. In the descent during planned loss of altitude, usually in preparation for landing for a search of radar recordings showed that a DC-10 had tracked within a few hundred metres of the house while passing 9,500 feet in the descent to Gatwick. [Pilot]
describe /drˈskraːrb/ verb 1. To give the particular features of something. 2. To describe what happened. Put into words exactly what happened. Describe a detail description of what happened. To describe an arc to draw or move in an arc.
description /drˈskrɪpʃən/ noun 1. The act of giving the particular features of something. A detailed description of world climate. 2. The drawing or making of a geometric figure. The description of a triangle. The drawing of a triangle.
desert /ˈdezərt/ noun a large area of dry often sandy country. Over desert areas the lack of water vapour produces cold nights.
design /drˈzain/ noun a plan or drawing of something before it is made. The design and testing of aircraft are important stages in the development programme. A verb to draw plans using accurate information in preparation for constructing something. To design an aircraft to have the idea, make drawings, calculate data, etc., with the intention of producing an aircraft.
designate /drˈzentɪt/ verb to choose for a special purpose. This region is designated as a fire zone.
designator /drˈzenteɪtər/ noun a group of letters and/or numbers that identify something.

desirability /dɪˈzaɪərəbəlɪtɪ/ noun a quality that is desirable.
desirable /dɪˈzaɪərəbəl/ adjective preferred or wanted. Equalisation of the air pressure across the eardrum is more difficult to achieve during descents than ascents, and a minimum rate of pressure change is desirable.
despite /dɪˈspɪt/ preposition in spite of. Many beacons and aids which are provided for low operations are left out to keep the chart clear – despite this, the charts still look very difficult to understand. Despite the weather, we took off although the weather was bad, we took off.

destiny /dɪˈstɪni/ noun the place to which somebody or something is going. Aerodrome forecasts are normally given in code form for destination and alternates.
destroy /dɪˈstrɔɪ/ verb to damage so much as to make useless. The aircraft was destroyed in the accident.
destruction /dɪˈstrʌkʃən/ noun an act or instance of making completely useless by breaking. By testing selected parts to destruction, a safe life can be assessed for all structures and components.
destructive /dɪˈstrʌktɪv/ adjective referring to something which destroys. The winds of a tornado are extremely destructive. Tornadoes cause a lot of serious damage.
detach /dɪˈtætʃ/ verb to remove a part from something, or to be removed. A fuselage panel became detached and had to be replaced. The parachute flare is a device which is fired to a height of 1,200 ft where a red flare and parachute detach.
detachable /dɪˈtætʃəbəl/ adjective referring to something which can be unfixed and removed.
detachable wheel spats /dɪˈtætʃəbəl /ˈwiːl ˌspæts/ plural noun
streamlined coverings for the wheels of light aircraft which can be taken off to allow inspection and repairs of tyres.

detail /ˈdɪteɪt/ noun the important and less important facts about something. The amount of detail which appears on a topographical chart depends upon the scale.

detect /ˈdɛkt/ verb to discover the presence of something. Apart from sensing the abnormal rate of descent of a false glide slope, the pilot can detect an error by comparing height with distance to go.

detection /ˈdɛktʃən/ noun the discovery of the presence of something. Ice detector a device for detecting the presence of ice on the airframe. When ice forms on the vibrating rod ice detector head, the probe frequency decreases.

deteriorate /dɪˈtɪərɪət/ verb to become or make bad or worse. The electrolyte in the cells of a nickel-cadmium battery does not chemically react with the plates and so the plates do not deteriorate. Deteriorating weather worsening weather.

deterioration /ˌdɪtərɪˈeɪʃən/ noun worsening a deterioration in the situation a worsening of the situation.

determination /ˌdɛtərɪˈmeɪʃən/ noun 1. the act of finding out by calculation. Structure design for a given safe life has led to the determination of the minimum number of flying hours which should pass before major failure occurs. 2. the strength of mind to do what is required. Determination was a major factor in the trainee passing his exams.

determine /dɪˈtɜːmɪn/ verb 1. to find out by calculation. To determine the average age, divide the total number of years by the number of people. When we wish to fly from one place to another, it is first necessary to determine the direction of the destination from the departure point. 2. to set or to fix precisely. On a large transport aircraft, the safety of hundreds of passengers is involved, and regulations determine the minimum crew that must be carried.

detonation /ˌdɛtəˈneɪʃən/ noun a sudden, explosive burning of the air/fuel mixture. Prior to the accident, engine detonation could be heard by people on the ground.

COMMENT: Detonation imposes excessive loads on the pistons and other engine components, possibly causing engine damage and resulting in engine failure.

development /dɪˈvɛlpmənt/ noun 1. something new, made as an improvement on something older. Satellite navigation aids for light aircraft are a recent development. 2. to get bigger, to grow and change. During the day, light breezes may develop into strong winds.

device /dɪˈvaɪs/ noun an object, especially mechanical or electrical, which has been made for a particular purpose. A capacitor is a device with the ability to temporarily store an electric charge.
dew /dʒuː/ noun drops of condensed moisture left on the ground overnight in cool places.

dew point /dʒuː pɔɪnt/ noun the temperature at which air is saturated with water vapour and condensation begins

COMMENT: Weather reports usually include the air temperature and dew point temperature. When the difference between temperature and dew point is small, there is a strong possibility of fog, clouds, or precipitation.

df abbreviation direction finding

dfdr abbreviation digital flight data recorder

dfr abbreviation departure flow regulation

dfi abbreviation Distance from touchdown indicator

dh abbreviation decision height

di abbreviation direction indicator

diagonal /dəɪˈɡənəl/ adjective
1. joining two opposite corners of a rectangle
2. sloping halfway between the vertical and horizontal ○ Early aircraft were of the wire braced type of construction, the wire being superseded by tubular diagonal struts.


diagram /ˈdaɪəɡræm/ noun an often simplified drawing showing the structure or workings of something ○ The diagram shows a simple open-circuit system.


diagrammatic /ˌdaɪəˈɡræmətɪk/ adjective referring to something which is shown as a drawing of a system or structure ○ diagrammatic format in the form of a diagram

dial /daɪəl/ noun the face of an instrument showing a scale ○ A cup anemometer is connected to an instrument with a dial showing wind speed in knots.

diameter /ˈdætərəmətər/ noun the distance from one side of a circle to the other, passing through the centre ○ equatorial diameter the distance from the equator, through the centre of the Earth to the equator on the opposite side of the globe

diaphragm /ˌdaɪəˈfræm/ noun a thin sheet of material used to separate parts or chambers ○ Some switches are operated by a diaphragm which flexes under fluid or air pressure.

differ /ˈdɪfər/ verb to be unlike ○ Track and heading differ by the amount of drift. ○ Because the chart time and the departure/arrival times differ, it is necessary to consider the movement of any weather system which might affect the route.

differential /ˌdɪfəˈrɛnʃiəl/ adjective referring to things which react differently when measured against a norm or standard ○ differential heating of the atmosphere the heating of the atmosphere to varying temperatures depending on the relative warmth of the land at the equator and the poles

differential expansion switch /ˌdɪfəˈrɛnʃiəl ɪkˈspɛnʃən ˈswɪtʃ/ noun a switch which operates on the principle that the coefficients of expansion of dissimilar metals are different

differentiate /ˌdɪfəˈrɛntɪeɪt/ verb to recognise the difference between two things; to show two things to be different ○ Some types of colour blindness make the sufferer unable to differentiate between blue and red.

diffraction /ˈdɪfrækʃən/ noun the breaking down of a beam of radiation ○ Diffraction produces a surface wave which follows the curvature of the earth.

diffuse /ˈdɪfjuːs/ adjective spread out in every direction ○ Glare caused by diffuse reflection of sunlight from the top of a layer of fog or haze can seriously reduce air-to-ground visibility. ○ verb to spread out in every direction ○ Light diffuses as it passes through fog.

diffuser /ˈdɪfjʊsər/ noun a device in a jet engine that alters the direction of flow of the air entering the engine as part of the process of compressing it before it reaches the combustion chamber

diffusion /ˈdɪfjuːzən/ noun the process of spreading out ○ Gas from the turbine enters the exhaust system at high velocities but, because of high fric-
tion losses, the speed of flow is decreased by diffusion.

digit /daɪˈdɪt// noun any number from 0 to 9 © Information is provided in a four-digit group.
digital /daɪˈdɪt(ə)l/ adjective referring to a system or device which uses signals or information in the form of numbers
dihedral /daɪˈhɛdr(ə)l/ noun the angle between an upward sloping aircraft wing and a horizontal line
diluted /daɪˈlʊtɪd/ adjective made weaker by adding water or some other fluid © Spillage from a lead acid battery may be neutralised by washing with a diluted solution of sodium bicarbonate.
diluter /daɪˈlʊtə/ noun a device for decreasing the strength or concentration of a liquid or gas © Most flight decks use the diluter demand system in which the oxygen is diluted with cabin air.
dimension /daɪˈmɛfnʃən/ noun a measurable distance such as height, length, etc., or a measurement of height, length, etc. © Variations of atmospheric pressure produce changes in the dimension of the capsule chamber.
diminish /daɪˈmɪnɪʃ/ verb to decrease or to reduce in size or importance © Friction is greatest near the ground and diminishes with height. © At higher altitudes, ground objects are less easily seen because of diminished size.
diode /daɪˈaʊd/ noun an electronic component that allows an electrical current to pass in one direction and not the other
dioxide /daɪˈaʊksəd/ noun an oxide containing two atoms of oxygen. © carbon dioxide
dip to move e.g. the wing or nose of an aircraft so that it points downwards
direct /daɪˈrekt/ adjective 1. in a straight line; by the shortest route © a direct flight 2. complete © the direct opposite © verb to guide or control the movement of something © Clamshell doors are hydraulically or pneumatically opened, and direct the exhaust gases forwards to produce reverse thrust.
direct current /daɪˈrekt ˈkaːrənt/ noun an electric current flowing in one direction only © An electric starter is usually a direct current electric motor coupled to the engine, which automatically disengages after the engine starts. Abbreviation DC
direction /daɪˈrektʃən/ noun the course taken by somebody or something © The Earth rotates about its own axis in an anticlockwise direction.
directional /daɪˈrektʃən(ə)l/ adjective referring to the course taken by somebody or something
directional gyro /daɪˈrektʃən(ə)l ˈdʒaɪrəʊ/ noun a gyroscopic instrument which indicates direction but does not have a north-seeking magnet © The directional gyro should be set to correspond with the magnetic compass.
directional radar beam /daɪˈrektʃən ˈreɪdər bēm/ noun a signal from a directional beacon enabling the pilot to determine a bearing from the beacon with a communications receiver
directional indicator /daɪˈrektʃən ɪndɪkətər/ noun an instrument which gives direction information. Abbreviation DI
directive /daɪˈrektɪv/ adjective referring to the ability of a device to send or receive signals in straight lines © The antenna is highly directive in transmission and reception. © noun general or detailed instructions from management to staff to guide them in their work © According to the management directive, all late arrivals should be logged.
director /daɪˈrektər/ noun 1. a device with a central controlling function © EFIS is a highly sophisticated type of flight director system. 2. a person who is a member of the board that controls the activities of a company © managing director
disadvantage /ˌdɪsəˈvæntɪdʒ/ noun an unwanted situation or condition, or a factor which makes somebody or something less likely to succeed © The disadvantage of a booster pump is that the output is constant so that when engine demand is high, fuel pressure
tends to be low and vice versa. Opposite advantage.

disadvantaged /dɪsəˈdævəntɪdʒt/ adjective a physically disadvantaged (person) a person who has a physical disability.

COMMENT: The word ‘disadvantaged’ may be regarded by some people as a politically correct term for ‘disabled’. With the help of specially-adapted controls, more and more disabled people are learning to fly.

disappear /dɪsəˈpɪər/ verb 1. to vanish. If air blew at right angles to isobars, the horizontal pressure differences would eventually disappear.

2. to pass out of sight. The aircraft took off, climbed out and soon disappeared from view.

disarm /dɪsər/ verb 1. to switch off an active or live system. On the ground approaching the terminal, the flight deck will instruct the cabin crew to disarm the escape devices.

2. to forcibly remove a weapon from somebody. The hijacker was disarmed by security forces.

disc /dɪs/ noun a circular flat plate.

A turbine consists of a disc on which is mounted a number of blades.

discharge /dɪsˈtʃaːrʤ/ noun a release of power from a source such as a battery. A lightning flash is a large-scale example of an electrical spark, or discharge.

battery discharge the loss or release of electrical supply from a battery.

verb to release electrical supply from a source such as a battery.

The battery discharged overnight.

disconnect /dɪskəˈnekt/ verb to separate two things attached to one another.

The electrical supply can be disconnected by pulling out the plug.

discrimination /dɪˈskrɪmiˈneɪʃ(ə)n/ noun the ability to know or see the difference between two similar things.

Targets on the same bearing which are separated radially by less than half a pulse length distance will appear at the receiver as one echo, so good target discrimination requires short pulses.

discuss /dɪˈskʌs/ verb to write about or talk about a subject. This chapter will discuss HF and VHF voice communications.

disembark /dɪsəˈmberk/ verb to leave the aircraft after landing. The passengers finally disembarked at 06.00 hours.

disembarkation /dɪsəˈmberkeɪʃ(ə)n/ noun the act of leaving the aircraft after landing.

The exits are used as conventional doors for disembarkation.

disengage /dɪsəˈdʒɛngdʒ/ verb to switch off a system or device. Switches on the control columns instantly disengage the autopilot when depressed.

dish /dɪʃ/ noun a shallow container for food.

dish antenna /dɪʃ ˈæntə/ noun a circular antenna with a shape like a shallow bowl.

disintegration /dɪsɪˌtɪgrəˈʃ(ə)n/ noun the falling apart or destruction of something. Electromagnetic radiations resulting from the disintegration of radioactive materials are known as gamma rays.

dismantle /dɪsˈmænt(ə)l/ verb to take apart into single components.

One type of inspection is able to reveal fatigue cracks, corrosion, internal damage, the presence of loose articles and mercury spillage without the need to dismantle the aircraft. Opposite assemble (NOTE: The verb ‘mantine’ is not used.)

disorientation /dɪsəˈrɪntəˈʃ(ə)n/ noun a state of confusion in which there is loss of understanding of where one is or which direction one is facing, etc.

When the cabin is rapidly and completely filled by smoke and fumes passengers will suffer from disorientation.

dispensation /dɪspəˈneʃ(ə)n/ noun permission not to have to do something.

At very high altitudes the flying pilot must be on oxygen at all times, unless an aircraft dispensation has been obtained.

dispense /dɪˈspens/ verb not to include or not to use something.

In some cases the rivets are dis-
dispersed with and the skin is fixed to the internal members by the redux process.

dispersal /dɪsˈpɜːs(ə)l/ noun 1. the act of leaving an area and going in different directions • the dispersal of a crowd the disappearance of a crowd 2. the clearing away of something such as mist, e.g. by the wind • the dispersal of hill fog • Dispersal of cloud takes place when surface heating lifts the cloud base or drier air is advected.

disperse /dɪsˈpɜːs/ verb 1. to leave an area going in different directions • the crowd dispersed the people in the crowd left the area, going in different directions, so that eventually the crowd disappeared • to disperse 2. to clear away • the fluorescent green dye will disperse slowly in a calm sea but quickly in a moderate to rough sea.

displace /dɪsˈpleɪs/ verb to move something out of its normal position • the atmosphere is said to be stable if, when a parcel of air is displaced vertically, it tends to return to its original level.

placement /dɪsˈpleɪsmənt/ noun movement away from the normal position • the ILS is a cross-pointer indicator which shows the aircraft horizontal displacement from the localiser and vertical displacement from the glide path.

display /dɪsˈplay/ noun 1. the appearance of information on a monitor screen or on the panel of an instrument or of an indicator • there are three different types of electronic display systems: EFIS, EICAS and ECAM. • digital display information shown as numbers • the clock uses a digital display to show the time of 12:33. 2. a show or demonstration • verb to show, e.g. on a panel or a screen • alerting and warning information is displayed.

disseminate /dɪˈsɪmɪnet/ verb to send out or spread • meteorological stations make routine weather observations at fixed intervals and disseminate this information locally.

dissimilar /dɪsˈtɪmlər/ adjective referring to something which is not the same as, or is unlike, something else • different expansion switches operate on the principle that the coefficients of expansion of dissimilar metals are different.

dissipate /dɪsˌsɪp/ verb to spread out and lose power or strength, or to cause something to do this • Tropical storms often dissipate as they pass from sea to land.

dissipation /dɪsˈpəʃ(ə)n/ noun the process of spreading out and losing power or strength • the rubber used on nose or tail wheels is usually constructed to form a good electrical conductor for the safe dissipation of static electricity.

dissolve /dɪˈzɒlv/ verb to become or to cause to become part of a liquid and form a solution • sugar dissolves in water • there is a possibility that in some types of accumulator, gas may be dissolved into the fluid and thus introduced into the system.

dissolved /dɪˈzɒlvd/ adjective that has melted and become of a liquid • dissolved water water in solution in fuel.

distance /dɪstəns/ noun a space between two places or points, or the measurement of such a space • the distance from point A to point B is 100 nm. • the distance from point A to point B on the diagram is 2 cm. • the height of the aircraft is the vertical distance, measured in feet, of the aircraft above the surface of the Earth.

distance measuring equipment /dɪstəns ˈmɛʒərɪŋ ɪˌkwɪpmenənt/ noun an airborne secondary radar whose signal is converted into distance • it is quite common to find a VOR located together with DME (distance measuring equipment) to give simultaneous range and bearing from the same point on the ground. Abbreviation DME

COMMENT: DME equipment is usually located in a VOR station. Other equipment in the aircraft transmits a signal to the VOR station, which replies. The equipment in the aircraft converts the signal into distance and also calculates ground speed and the time needed to reach the station.
distillation /dɪstɪˈleɪʃ(ə)n/ noun the process by which a liquid is heated and the resulting vapour is then condensed and collected. With kerosene-type fuels, the volatility is controlled by distillation.
distinct /dɪstɪŋkt/ adjective clear and easily seen or understood. When a lead-acid battery is fully charged, each cell displays three distinct indications.
distinction /dɪstɪŋkʃ(ə)n/ noun something which makes one thing different from another. A clear distinction is made between showers and general precipitation.
distinctive /dɪstɪŋktɪv/ adjective easily recognised because of particular features or characteristics. Concorde is a very distinctive-looking aeroplane.
distinguish /dɪstɪŋgwɪʃ/ verb to know or to see the difference between things. A receiver antenna would be unable to distinguish between signals unless they had some differing characteristics.
distinguishable /dɪstɪŋgwɪʃəb(ə)l/ adjective easily recognised as different from. Useful ground features must be easily distinguishable from their surroundings.
distort /dɪstɔːt/ verb 1. to put out of shape. Stress could cause the body of the aircraft to distort or change its shape. 2. to produce a bad radio signal. The sound of the transmission is distorted if the volume is set too high.
distortion /dɪstɔːʃ(ə)n/ noun 1. the bending or twisting of something so that it is out of shape. Difficulty in closing a door may be caused by distortion of the airframe. 2. alteration of the electrical signal that makes a transmission unclear. Distortion of the signal made it difficult for the controller to understand what the pilot said.
distress /dɪstrɛs/ noun 1. serious danger or difficulty. Some passengers were in distress after the incident. 2. a personal worry or anxiety. Some passengers were in distress regardless of the incident.
distress and diversion cell /dɪstrɛs ənd dɪˈvɜːʒ(ə)nˌsel/ noun a unit at an air traffic control centre that provides immediate assistance to aircraft in difficulty.
distress signal /dɪstrɛs ˈsɪgn(ə)l/ noun a signal transmitted by an aircraft in danger.
distribute /dɪstrɪbjuːt/ verb 1. to give or send out. There are two basic configurations which are used to distribute electrical power, the parallel system and the split bus system. 2. to spread over a wide area. Multiple wheel undercarriage units distribute the weight of the aircraft.
distribution /dɪstrɪˈbjuːʃ(ə)n/ noun 1. the act of giving or sending out. There is a high distribution of used and disused airfields in the south of England. 2. the fact of being spread over an area. There is a high distribution of used and disused airfields in the south of England.
distributor /dɪstrɪbjuˈtɔːr/ noun a device which sends an electrical charge to each spark plug in turn. The distributor directs the high voltage impulses to the cylinders in turn as they reach their ignition point.
disturb /dɪstəb/ verb to upset the normal condition of something. Small hills can disturb the flow of air.
disturbance /dɪstərˈbæns/ noun something that upsets the normal condition of something. In general, the higher the mountain and the faster the air flow the greater is the resulting disturbance.
ditch /dɪtʃ/ verb to land a plane in the sea, in an emergency. Even though aircraft have ditched successfully, lives have been lost because life rafts were not launched in time.
ditching /dɪtʃɪŋ/ noun the act of landing a plane in the sea, in an emergency. After all four engines stopped, the captain had to seriously consider the possibility of a ditching in the Indian Ocean.
diurnal /dɪˈjʊərnl/ adjective referring to the 24-hour cycle of day and night. Diurnal changes in surface temperature over the sea are small.
Aircraft personnel must have sufficient experience to know the safe dive attitude of an aircraft. During a dive, the aircraft can lose lift and may descend rapidly. A dive also increases the stresses on the airframe.

When operating at high altitudes, aircrews must be aware of the change in density that occurs. Above 30,000 feet, the density is approximately 1/10 that at sea level. This can affect the performance of the aircraft.

Aircrews must also be aware of air masses and their associated weather conditions. Air masses are divided into two types: polar and tropical. These are known as cold and warm air masses.

The aircraft had to make a diversion from an airborne installation during a rainstorm. Despite the technical problems caused by the weather, the flight crew managed to complete their mission.

To calculate the number of times a number is contained in another number, one must divide the larger number by the smaller number. For example, 8 divided by 4 equals 2.

Polar air masses are associated with cold, dry conditions and occur near the poles. Tropical air masses are associated with warm, humid conditions and occur near the equator. The movement of these air masses can cause significant weather changes.
downstream /daʊnˈstrɪm/ adverb in the direction of flow, or further along the line of flow. Internally driven superchargers are generally used on medium and high powered engines and are fitted downstream of the throttle valve.

downward /daʊnwəd/ adjective moving to a lower level. When flying in turbulent air conditions, an aircraft is subjected to upward and downward gust loads.

downwards /daʊnwədz/ adverb to a lower level, towards the bottom. Pull the toggles downwards to inflate the life jacket. Opposite upwards (note: in US English, downward is used as an adverb and as an adjective.)

downwind /daʊnˈwɪnd/ adjective, adverb in the same direction as the wind is blowing. Turn downwind turn the aircraft so that it is flying in the same direction as the wind is blowing. Opposite upwind.

downwind leg /daʊnˈwɪnd leg/ noun part of the airfield traffic circuit which runs parallel to, but in the opposite direction to, the approach to land which is made into wind.

DR abbreviation dead reckoning.

draft /draft/ noun US same as draught. A down draft or an updraft.

drag /dræg/ noun the resistance of the air created by moving the aircraft through the air. To reduce the effect of drag on an aircraft by the fixed undercarriage a retractable type was introduced. If an engine failure occurs, the windmilling propeller may cause considerable drag.

COMMENT: There are two basic types of drag called parasite drag and induced drag. Parasite drag is caused by friction between the air and the aircraft surface, ailerons, landing gear, etc. Induced drag is produced by lift.

drain /dren/ noun a device to allow fluid to escape from its container. When the cabin is pressurised the drains close, preventing loss of pressure. To allow fluid to escape by providing a hole or tube, etc., through which it can pass. The moisture drains in the lower skin of the cabin are open when the cabin is unpressurised, allowing moisture to drain.

drainage /ˈdreɪnɪdʒ/ noun 1. the act of allowing a fluid to escape from its container. Drainage of water from the fuel system should be carried out before the first flight of the day. 2. a system of outlets for fluid such as water or fuel to pass out of a closed area.

draught /draʊt/ noun a local current of air. A down draught or an updraught. (Note: This word is written as draft in US English.)

draw /drɔ/ verb 1. to make a picture as with a pencil, on paper, etc. Because there is a temperature gradient across each front it is possible to draw isotherms which reduce in value from warm to cold air. 2. to pull or to take. Fluid is drawn into the pump body. 3. to pull towards oneself. (Note: drawing – drew – drawn)

drift /drɪft/ noun movement away from the desired course, created by wind blowing at an angle to the intended direction of flight. If the wind direction is not the same as the aircraft track or its reciprocal, then the aircraft will experience drift. To move away from the desired course. When landing, a cross-wind from the right will cause the aircraft to drift to the left.

drill /driːl/ noun 1. a short series of actions carried out in a particular sequence. The starting drill varies between different aircraft types and a starting check procedure is normally used. 2. a tool, often electrically powered, for making holes in metal, wood, etc.

drive /drɪv/ noun a series of connected devices that transmit power to the wheels, propellers, etc. Rotation of the engine for starting is done by an electric starter motor connected to a drive shaft in the accessories gearbox. To move something move or turn. Shaft-driven using a rotating shaft as a means of transmitting power from one part to another, e.g. from a turbine engine to a helicopter rotor.

77 drive
and guide ○ He’s learning to drive.

(NOTE: driving – drove – driven)

**driven** /driv(ə)n/  drive

**drizzle** /driz(ə)/ noun precipitation, often persistent, in the form of very small drops of water ○ Drizzle is the lightest form of precipitation consisting of fine water droplets.

COMMENT: In weather reports and forecasts, drizzle is abbreviated to DZ.

**drogue parachute** /dروگ ˈparəʃuːt/ noun a small parachute used in releasing a larger parachute from its pack

**drone** /drəʊn/ noun an aircraft whose flight is controlled from the ground

**drop** /drɒp/ noun 1. a small amount of liquid that falls ○ a drop of water ○ a few drops of rain 2. a sudden lowering ○ The passage of a cold front is usually followed by a drop in temperature. ○ A sudden drop in oil pressure is normally an indication of serious engine trouble.

verb to become lower or to decrease suddenly ○ The temperature dropped by several degrees.

**droplet** /ˈdrɒplət/ noun a small drop of liquid ○ Experiments show that smaller droplets of rain can remain super cooled to much lower temperatures than large droplets.

**dove** /dəʊv/ drive

**drum** /d्रʌm/ noun a cylindrical device, often with closed ends

**dry** /draɪ/ adjective containing no water or no moisture ○ dry air ○ lapse rate

**dry ice** /ˈdraɪ ˈaɪs/ noun solidified carbon dioxide

**dual** /ˈdjuːəl/ adjective double, in pair ○ Most light aircraft with side-by-side seating have dual controls.

**duct** /dʌkt/ noun a channel or tube through which fluids or cables can pass ○ The modern jet engine is basically a duct into which the necessary parts are fitted.

**due** /djuː/ adjective 1. expected to arrive ○ the flight is due at 10 o’clock; the flight should arrive at 10 o’clock 2. ○ due to because of ○ Due to daytime heating, the stability decreases and the wind speed increases. ○ adverb exactly and directly ○ The aircraft flew due east.

**dump** /dʌmp/ verb to offload quickly ○ Normal operating cabin pressure can be reduced rapidly in the event of emergency landings, by dumping air. ○ The aircraft flew out to sea in order to dump fuel before landing.

**duplication** /djuˈplɪkəʃən/ noun the act of copying or doubling ○ Control surfaces are divided into sections operated by a separate control unit, thus providing duplication to guard against failure of a unit.

**durability** /djuˈərəlɪti/ noun the ability of a substance or device to last a long time ○ High quality components have good durability.

**duration** /djuˈrəʃən/ noun the length of time for which something continues ○ The duration of the examination is two hours. ○ The duration of the flight was three hours.

**dust** /dʌst/ noun a fine powdery substance blown by the wind and found on surfaces ○ Solid particles in the air include dust, sand, volcanic ash and atmospheric pollution.

**duty** /ˈdjuːti/ noun 1. a period of work ○ on duty at work ○ off duty not at work 2. same as import duty ○ the duty payable on a carton of cigarettes

**dye** /dai/ noun a material used to change the colour of something ○ Minute surface cracks which are difficult to detect by visual means may be highlighted by using penetrant dyes.

**dynamic** /ˈdaiənɪm/ adjective referring to something in motion ○ dynamic pressure pressure created by the forward movement of the aircraft ○ If the dynamic pressure increases due to an increase in forward speed, the force required to move the control column will increase. Opposite **static pressure**

**dynamic seal** /ˈdaiənɪm ˈsɪl/ noun a seal which is part of a moving component, e.g. in a hydraulic system ○ dynamic seals require lubrication to remain effective

**DZ** /ˈdəʊ/ abbreviation drizzle
E

abbreviation east
ear /ɪə/ noun the hearing organ
ear defenders /ˈiə dɪfnər/ plural noun same as acoustic ear muffs
eardrum /ˈɛədrʌm/ noun a membrane inside the ear which vibrates with sound and passes the vibrations to the inner ear. Equalisation of the air pressure across the eardrum is more difficult to achieve during descents than ascents.
ear muffs /ɪə mʌfs/ plural noun same as acoustic ear muffs
ear protectors /ɪə prətektaɪə/ plural noun same as acoustic ear muffs
earth /ɜːθ/ noun 1. (the planet) Earth the planet where we live. 2. ground or soil. verb to connect an electrical appliance to a position of zero potential. When refuelling a light aircraft, ensure that the aircraft is properly earthed. (Note: The US expression is to ground.)
east /ɪst/ noun 1. a compass point on the mariner’s compass 90° clockwise from due north and directly opposite west. London is east of New York. 2. the direction in which the Earth rotates, the direction of the rising sun. adjective 1. referring to areas or regions lying in the east. 2. the eastern part of a region. East Africa. adverb towards the east. The aircraft was flying east.
eastbound /ˈiəstbaʊnd/ adjective travelling towards the east. 1. on an eastbound flight.
easterly /ˈiəstəli/ adjective 1. situated towards the east. 2. easterly component one part of the wind direction coming from the east. 3. to move in an easterly direction to move towards the east.
eastern /ˈiəstən/ adjective situated in the east. 1. one of the eastern provinces of Canada.

Eastern Standard Time /ˈiəsten ˈstændəd ˈtɜrm/ noun the time zone of the eastern USA and Canada, 5 hours behind GMT. Abbreviation EST.
eastward /ˈiəstwɔːd/ adjective going towards the east. 1. adverb US same as eastwards.
eastwards /ˈiəstwɔːdz/ adverb towards the east.
east wind /ˈiəst wɪnd/ noun a wind blowing from or coming from the east. (Note: A wind is named after the direction it comes from.)

EAT abbreviation expected approach time
EATMP abbreviation European air traffic management programme
ECAC abbreviation European civil aviation conference
ECAM abbreviation electronic centralised aircraft monitor
echo /ˈɛkəʊ/ noun 1. the repetition of a sound by reflection of sound waves from a surface. 2. the return of a signal back to the source from which it was transmitted. The strength of the returning echo from a radar transmission depends on a number of factors.
economic /ˌiːtɪkəˈnɒmɪk/ adjective financially rewarding. It was no longer
economical /ɪkəˈnomɪkl/ adjective referring to a substance or device for which input is minimised and output maximised (thereby saving costs) • economical engine an engine which uses less fuel to produce the same power as comparable engines • Jet engines are more efficient and economical when operated at high altitudes.

ECS abbreviation environmental control system

EDDUS abbreviation electronic display and update system

eddy /ˈɛdɪ/ noun a current of air moving in the opposite direction to the main current, especially in a circular motion • When wind flows over an obstruction • eddy is formed on the lee, or downwind side.

edge /ɛdʒ/ noun a line of intersection or joining of two surfaces

EET abbreviation estimated elapsed time

effect /ɪˈfekt/ noun 1. something which results from a cause • Ultra-violet radiation has the effect of warming the atmosphere. • Pressure patterns have an effect on weather. 2. the condition of being in full force • to take effect, to come into effect to start to operate • A new regulation comes into effect tomorrow: • with effect from starting from a verb to cause or carry out • to effect a change to make a change • modifications were effected • modifications were carried out. Compare affect

effective /ɪˈfektɪv/ adjective 1. having an expected and satisfactory result • the new cleaning fluid was very effective it cleaned well 2. operative, in effect • The regulation is effective immediately.

effectiveness /ɪˈfektɪvnəs/ noun how well something works • Ice covering reduces the effectiveness of an aerial.

effective pitch /ɪˈfektɪv pɪtʃ/ noun the distance the aircraft moves forward in flight for one 360° rotation of the propeller

efficiency /ɪˈfɪʃ(ə)nsi/ noun 1. the fact of being able to act or produce something with a minimum of waste, expense, or unnecessary effort • Efficiency is a key component of a successful business. 2. the ratio of the energy delivered by a machine to the energy supplied for its operation • mechanical efficiency • propeller efficiency • thermal efficiency the efficiency of conversion of fuel energy to kinetic energy

effort /ɛfərt/ noun 1. the use of physical or mental energy to do something • In order to qualify for a licence, it is necessary to put some effort into the training course. • Flying a high performance aerobatic light aircraft to its limits requires a lot of physical effort on the part of the pilot. 2. force applied against inertia • Actuators are capable of exerting low-speed turning effort.

EFIS abbreviation electronic flight instrument system

eggbeater /ɪɡˈbɪtə/ noun a rotary-wing aircraft (informal)

EGNOS noun a European system that improves the quality of data from existing satellite navigation systems to make the data suitable for use by aircraft. Full form European Geostationary Navigation Overlay Service (NOTE: The US equivalent is WAAS.)

EICAS noun a cockpit display for monitoring the engines and warning of malfunction. Full form engine indicating and crew alerting system

eject /ɪˈdʒekt/ verb to throw out forcefully • On depressurisation the oxygen mask is ejected automatically from the service panel.

ejection /ɪˈdʒekʃən/ noun an act of throwing out forcefully • ejection seat • ejection seat /ɪˈdʒekʃən sɪt/ • ejector seat /ɪˈdʒekʃər sɪt/ noun an emergency escape seat in military aircraft
which is fired out of the aircraft while the crew-member is still in it.

**ejector /ɪˈdʒɛktər/ noun** 1. a device to throw something out forcefully 2. a device using a jet of water, air, or steam to withdraw a fluid or gas from a space. A jet transfer pump or fuel ejector is used to transfer fuel.

**elapse /ɪˈlæps/ verb** to pass. The radio altimeter works on the principle that, if the path followed by the radio wave is straight down and up, then the elapsed time between the outgoing and incoming signal is a function of the aircraft’s height.

**elastic /ɪˈleɪstɪk/ adjective** flexible, easily returning to its original shape after being stretched or expanded. At low values of stress, if the plot of stress and strain is a straight line, this indicates that the material is elastic within this range.

**elasticity /ɪˌleɪsˈtɪstɪs/ noun** the property of returning to an original form or state following deformation. Titanium falls between aluminium and stainless steel in terms of elasticity, density and elevated temperature strength.

**electric /ɪˈlektrɪk/ adjective** powered or worked by electricity.

**electrical /ɪˈlektrɪk(ə)l/ adjective** 1. referring to electricity or an electrical fault. Powered or worked by electricity. Activation may be mechanical or electrical.

**electric current /ɪˌlektrɪk ˈkærənt/ noun** the mass movement of electric charge in a conductor.

**electricity /ɪˌlektrɪsəti/ noun** an electric current used to provide light, heat, power.

**electric power /ɪˌlektrɪk ˈpaʊər/ noun** electricity used to drive machines or devices.

**electro- /ɪˌlektrəʊ/ prefix** electricity.

**electrode /ɪˌlektrəʊd/ noun** a solid electrical conductor through which an electric current enters or leaves an electrolytic cell. A battery has a positive and a negative electrode.

**electrolyte /ɪˌlektrəlæt/ noun** a chemical compound that becomes conductive when dissolved or molten. The electrolyte in a lead-acid battery consists of sulphuric acid diluted with distilled water.

**electrolytic /ɪˌlektrəˈlɪtɪk/ adjective** or **electrolytic cell** a cell consisting of electrodes in an electrolyte solution.

**electro-magnet /ɪˌlektrəˈmægnt/ noun** a magnet consisting of a coil of insulated wire wrapped around a soft iron core that is magnetised only when current flows through the wire.

**electro-magnetism /ɪˌlektrəˈmægnətɪz(ə)ml/ noun** a force exerted by a magnetic field found around any conductor carrying current, the strength of which will depend on the amount of current flow.

**electromotive force /ˌlektrəˈmɔʊtɪv ˈfɔ:s/ noun** a source of electrical energy required to produce an electric current, produced by devices such as batteries or generators and measured in volts. Abbreviation **emf**.

**electron /ˌlektrəʊn/ noun** a sub-atomic particle that has a negative electrical charge. Electrons in the outer orbits of an atom may not be strongly attracted to the nucleus and may be lost.

**electronic /ˌlektrəˈnɪk/ adjective** referring to, based on, operated by, or involving the controlled conduction of electrons especially in a vacuum, gas, or semi-conducting material. Lightning does not often seriously damage aircraft but it may affect sensitive electronic equipment.

**electronic centralised aircraft monitor /ˌlektrəˈnɪkl ˌsɛntrəlɪzd ˈekskrɔnɪt, ˈmɔnɪtə/ noun** a display on two cathode ray tubes giving pilots engine and systems information. Abbreviation **ECAM**

**electronic flight instrument system /ˌlektrəˈnɪkl ˌflɪrt ˌɪnstəmənt ˌsɪstəm/ noun** primary flight and navigation information on a cathode ray tube. Abbreviation **EFIS**

**COMMENT:** The electronic flight instrument system can show basic flight information and engine performance information, as well as moving maps and checklists.
element  /ˈeləmənt/ noun 1. a substance composed of atoms with an identical number of protons in each nucleus. Elements cannot be reduced to simpler substances by normal chemical methods. 2. The resistance coil in an electrical device such as a heater.
elevate  /ˈeləvət/ verb to move something to a higher place or position from a lower one; to lift.
elevated  /ˈeləvətəd/ adjective elevated temperature increased or raised temperature.
elevation  /ˌeləvəˈʃən/ noun the height at which something is above a point of reference such as the ground or sea level. The highest point in a locality is marked by a dot with the elevation marked alongside. Aerodrome elevation distance in feet of the aerodrome above sea level.
elevator  /ˈeləvətər/ noun 1. a movable control surface, usually attached to the horizontal stabiliser of an aircraft, used to produce the nose up/down motion of an aircraft in level flight known as pitch.

COMMENT: Some aircraft have an all-moving tailplane called a ‘stabilator’ (a combination of the words stabiliser and elevator).

eliminate  /ɪˈlɪmɪneɪt/ verb to get rid of or remove. Air dryers are provided to eliminate the possibility of ice forming.

to eliminate the need for complex mechanical linkage, the selector is operated electrically.

to eliminate a danger to remove a danger.

eclipse  /ˈɛlkɪpɪs/ noun an oval-shaped line. Each planet moves in an ellipse and the sun is at one of the foci.

eccentric /ɪˈsɛntrɪk/ adjective having an oval shape.

electrical /ɪˈlektrɪkl/ adjective of or related to electricity.

ELR abbreviation 1. environmental lapse rate. 2. Extra Long Range (ICAO).

embarkation  /ˌembərˈkeɪʃən/ noun the act of going onto an aircraft. Embarkation will start in ten minutes.

(Note: Boarding is usually preferred.)

to embarkation time the time at which passengers will be asked to go onto the aircraft.

embed  /ɪmˈbed/ verb to fix firmly in a surrounding mass.

A temperature probe is embedded into the stator of the generator.

Water outlets have heater elements embedded in rubber seals in the outlet pipe.

emergency /ɪˈmɜːdʒənstri/ noun a serious situation that happens unexpectedly and demands immediate action to deal with or to handle an emergency.

Emergency descent A planned rapid losing of altitude because of a serious situation.

emergency equipment noun devices for use only in serious situations.

emergency exit /ɪˈmɜːdʒənstri ˈɛɡzɪt/ noun a way out only to be used in case of an emergency.

How many emergency exits are there in the aircraft?

emergency frequency /ɪˌmɜːdʒənstri ˈfriːkwənsi/ noun the frequency on which aeronautical emergency radio calls are made.

Emergency landing /ɪˌmɜːdʒənstri ˈlændɪŋ/ noun a landing made as a result of an in-flight emergency.

Emergency procedures plural noun a set of actions pre-planned and followed in the event of a serious situation.

Emergency services /ɪˌmɜːdʒənstri ˌsɜːvəsɪs/ plural noun the fire, ambulance and police services.

The alarm will activate the emergency services.

electromotive force /ɪˌlektrəˈmɒtɪv/ noun the ability of an electrochemical cell to cause an electric current to flow.

emission /ɪˈmɪʃən/ noun 1. the process of sending out e.g. matter, energy or signals.

light emissions
radio emission ○ One factor on which the operational range of a radio emission depends is the transmitted power.

2. a substance discharged into the air, as by an internal combustion engine ○ Exhaust emissions contain pollutants.

emit /ˈɪmɪt/ verb to send out e.g. matter, energy or radiation ○ radiation emitted by the sun ○ An X-ray tube emits radiation. ○ Latent heat is emitted when condensation takes place. ○ (NOTE: emitting – emitted)

empennage /ˈempəndʒ/ noun the tail assembly of an aircraft ○ The empennage usually includes the fin, rudder, horizontal stabiliser (or tail-plane), and elevator.

emphasis /ˈemfəsɪs/ noun force of expression that gives importance to something ○ It is only in recent years that much emphasis has been placed on determining the causes of metal fatigue.

emphasise /ˈemfəsaɪz/, emphasize verb to give importance to something ○ On some maps, different elevations are emphasised by colouring.

employ /ɪmˈplaɪ/ verb 1. to use ○ There are two methods employed to cool the cylinders down. ○ In some aircraft, particularly those employing nickel-cadmium batteries, temperature sensing devices are located within the batteries to provide a warning of high battery temperatures. 2. to give somebody regular paid work

empty weight /ˈempti wɛt/ the weight of a plane without fuel, people or freight

enable /ɪnˈeɪbl/ verb to make something possible or easier ○ Isolation valves are fitted to enable servicing and maintenance to be carried out.

enclose /ɪnˈkləʊz/ verb to surround on all sides ○ The housing encloses the various mechanical parts. ○ Fuses form a weak link in a circuit and are usually made of a strip of tinned copper enclosed in a glass tube.

encode /ɪnˈkəʊd/ verb to put into code ○ Weather information is encoded to allow large amounts of information to be given in a short space of time.

encounter /ɪnˈkaʊntər/ verb to meet something unexpected or unwanted ○ Severe icing can be encountered in wave cloud.

endurance /ɪnˈdjuərəns/ noun the length of time an aircraft can stay in the air without refuelling ○ The flight time to the PNR and back will equal the endurance of the aircraft.

energy /ˈenədʒi/ noun 1. the ability of a physical system to do work 2. power from electricity, petrol, heat, etc. ○ The engine converts heat energy into mechanical energy. ○ The generator converts mechanical energy into electrical energy.

engage /ɪnˈɡeɪdʒ/ verb 1. to switch on and use ○ The autopilot may be engaged during climb or descent. ○ Opposite disengage 2. ○ engaged in working on a particular job or task ○ Personnel engaged in ground running must ensure that any detachable clothing is securely fastened and they should wear acoustic ear muffs.

engine /ˈendʒɪn/ noun a machine that converts energy into mechanical force or motion, different from an electric or hydraulic motor because of its use of a fuel ○ jet engine ○ piston engine ○ internal combustion engine ○ combustion, jet, piston ○ engine-driven referring to equipment and devices which take their power from the engine when it is running ○ engine-driven generator ○ engine-driven pump ○ engine running engine operating or working ○ the engine is running the engine is working ○ The accident investigation demonstrated that the engine was running at full power when the aircraft hit the ground.

COMMENT: In British usage, there is a clear distinction between the terms 'engine' and 'motor', the term 'motor' only being used for electric power units. In American usage, however, 'motor' is used for all types of power unit including the internal-combustion engine.

engine block /ˈendʒɪn bλk/ noun a cylinder block with integral crankcase
engine capacity /'endʒɪn kæpəsitɪ/ noun the swept volume of an engine
engine compartment /'endʒɪn kɔmˈpərtmənt/ noun a space in the airframe where the engine is located
engineer /'endʒɪn ɪnˈgɪnɪər/ noun a person who is qualified to design, build and repair machines a aircraft engineer an engineer who specialises in the maintenance and repair of aircraft
engineering /'endʒɪn ɪnˈgɪnɪərɪŋ/ noun the use of scientific and mathematical principles for practical reasons such as the design, manufacture, and operation of machines and systems, etc. a aircraft engineering the branch of aviation concerned with the maintenance and repair of aircraft a Reinforced plastics or composites are being used in aircraft engineering instead of metals because they are much lighter.
engine failure /'endʒɪn fəˈlɑːr/ noun a situation in which an engine stops during running
engine indicating and crew alerting system /'endʒɪn ˈɪndɪkeɪtɪŋ ənd kruːl ˈæltrəntɪŋ sɪstəm/ noun full form of EICAS
engine instruments /'endʒɪn ɪnstrʊmənts/ plural noun instruments which give the pilot information about engine temperature, speed, etc.
engine intake /'endʒɪn ˈɪntekt/ noun the front part of the engine where air enters the engine
engine malfunction /'endʒɪn ˈmælənʃən/ noun a situation in which the engine does not work as it should
engine oil /'endʒɪn ˈɔɪl/ noun oil used especially to lubricate engines
engine performance /'endʒɪn ˈpərəməns/ noun a description of how well the engine works or detailed statistical information about the capabilities of the engine
enhance /ˈɛnˈhɑːns/ verb to make greater or better or clearer a Chances of survival are enhanced if passengers know where the emergency exits are. '…any automation must be designed to enhance the decision making abilities of the crew, not replace them' [INTER PILOT]
enhancement /ˈɛnhaʊnmənt/ noun the process of making greater, better or clearer a enhancement of an image on a screen the improvement of an image on a screen
enlarge /ˈɪnˈlaʊdʒ/ verb to make bigger or larger a enlarge the hole make the hole bigger
enplane /ˈɛnˈplɛn/ verb to board or allow somebody to board an aircraft en route /ˌen rʊt/ adverb, adjective on or along the way a en route from New York to London on the way from New York to London a en route alternate an airfield where it is possible to land if there is an in-flight problem a en route weather conditions a description of the weather along the path of flight ensure /ɪnˈʃʊr/ verb to make certain, to make sure a The generator cut-out ensures that the battery cannot discharge. a Before the engine is stopped, it should normally be allowed to run for a short period at idling speed, to ensure gradual cooling.
enter /ˈentər/ 1. to come or go into a Air enters at the front of the cabin and leaves at the rear. 2. to write down e.g. information a Enter the rectified airspeed in the log. a Enter your name in the correct place in the form. 3. to put data into a computer, especially by using the keyboard to type it in a Enter the data into the computer.
etire /ˈɪnˌtɜːr/ adjective whole, having no part excluded or left out a the entire life of a thunderstorm the complete life of a thunderstorm
entry /ˈentri/ noun 1. the act or instance of going in a the flow of traffic at entry points to the airfield. 2. the writing in of an item, as in a record or log a An entry should be made in the technical log.
entry point /ˈentri pɔɪnt/ noun a position on the ground above which an aircraft entering a control zone crosses the boundary
envelop /ɪnˈvɛlp/ verb to surround and cover a The atmosphere envelops the earth.
envelope /'envələp/ noun 1. the set of limitations within which a technological system, especially an aircraft, can perform safely and effectively. The boundaries of flight envelopes vary between aircraft categories and performance groups but in each case, there is a speed which must not be exceeded which is called the Vne (never-exceed speed). 2. a cover. The atmosphere is the gaseous envelope surrounding the earth.

environment /'envərəmənt/ noun 1. nearby conditions or circumstances. A body of air warmer than its environment will rise. 2. a non-computer environment. A computer-free working situation. 3. the natural world in which people, animals and plants live. People are interested in issues to do with the environment, such as global warming.

environmental /'envərəmənt(al)/ adjective referring to the immediate surroundings. Environmental conditions.

environmental control system /'envərəmənt(ə)l kən'trəul ,sistəm/ noun an air-conditioning system for the aircraft. Abbreviation ECS.

equilibrium /'kwɪljʊərəm/ noun a state of physical balance. When an aircraft is in unaccelerated straight and level flight at a constant speed, the forces of lift, thrust, weight and drag are in equilibrium.

equipment /'kwɪpmənt/ noun devices, systems, machines, etc., that are needed for a particular purpose. Equipment has no plural form; for one item say: a piece of equipment.

epoxy-based primer /ˌpɒksiˈbɑːzd/ noun a primer containing epoxy resin, a substance which, with the addition of hardeners, becomes very strong and hard after a time at normal temperatures.

equal /'iːkwəl/ adjective having the same quantity, measure, or value as another. For every action, there is an equal and opposite reaction. noun two plus two equals four (2 + 2 = 4).

equilibration /ˌiːkwɪlɪˈbreɪʃən/ noun the unit used for stating the total power of a turboprop engine, consisting of the shaft horsepower of the engine plus the thrust from the engine. Abbreviation ESHP.
error /'eər/ noun 1. a mistake or incorrect calculation o an error in somebody's work: errors caused by location
2. the known inaccuracy of an instrument or system which has to be corrected by calculating the true value
escape /'eskipt/ noun the act of getting away from or out of a place after being held o escape from danger getting to a safe place: verb to get away from or out of after being held o If there is a hole in the fuselage of a pressurised aircraft, air escapes from the cabin to the atmosphere.
escape hatch /'eskept ha:t/ noun a small doorway only used in emergencies
escape route /'eskip rüt/ noun the passengers' way out of an aircraft after an emergency landing
escape slide /'eskip slid/ noun a device which allows passengers to exit the aircraft safely in an emergency, when no steps are available
ESHIP abbreviation equivalent shaft horsepower
essential /'esensʃəl/ adjective absolutely necessary: Teamwork within the crew is essential. o A knowledge of the tropopause is essential. o non-essential not necessary
EST abbreviation 1. Eastern Standard Time 2. estimate (ICAO) 3. estimated (ICAO)
establish /'establɪʃ/ verb 1. to be confirmed as stable in a particular flight condition, such as a flight level or glideslope, etc.: o Once established on the downwind leg, the pilot should perform the checks. 2. to work out or to calculate o establish your position find out where you are 3. to position o Low-power NDBs (Non-Directional Radio Beacons) are often established at the outer or middle marker sites. 4. to establish communication to make contact with o to establish control to get control
estimate /'esmirət/ verb 1. to calculate approximately the cost, value or size of something o I estimate that it will take about two hours for us to reach our destination. o Cloud heights may be measured or estimated. 2. to form a judgement about o to estimate the chances of something to weigh the possibilities and form an opinion
estimated take-off time /'estimət təkəf taim/ noun the time when an aircraft is expected to take off. Abbreviation ETOT
estimated time of arrival /'estimət taim òəˈriəl/ noun the time when an aircraft is expected to arrive. Abbreviation ETA
estimated time of departure /'estimət taim òəˈpərətʃ/ noun the time when an aircraft is expected to take off. Abbreviation ETD
estimation /'estiməʃən/ noun 1. an approximate calculation o an estimation of ground speed o Estimation of visibility is achieved by noting the distances at which lights of known candle power can be observed and relating these distances to visibility-by-day values. 2. an opinion o my estimation in my opinion
ETA abbreviation estimated time of arrival
ETD abbreviation estimated time of departure
ETOT abbreviation estimated take-off time
Eurocontrol /juəˈrəʊkən, traʊl/ noun the European organisation for the safety of air navigation (NOTE: Eurocontrol operates the ATC centre at Maastricht in the Netherlands and the Central Flow Management Unit in Brussels.)
European Geostationary Navigation Overlay Service /jʊərɪəˈstæʃən, dʒiˈɒstətʃən òʊəˈverəl, ˈsɜːvɪs/ noun full form of EGNOS
evacuate /i:vəˈkju:ət/ verb 1. to remove all the people from somewhere in the event of an emergency o to evacuate all passengers from the airport 2. to empty somewhere of all people in it because of an emergency o to evacuate the aircraft 3. to create a vacuum
evacuate a glass jar remove all the air from a glass jar

evacuation /ˈevəkeɪʃən/ noun
1. the act of removing all people from somewhere in the event of an emergency ○ The evacuation of the passengers from the airport was not ordered.
2. an act of emptying somewhere of all people in it because of an emergency ○ The evacuation of the aircraft did not take long. ○ evacuation command an evacuation order from the captain ○ ditching evacuation an evacuation after the aircraft has force-landed on water

evaluate /ɪˈvəluːt/ verb to examine and judge carefully ○ Deposits of ice are detected and continuously evaluated to operate a warning system.

evaluation /ɪˌvəluˈeɪʃən/ noun
1. the examination and judgement of something ○ The ice detector system provides continuous evaluation of conditions conducive to the formation of ice.
2. the changing of a liquid into vapour, vaporisation ○ Carburettor icing can be caused by the expansion of gases in the carburettor and the evaporation of liquid fuel.
evaporate /ɪˈvəpərət/ verb to convert or change a liquid into a vapour ○ In the heat of the day, water evaporates from the surface of the earth. Opposite condense

evaporation /ɪˌvəpəˈreɪʃən/ noun
1. the changing of a liquid into vapour, vaporisation ○ Carburettor icing can be caused by the expansion of gases in the carburettor and the evaporation of liquid fuel.
even /ˈiːvən/ adjective
1. flat or smooth, with no bumps or dents ○ The same in all parts of an area or over a whole surface ○ an even distribution of passengers ○ an even application of paint ○ even numbers exactly divisible by 2, e.g. 4, 6, 20 ○ even faster not just as fast as, but more ○ Stop at the holding point even if there are no other aircraft on the approach. ○ even though in spite of the fact that ○ He gained his private pilot’s licence even though he was 73 years old.
event /ɪˈvent/ noun a happening ○ The Paris air show is a major event. ○ in the event of if something should happen ○ Passengers should fasten their seat belts in the event of turbulence. ○ in the event of main pump failure if there should be a failure of the main pump ○ in the event of fire if there should be a fire

eventual /ɪˈventjuːl/ adjective happening at an unspecified time in the future ○ Water in the fuel may lead to eventual engine stoppage.
eventually /ɪˈventjuːli/ adverb at an unspecified time in the future ○ Vapour cools and eventually condenses.
evidence /ˈevɪdəns/ noun an outward sign ○ external evidence of cracks something which can be seen on the surface which suggests that there is a deeper structural problem ○ Deformed wing panels may be evidence of an over-stressed airframe.
evident /ˈvidənt/ adjective obvious, easily seen or understood ○ It is evident from the information available that language problems played a part in the cause of the accident. ○ self-evident clear in itself, without further explanation

exact /ækˈsækt/ adjective completely accurate or correct ○ The exact fuel flow and pressure is adjusted. ○ the calculation is not exact the calculation is not 100% correct

exactly /ækˈsæktli/ adverb
1. accurately, correctly ○ Measure the quantity exactly. ○ 2. absolutely, completely ○ A fuel injection system performs exactly the same function as a carburettor.
examination /ˌɛkzəmɪˈneɪʃən/ noun
1. a set of questions or exercises testing knowledge or skill ○ The examination includes a flight plan. ○ 2. medical examination medical check-up ○ a careful observation or inspection ○ the examination of a faulty component

‘...the pilot of a Grumman Cheetah refused to be breathalysed, and was taken to a police station for examination by a police surgeon, who confirmed that he had been drinking’ [Pilot]
1. examine /ig'zeimn/ verb 1. to find out how much knowledge or skill somebody possesses by means of questions or exercises ○ Students will be examined in four subjects. 2. to test or check the condition or health of somebody ○ to examine a patient 3. to study or analyse something ○ to examine charts

2. exceed /ik'skid/ verb to be greater than ○ Vertical velocity of updraughts can exceed 50 kt.

3. exceptional /ik'sepʃən/ adjective 1. being an exception, uncommon ○ in exceptional circumstances in unusual circumstances 2. well above average, extraordinary ○ an exceptional pilot a very good pilot

4. excess /ik'ses/ noun an amount or quantity beyond what is normal or sufficient ○ excess power the difference between horsepower available and horsepower required ○ in excess of more than ○ a height in excess of 50,000 feet a height greater than 50,000 feet

5. exhaust /ig'zɔst/ noun 1. the escape or release of vaporous waste material from an engine 2. a pipe through which waste gases pass out of the engine ○ The exhaust valve opens to allow for the exit of exhaust gases. ○ verb to consume or use up all of something ○ Supplies of fuel are exhausted. (Note: To run out is less formal.)

6. exciter /ik'saitə/ noun the source of a small current to supply electrical current to the windings of larger electrical motors, etc., e.g. a battery ○ Pilot excitation consists of a pilot exciter and a main exciter, to provide the direct current for the motor of the alternating current generator.

7. exercise /eksəsaiz/ noun an activity that requires physical or mental effort or practice ○ a classroom exercise ○ Swimming is good physical exercise for people such as pilots who spend a lot of time sitting down. ○ verb to use or to put into play or operation ○ Student pilots must exercise special care when landing in a strong crosswind.

8. examine /ig'ziːmən/ verb to find out how much knowledge or skill somebody possesses by means of questions or exercises ○ Students will be examined in four subjects.

9. excess baggage /ekses 'bægɪdʒ/ noun an amount, usually expressed as weight, of baggage which exceeds the airline’s limit per passenger.

10. excessive /ik'sesəs/ adjective more than the normal, usual, reasonable, or proper limit ○ Excessive use of power when taxiing will require excessive use of brakes.

11. exchange /iks'tʃendʒ/ verb to give in return for something received ○ Meteorological stations exchange information with other meteorological stations.

12. excitation /ek'steiʃən/ noun the act of supplying a small current to the windings of larger electrical motors, etc. ○ Pilot excitation consists of a pilot exciter and a main exciter, to provide the direct current for the motor of the alternating current generator.
dangerous condition.

exist /ɪɡˈzɪst/ verb to be present under particular circumstances or in a specified place. Water can exist in the atmosphere in three forms. A fire risk may exist following failure or leakage of any component.

existence /ɪɡˈzɪstəns/ noun the fact or state of being. Warning systems are provided to give an indication of a possible failure or the existence of a dangerous condition.

exit /ˈeɡzɪt/ noun 1. the act of going out of a place. The exhaust valve opens to allow for the exit of exhaust gases. 2. exit velocity the velocity of exhaust gases from a jet engine.

exit nozzle /ˈekstəˌnəʊzl/ noun a pipe or opening through which exhaust gases leave a jet engine.

exit point /ˈekstəˌpɔɪnt/ noun a position on the ground above which an aircraft leaving a control zone crosses the boundary.

expand /ɪkˈspænd/ verb to increase in size, volume or quantity, to enlarge. Air expands when heated and contracts when cooled.

expansion /ɪkˈspɛnʃən/ noun an increase in size, volume or quantity. There is an expansion of the gas when it is heated.

expansion chamber /ɪkˈspɛnʃən ˈtʃeɪmər/ noun a container which allows for expansion of a fluid caused by increase in temperature, etc.

expect /ɪkˈspekt/ verb to hope or to assume that something is going to happen. The weather to be expected along a route. We expect flight AC 309 within ten minutes. As might be expected as people think would happen.

‘...by 1959 there were some 40 pilots past age 60 flying the line with the number expected to rise to 250 within the next few years’ [INTER PILOT].

expected /ɪkˈspektid/ adjective being thought or hoped to be taking place of the expected number of passengers.

expected approach time /ˌɛkˈspɛktɪŋ əˈprəʊtʃ tʌm/ the time at which air traffic control expects an arriving aircraft to complete its approach for landing, following a delay. Abbreviation EAT.

expedite /ˌɛkspɪdɪt/ verb to speed up the progress of. To expedite the evacuation to speed up the evacuation. To expedite the disembarkation to get the passengers off the aircraft quickly.

expel /ɪkˈspɛl/ verb to force out, to drive out. Exhaust gases are expelled from the cylinder by the upward movement of the piston. The piston draws fluid into the cylinders on the outward stroke and expels fluid into the system on the inward stroke.

experience /ɪkˈspɛriəns/ noun 1. the building up of knowledge or skill over a period of time by an active participation in events or activities. A pilot with 20 years’ experience. 2. an event or incident. The first solo is an experience most pilots never forget.

experiment noun /ɪkˈspɛrɪmɛnt/ a scientific test, carried out under controlled conditions, that is made to demonstrate or discover something. Experiments have shown that left-handed people often have better hand-eye coordination than right-handed people.

to conduct an experiment to perform an experiment. To experiment with to carry out a scientific test under controlled conditions in order to demonstrate or discover something.

experimental /ɪkˈspɛrɪmɛnt(ə)l/ adjective referring to something still at an early stage of development, not tried and tested. An experimental aircraft an aircraft designed to be used for experimental
purposes ○ The experimental aircraft were used to investigate high-speed flight.

explanatory /Ik'spleunati/ adjective referring to something which explains ○ explanatory paragraph a paragraph of text which explains something ○ self-explanatory something which does not need any further explanation

explanation /Ik'spleunʃan/ noun 1. a release of energy in a sudden and often violent way ○ an explosion caused by a bomb 2. an act of bursting as a result of internal pressure ○ tyre explosion due to overheating 3. the loud sound made as a result of an explosion ○ The passengers heard an explosion.

explosive /Ik'spleusiv/ adjective referring to something having the nature of an explosion ○ an explosive effect having the effect of an explosion 1 noun a substance, especially a prepared chemical, that explodes or causes explosions, e.g. Semtex

expose /Ik'spres/ verb to uncover something or leave something uncovered so that it is not protected from something or leave something uncovered ○ exposed surface a surface without paint or covering of any sort

exposure /Ik'spresəu/ noun 1. the fact of being exposed, especially to severe weather or other forces of nature ○ After 24 hours in the sea, she was suffering from the effects of exposure and was taken to hospital. 2. the fact of being subjected to something ○ Exposure to radio-active substances may cause cancer.

express /Ik'spres/ verb to put into words, symbols or signs ○ Bearings may be expressed as true or relative. ○ An angle may be expressed in degrees, minutes and seconds. ○ Pressure altitudes are expressed in hundreds of feet.

extend /Ik'stend/ verb to stretch or spread from one point to another in space or time ○ Air from the Gulf of Mexico can extend into Canada. ○ Cumulonimbus clouds may extend to over 50,000 ft. ○ to extend the duration of something to prolong the time ○ The visit was extended to allow time for more discussions.

extensive /Ik'stensiv/ adjective large in range or amount ○ an extensive area a large area ○ extensive cloud a lot of cloud ○ extensive use is made of much use is made of

extent /Ik'stent/ noun a range or amount of something ○ The horizontal extent of the cloud averages about 50 km. ○ Clouds of great vertical extent are not uncommon ○ to a certain extent, to some extent partly ○ The accident was caused, to a certain extent, by the poor weather. ○ to a lesser extent not as much as something previously stated ○ The cloud types which are most likely to affect flying conditions in terms of icing, precipitation and turbulence are cumulus, cumulonimbus and, to a lesser extent, nimbostratus.

external /Ik'stektən/ adjective referring to, existing on, or connected with the outside or an outer part ○ The only external force acting on air is gravity. Opposite internal ○ external appearance the appearance of something from the outside

external ambient pressure /Ik'stektərnəmbiənt/ noun 1. pressure outside the aircraft ○ The fire services extinguished the fire.

extinguish /Ik'stɛŋkwıʃ/ verb to put out ○ The fire services extinguished the fire.

extinguisher /Ik'stɛŋkwıʃə/ noun a portable mechanical device for spraying and putting out a fire with chemicals ○ Hand-operated fire extinguishers are provided to combat any outbreaks of fire in the flight crew compartment and passengers' cabins.

extract noun /Ik'strɪkt/ a part taken from a longer text ○ The following paragraph is an extract from a flight manual. ○ verb /Ik'strɪkt/ 1. to obtain from a substance by chemical or mechanical action ○ A dehumidifier extracts moisture from the atmosphere, 2. to take out or to obtain information from some-
thing ○ Extract the important information from a text.

extrapolate /ɪkˈstræpəleɪt/ verb to estimate by using known facts ○ Information given on a synoptic chart can be extrapolated, by the use of some simple guidelines.

extreme /ɪkˈstrɪm/ adjective 1. most distant in any direction, the outermost or farthest ○ the most extreme point on the map 2. to the greatest or highest degree, very great ○ extreme care must be taken the greatest care must be taken ○ extreme difficulty great difficulty ○ noun either of the two things, values, situations, etc., situated at opposite ends of a range ○ the extremes of boiling and freezing ○ The region experiences extremes of temperature.

eye /aɪ/ noun an organ in the head which lets you see. ○ coordination, vision
Fahrenheit 2. farad
Federal Aviation Administration fabric /ˈfæbrɪk/ noun material or cloth produced especially by knitting or weaving. A breathing mask has a fabric carrying bag.
fabricate /ˈfæktrɪt/ verb to make or manufacture. Selected wing panels are fabricated entirely from magnesium alloys. The ease with which aluminium can be fabricated into any form is one of its most important qualities.
fabricate /ˈfæktrɪt/ verb to make or manufacture. Selected wing panels are fabricated entirely from magnesium alloys. The ease with which aluminium can be fabricated into any form is one of its most important qualities.
face /feɪs/ noun 1. the surface of an object. The face of the earth. The exhaust cone prevents the hot gases from flowing across the rear face of the turbine disc. 2. the front part with dial, indicators, etc. The face of an instrument. 3. the front part of the clock with numbers. The face of a clock. 4. the front of the head, including the eyes, nose, mouth. A full face smoke mask. A protective mask for fighting fires which covers the whole face. 5. the face of a clock. The building faces north. The building has its front towards the north.
facilitate /ˈfæsɪtɪteɪt/ verb to enable something to happen more easily or quickly. A ramp is used to facilitate access to the wing. Clearly marked exits facilitate rapid evacuation of passengers.
facilitate /ˈfæsɪtɪteɪt/ verb to enable something to happen more easily or quickly. A ramp is used to facilitate access to the wing. Clearly marked exits facilitate rapid evacuation of passengers.
facsimile /ˈfæksɪmɪl/ noun same as fax.
fact /fækt/ noun information presented as real. Temperature changes are an important fact in meteorology. In (point of) fact in reality, in truth.
factor /ˈfæktaɪr/ noun 1. an important part of a result, a process, etc. Visibility remains a very important factor in aviation. 2. by a factor of quantity by which a stated quantity is multiplied or divided, so as to indicate an increase or decrease in a measurement. By a factor of ten ten times. The rate is increased by a factor of ten. 3. conversion factor a formula or figure used for conversion of temperatures, distances, etc., from one system to another. The conversion factor for converting UK gallons to litres is: x 4.546.
fade /feɪd/ noun  1. a periodic reduction in the received strength of a radio transmission.  2. a periodic reduction in braking power.  3. braking can cause fade and tyre burst through overheating.

Failure /feɪl/ verb  1. to stop working properly.  2. the brakes failed.  3. the wing failed during a high-speed turn.

Fail safe /feɪl seɪf/ noun the principle of designing a structure so that the failure of one part does not affect the safety of the whole.

Fail safe system /feɪl seɪf ˈsɪstəm/ noun a system or device which has inbuilt safeguards against total failure.

Failure /feɪljuər/ noun  1. a stoppage or a breakdown.  2. bearing failure.

Failure to do something noun  1. the failure of an experiment.  2. the failure to do something.

Fair /feər/ adjective  1. free of clouds or storms.  2. good weather.

Fair weather /ˈfeər ˈweðər/ noun  1. free of clouds or storms.  2. good weather.

Fairly /ˈfeəli/ adverb moderately, rather, quite.

Fairly high levels /ˈfeəli ˈhaɪ ˈli:vz/ noun moderately high levels.

False /feɪls/ adjective not true, incorrect.

False glide path information /ˈfeɪls ɡlaɪd ˈpeθ ˈɪnformaʃən/ noun incorrect glide path information.
familiar /ˈfæmɪliər/ adjective 1. often seen, common ○ Clouds are the most familiar visible meteorological feature. 2. known ○ Symbols and abbreviations which are strange at present become familiar after a time. ○ to be familiar with to have some knowledge of something ○ He is familiar with the procedure.
familiarise /ˈfæmɪliəraɪz/, familiarize verb ○ to familiarise yourself with to get to know something well
fan /fæn/ noun a circular device with rotating blades, powered by an engine or motor, for moving a gas such as air ○ The compressor has large rotating fan blades and stator blades.
fanjet /ˈtɜːrboʊfæn/ noun US same as turbofan
FANS abbreviation future air navigation systems
FAR abbreviation US Federal Aviation Regulation
farad /ˈfærəd/ noun the SI unit of capacitance. Symbol F
fasten /ˈfæstən/ verb to secure or to close, as by fixing firmly in place ○ fasten your seat belt put on and attach your seat belt ○ If in-flight conditions require the captain to activate the fasten seat belt sign, all cabin service ceases and cabin crew take up their assigned seats and strap in.
fatigue /ˈfætɪdʒ/ noun 1. physical or mental tiredness resulting from exertion ○ Pilot fatigue was a contributing factor in the accident. 2. the weakening or failure of a material such as metal, resulting from stress ○ Fan blades must be resistant to fatigue and thermal shock. ○ Titanium has good fatigue resistance. ○ fatigue crack crack due to material fatigue
fault /fɔːlt/ noun a defect in a circuit or wiring caused by bad connections, etc. ○ A fault in the automatic boost control unit was repaired.
faulty /ˈfɔːlti/ adjective containing a fault or defect, imperfect ○ The faulty component was replaced.
fax /fæks/ noun 1. an exact copy of a document, drawing, etc., transmitted and received by a fax machine connected to a telephone link 2. an electronic apparatus linked to a telephone used to send and receive a fax ○ Charts are transmitted by fax to meteorological offices. ○ CAMFAX • verb to send a fax ○ Charts are faxed to meteorological offices.
FDPS abbreviation flight data processing system
FDR abbreviation flight data recorder
FDS abbreviation flight director system
feather /ˈfeðər/ verb ○ to feather a propeller to turn the blades of a stopped propeller edge on to the airflow in order to reduce drag or wind resistance ○ The feathered position not only reduces drag, but also minimises engine rotation, thus preventing any additional damage to the engine.
feathering /ˈfeðərɪŋ/ noun the act of turning the blades of a stopped propeller edge on to the airflow in order to reduce drag ○ Feathering is accomplished by moving the pilot's control lever.
feathering gate /ˈfeðərɪŋ ɡet/ noun a device on the propeller pitch control to prevent unwanted selection of the feathering position
feathering position /ˈfeðərɪŋ pɑːs/#noun a position of the propeller pitch control in which the blades are feathered
feature /ˈfɪtʃ/ noun 1. an important, noticeable or distinctive aspect, quality, or characteristic ○ Sea breeze is a regular feature of coastal climates. 2. ○ ground features noticeable, important objects in the landscape which are useful aids to navigation, e.g. bridges, rivers, railway lines, etc. ○ verb to have as a particular characteristic ○ Many Rutan designs feature a canard wing.
Federal Aviation Administration /ˌfɛdəral ˈɛrɪvəʃən /noun the body responsible for the regulation of aviation in the United States ○ The FAA issues licenses. Abbreviation FAA
Federal Aviation Regulation /ˌfɛdəral ˈɛrɪvəʃən ,rɛɡjʊ
frequency is sent back to the CSDU.

feedback signal of the monitored output

glass.

film is sandwiched between the layers of

from solid matter or to remove

passed in order to separate the fluid

device through which a liquid or a gas is

energy, etc. provided for use

arithmetic, accounting, etc. calculations

fighter

calculations

the area in which something can be seen without moving the head or the

eyes

fighter verb to make a delivery of

an aircraft by flying it to its operator

fibre noun a natural or synthetic filament like cotton or nylon

(FOR: The US English is fiber.)

FIC abbreviation flight information centre

field noun 1. an area of grass on farmland, in the countryside

In the event of a power failure, it is important to select the most suitable field for a

forced landing. 2. an imaginary area

field of vision noun the area in which something can be seen without moving the head or the

fighter noun small, single-seat or two-seat aircraft for use in military conflict. The F16 is an American-built fighter.

figure noun 1. a diagram or drawing. Figure 1 shows a cross-section of an internal combustion engine.

2. a number, especially in mathematical calculations: a head for figures good at figures, arithmetic, accounting, etc. a two-figure code a code with two numbers between 0 and 9. 3. a form consisting of any combination of points or lines, e.g. a triangle

film noun 1. a thin skin or layer

An electrical element made of gold film is sandwiched between the layers of glass. 2. a thin covering or coating

There is a film of oil between the piston and cylinder wall.

filter noun 1. a material or device through which a liquid or a gas is passed in order to separate the fluid from solid matter or to remove unwanted substances. a fuel filter, oil filter 2. an electric, electronic, acoustic, or optical device used to reject signals, vibrations, or radiations of particular frequencies while passing others. The tuner is a band pass filter which confines the bandwidth passed to the receiver to that required. a verb to pass a liquid or gas through a filter in order to remove unwanted substances. Fuel is filtered before entering the carburettor.

filter cartridge noun same as filter element

filter element noun a removable paper or metal component in a filter housing which must be replaced periodically. From time to time the filter element must be removed and cleaned or replaced. Also called filter cartridge

fin noun a fixed vertical aerofoil at the rear of a plane, the vertical stabiliser. The fin provides directional stability about the vertical axis. Also called vertical stabiliser

final noun the end part of a series or process. The final assembly is the last stage of an aircraft’s construction. When all the pre-assembled parts are put together.

final approach noun a flight path in a direction along the extended centre line of the runway on which a plane is about to land. The aspect of the runway on final approach helps the pilot to judge height and progress.

fine noun 1. of superior quality, skill, or appearance. a fine day a day when the weather is good. a fine weather good weather, very small in size, thickness or weight. Cirrus cloud has a fine, hair-like appearance. a fine powder powder consisting of very small particles. a fine spray a spray consisting of very small drops of liquid. a fine wire very thin wire referring to the pitch or blade angle setting of the
propeller ○ Fine pitch enables full engine speed to be used on take-off and coarse pitch allows an economical engine speed to be used for cruising.

**FIR** abbreviation flight information region

**fire** /faɪər/ noun an area of burning ○ To guard against the risk of fire, passengers are requested not to smoke in the toilets. ○ an engine fire a fire in an engine ○ verb to shoot a gun, or to launch something such as a flare or a rocket

**fire deluge system** /ˌfaɪər ˈdeljʊdʒɪs/ noun a system which extinguishes fire by spraying large quantities of water on it ○ A lever actuates the fire deluge system.

**fire detection system** /ˌfaɪər dɪˈteɪʃən sɪstəm/ noun a system to detect the presence of fire in an aircraft

**fire extinguisher** /ˌfaɪər ɪˈkstɪŋgwɪʃər/ noun a portable device full of foam, water, powder, etc., for putting out fires

**fireproof** /ˌfaɪərpruːf/ adjective designed to resist the effect of fire ○ A fireproof bulkhead is provided to separate the cool area of the engine from the hot area.

**fire triangle** /ˌfaɪər ˈtriːəŋɡəl/ noun the illustration of the chemistry of fire as the three sides of a triangle representing fuel, oxygen and heat ○ If fuel, oxygen or heat is removed from the fire triangle, combustion will cease.

**first aid kit** /ˈfaɪst əˈɛd ,kɪt/ noun a small pack containing plasters, bandages, antiseptic cream, etc., to be used in case of an emergency

**first officer** /ˈfaɪst əˈfɪssər/ noun the officer who is second-in-command to the captain of an aircraft

**FIS** abbreviation flight information service

**flishtail** /ˈflɪʃteɪl/ verb to move the tail of an aircraft from side to side as a way of reducing speed

**FISO** abbreviation flight information service operator

**fit** /fɪt/ adjective in good physical condition, healthy ○ Keep fit with diet and exercise. ○ noun the exactness with which surfaces are adjusted to each other in a machine ○ There should be a loose fit between the cylinder and the piston, the difference being taken up by the piston rings. ○ verb 1. to be the correct size and shape for ○ Oxygen masks should fit the wearer properly. 2. to put on or attach ○ Wheel fairings, called spats, are fitted to some light aircraft to reduce drag. (NOTE: fitting – fitted)

**fitment** /ˈfɪtmənt/ noun an act of attaching or fixing ○ Attachment points are supplied for the fitment of heavy equipment.

**fitness** /ˈfɪtnəs/ noun the state or condition of being physically fit, especially as the result of exercise and proper eating habits ○ The age and physical fitness of some passengers can be a limiting factor in an evacuation. ○ fitness to fly description of the physical or mental capabilities a person needs to fly an aircraft

**fixed-wing** /ˈfɪksɪ st ˌwɪŋ/ adjective referring to an aircraft that has wings that do not move, rather than rotor blades

**FL** abbreviation flight level

**flag** /flæɡ/ noun 1. a usually square or rectangular piece of cloth with a symbolic design or colour ○ Flags are flown from the signal mast. 2. a small visual warning or indicating device on the face of an instrument ○ There is a warning flag on the instrument if there is a problem.

**flame** /fleɪm/ noun the usually yellow area of burning gases seen when something is burning ○ Flames were seen coming from number 2 engine.

**flame arrester** /ˈfleɪm əˈrɛstər/ noun a device to prevent flame from an external source from entering a fuel tank

**flame out** /ˈfleɪm aʊt/ verb to cease from some cause other than the shutting off of fuel ○ Air in the fuel line can cause an engine to flame out or stop.

**flame-out** /ˈfleɪm aʊt/ noun the ceasing of combustion in a gas turbine engine from some cause other than the shutting off of fuel (NOTE: The word is also written flameout.)
flamable /ˈflɛməb(ə)l/ adjective easily ignited and capable of burning fiercely and rapidly, and therefore hazardous. ▪ Aviation gasoline is a flammable liquid. (NOTE: Flammable and inflammable mean the same thing.)

flange /flændʒ/ noun the outside edge or rim of a part such as a beam or wheel. ▪ The web connects the upper and lower flanges of a beam.

flap /flæp/ noun a movable control surface on the trailing edge of an aircraft wing, used primarily to increase lift and drag during final approach and landing. ▪ Flaps should be retracted immediately after landing to decrease lift and therefore increase brake effectiveness. ▪ cowl

COMMENT: Flaps are not usually used for take-offs in light aircraft except when a short take-off run is required. Flaps are not primary control surfaces of an aircraft.

flare /flɛr/ noun 1. a stage of the flight immediately before touchdown when the nose of the aircraft is raised into the air. The approach, flare and landing can be carried out by automatic systems. 2. a small rocket-like device with a bright light, for attracting attention.

flash /flæʃ/ noun giving off light in sudden or periodic bursts. ▪ Lightning is accompanied by a brilliant flash. ▪ Loss of vision may occur due to lightning flashes especially at night. ▪ verb 1. to give off light in regular bursts ▪ warning lights flash warning lights go on and off rapidly. 2. to appear or to happen suddenly. ▪ The image flashed onto the screen.

flash point /ˈflæʃ pɔɪnt/ noun temperature at which fuel vapour or oil vapour will burst into flame.

flat /flæt/ adjective 1. having a horizontal surface without a slope, tilt or curvature. ▪ It has been shown that the flat chart misrepresents the globe-shaped earth. ▪ flat country country with no hills or mountains. 2. having no air inside. ▪ The flat tyre had to be changed because it had a puncture. 3. electrically discharged or with no electrical charge left in it. ▪ The engine wouldn’t start because the battery was flat.

flight /flɪt/ noun 1. the motion of an object in or through the Earth’s atmosphere or through space. 2. the distance covered by a body, e.g. an aircraft, as it flies through the atmosphere. ▪ The flight from London to Paris took 55 minutes. 3. a scheduled airline journey. ▪ passengers for flight GF 008 to Amman should proceed to gate number 4.

flight attendant /ˈflɪtə tɛndənt/ noun a member of the flight crew who looks after passengers, serves food, etc. ▪ If you need something, press the call button and a cabin attendant will
flight bag /ˈflaɪt bæɡ/ noun a bag used by flight crew to carry manuals, documents, headset, etc.

flight-briefing room /ˈflaɪt briːfɪŋ rʊm/ noun a room where instructors talk to trainees immediately before a training flight or where a pilot talks to his or her crew immediately before boarding the aircraft.

flight crew /ˈflaɪt kruː/ noun airline staff responsible for flying the aircraft.

flight data recorder /ˈflaɪt dɪˈtɑːr kɔːrdər/ noun an electronic device located in the tail section of an aircraft that picks up and stores data about a flight. Abbreviation FDR. Also called black box (NOTE: It is often called the black box, although it is not black.)

flight deck /ˈflaɪt dɛk/ noun a place where the flight crew of an airliner sit while flying the aircraft.

flight deck instruments plural noun instruments used by the flight crew when flying an aircraft.

flight engineer /ˈflaɪt ɪnˈdʒɪnɪər/ noun the member of the crew of a plane who is responsible for checking that its systems, including the engines, perform properly.

flight envelope /ˈflaɪt ɪnˈvɛlp/ noun same as envelope.

flight information region /ˈflaɪt ɪnˈfərənʃ(ə)rɪzn/ noun airspace with defined limits which has an air traffic control information and alerting service. Abbreviation FIR.

flight level /ˈflaɪt ˈlevəl/ noun 1. the level of constant atmospheric pressure related to a reference datum of 1013.25 mb. ○ FL 250 = 25,000 ft. Abbreviation FL 2. the height at which a particular aircraft is allowed to fly at a particular time.

flight line /ˈflaɪt lайн/ noun the area of an airfield, especially a military airfield, where aircraft are parked, serviced, and loaded or unloaded.


flight operations /ˈflaɪt ˌɒpərəˈteɪʃənz/ plural noun the use of aircraft.

flight path /ˈflaɪt pɑθ/ noun a line, course or track along which an aircraft flies.

flight plan /ˈflaɪt plæn/ noun a written statement that gives details of the flight that a pilot intends to make.

flight progress strip /ˈflaɪt ˈprəsərˌstrɪp/ a thin cardboard strip with information on it about a flight, which is updated by air traffic controllers as the flight progresses.

flight simulator /ˈflaɪt ˈsɪmjuˈletər/ noun a device or computer program which allows a user to pilot an aircraft, showing a realistic control panel and moving scenes, used as training programme.

flight-test /ˈflaɪt tɛst/ verb to test the performance of an aircraft or component in flight.

float /ˈfləʊt/ noun 1. a floating ball attached to a lever to regulate the level of a liquid in a tank, etc. ○ float-operated switch a shut-off valve operated by a float. 2. a hollow structure fixed below an aircraft that allows it to float on water. Also called pontoon. ○ verb to remain on the surface of a fluid without sinking. Because of the air-tight nature of the fuselage, most large aircraft will float for some time before sinking.

float chamber /ˈfləʊt tʃɛmbər/ noun the part of a carburettor which houses the float.

floatplane /ˈfləʊtpleɪn/ noun a seaplane that has hollow structures attached underneath its wings and sometimes its fuselage on which it floats so that the main body of the plane is not in contact with the water. Compare flying boat.

flow /ˈfləʊ/ verb 1. to move or run smoothly with continuity, as a fluid. ○ Air flows over the wing surfaces and lift is produced. 2. to circulate. Liquid coolant flows around the engine. ○ noun continuous movement in a particular direction. The flow of fuel from the fuel tanks to the engines.
flowmeter /ˈflɔʊmətər/ noun a device for measuring the flow of a liquid or gas.

fluid /ˈfluɪd/ noun a substance which is not solid, whose molecules move freely past one another and that takes the shape of its container. de-icing fluid a liquid for removing ice.

fluorescent /ˈflɔːrəs(ə)nt/ adjective referring to the emission of electromagnetic radiation of visible light. The fluorescent penetrant process of flaw detection uses a penetrant containing a fluorescent dye which fluoresces in ultra-violet light.

fly /flai/ verb to move through the air or to cause an aircraft to move through the air in a controlled manner. An airplane may not fly over a city below such a height as would allow it to alight in the event of an engine failure. He’s learning to fly. (NOTE: flying – flew – flown) to fly in formation to fly as a group which maintains a particular pattern or arrangement in the air.

fly-by-wire /ˈflai baiˌwaɪər/ noun technology which interprets movements of the pilot’s controls and, with the aid of computerised electronics, moves the control surfaces accordingly. Using fly-by-wire technology, the stalling angle cannot be exceeded regardless of stick input. The more reliable and quick fly-by-wire system allows a much greater degree of flexibility with aircraft stability.

focal point /ˈfɔʊkəl pɔɪnt/ noun the point at which rays of light or other radiation converge. The focus of a lens is also called the focal point. (NOTE: The plural form is foci. to come into focus to become clearer as through the viewfinder of a camera (verb 1). to make things such as light rays converge on a central point. A parabolic reflector focuses the transmission into a narrow beam. 2. to give an object or image a clear outline or detail by adjustment of an optical device. Focus the microscope in order to make the image easier to see. 3. to direct toward a particular point or purpose. The crew focused all their attention on finding a solution to the problem.

flying /ˈflɛɪŋ/ noun the act of making an aircraft move through the air in a controlled manner.

flying boat /ˈflɛɪŋ bɔːt/ noun a seaplane with a body that acts like a boat’s hull and allows the plane to float on water. Compare floatplane.
force /fɔːs/ noun 1. the capacity to do work or cause physical change ∙ the force of an explosion 2. power used against a resistance ∙ In small aerobatic aircraft, considerable force is needed on the control column when performing high-speed manoeuvres. 3. a vector quantity that produces an acceleration of a body in the direction of its application (NOTE: We say centrifugal force, but the force of gravity) ∙ the force of gravity the natural force of attraction which pulls bodies towards each other and which pulls objects on Earth towards its centre ∙ verb 1. to use power against resistance ∙ Because of distortion to the airframe, the pilot had to force the door open in order to exit the aircraft. 2. ∙ to force someone to do something to use physical or psychological power to make somebody do something they otherwise would not do ∙ The hijackers forced the crew to fly to Athens.

forced landing /fɔːst 'lændɪŋ/ noun an unexpected landing that a pilot of an aircraft has to make because of an emergency situation.

force down /fɔːs 'daʊn/ verb to force an aircraft to land, usually because of an emergency situation.

force-land /fɔːs 'laʊnd/ verb to land an aircraft before it gets to its destination because of an emergency situation, or land in these circumstances.

fore /fɔː/ adjective located at or towards the front ∙ the fore and aft of the aircraft the longitudinal axis of the aircraft ∙ to come to the fore to become important or to start to play a leading role ∙ The jet engine came to the fore in the late forties. ∙ aft

forecast /fɔːkɛst/ noun a statement of what is likely to happen in the future or describing expected events or conditions ∙ weather forecast ∙ forecast weather charts charts with information about the weather coming to a particular area ∙ verb to estimate or calculate weather conditions by studying meteorological information ∙ Rain is forecast for this afternoon. (NOTE: forecasting ∙ forecast or forecasted)

forecast chart /fɔːkɛst ˈtʃɑːt/ noun same as prognostic chart ∙ Prognostic or forecast charts are prepared, by the central meteorological office of each region, normally for periods up to 24 hours ahead.

form /fɔːm/ noun 1. a document with blanks for the insertion of details or information ∙ insurance form ∙ application form 2. a kind or type ∙ The ground automatic relief valve is a form of discharge valve. ∙ Drizzle is the lightest form of precipitation. 3. the shape of an object ∙ Fluids take on the form of the container in which they are found. ∙ in the form of a triangle in the shape of a triangle 4. the way in which a thing exists, acts, or shows itself ∙ water in the form of ice ∙ fuel in the form of a spray ∙ verb 1. to come into being ∙ In some conditions, ice forms on the leading edge of the wing. ∙ Cumulus clouds only form in an unstable atmosphere. 2. to make a shape ∙ The hydraulic forces of flight ∙ plural noun the aerodynamic forces, lift, drag, weight and thrust, which act on an object that is travelling though the air.

föhn /ˈfɔːn/ noun a warm dry wind that blows down the lee side of a mountain, particularly in the Alps. (NOTE: The plural form is föhns.)

foil /fɔɪl/ noun same as aerofoil

foot /fʊt/ noun a unit of length in the US and British Imperial Systems equal to 12 inches or 30.48 centimetres. Symbol ft (NOTE: The plural form is feet; foot is usually written ft or ’ after figures: 10ft or 10').

foot-pound /fʊt paʊnd/ noun the ability to lift a one pound weight a distance of one foot. Abbreviation ft-lb

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classroom and accommodation building form the main part of the college.

**formation** /faˈmeɪʃən/ noun 1. the process of coming into being or forming $$\circ$$ cloud formation the natural production and development of clouds $$\circ$$ ice formation the natural production and development of ice 2. $$\circ$$ to fly in formation to fly in a group which maintains a particular pattern or arrangement in the air

**former** /ˈfɔːmər/ adjective having been in the past $$\circ$$ a former military pilot a pilot who used to be a military pilot $$\circ$$ noun 1. the first of two things mentioned 2. a light secondary structure of the airframe which gives improved shape

’ve much has changed in the former Eastern European States, especially in terms of aviation operations and training’ [Civil Aviation Training]

**formula** /ˈfɔːmjʊla/ noun a mathematical rule expressed in symbols $$\circ$$ The formula for calculating speed is $$D \div T = S$$ (where $$D$$ = distance, $$T$$ = time and $$S$$ = speed). (NOTE: The plural form is **formulae** or **formulae**.)

**forward** /ˈfɔːwəd/ adjective at, near, or belonging to the front $$\circ$$ the forward section of the aircraft $$\circ$$ forward and aft exits

**forwards** /ˈfɔːwədər/ adverb towards a position in front $$\circ$$ The throttles are moved forwards for take-off. (NOTE: The US English is forward.)

**fouling** /ˈfɒulɪŋ/ noun contamination of the spark plugs with oil or petrol so that they do not fire correctly $$\circ$$ The engine should be run at a positive idling speed to prevent spark plug fouling.

**four-digit group** /ˈfɔːr-dɪʒɪt ˈgɹʊp/ noun four single numbers found together

**four-stroke combustion engine** /ˈfɔːrstrʌk kɔmˈbʌstʃən ˈɛnʤɪn/ noun an engine which operates in accordance with the four-stroke cycle $$\circ$$ Induction, compression, power and exhaust are the four phases of the four-stroke combustion engine.

**fpm** abbreviation feet per minute

**FPPS** abbreviation flight plan processing system

**frame** /frem/ noun 1. a structure that gives shape or support $$\circ$$ Early aircraft fuselages were made of a frame covered by a fabric. 2. an open structure for holding, or bordering $$\circ$$ a door or window frame

**FREDA** mnemonic

**freeze** /fриːz/ verb to pass from the liquid to the solid state by loss of heat $$\circ$$ In some conditions, rain droplets freeze rapidly on striking the aircraft. (NOTE: freezing – froze – frozen)

**freight** /friːt/ noun anything other than people transported by a vessel or vehicle, especially by a commercial carrier $$\circ$$ Freight holds are usually located beneath the passenger cabins.

**freighter** /friːtər/ noun an aircraft designed to carry freight

**frequency** /ˈfriːkwənsi/ noun 1. the number of times or the rate at which something happens in a given period of time $$\circ$$ The frequency of flights to holiday destinations increases during the summer time. 2. the number of repetitions per unit time of a complete waveform, as of an electric current frequency

’ve…a Baltimore man adjusted a baby alarm to improve its performance and found his youngster’s squawks were being picked up by incoming aircraft tuned to the local NDB frequency’ [Pilot]

**frequency bracket** /ˈfriːkwənsiˈbreɪkɪt/ noun a range of frequencies $$\circ$$ VHF communications are allocated the frequency bracket 118–137 MHz.

**frequent** /ˈfriːkwənt/ adjective happening or appearing often $$\circ$$ frequent inspection

**friction** /ˈfrɪkʃən/ noun a force that resists the relative motion or tendency to such motion of two bodies in contact $$\circ$$ Energy is converted to heat through friction.

**front** /frʌnt/ noun 1. the forward part or surface $$\circ$$ The entrance is at the front. 2. the area, location, or position directly before or ahead $$\circ$$ in front in a forward position relative to something else $$\circ$$ Row 23 is in front of row 24. 3. the
**frontal**

mixed area between air masses of different temperatures or densities

**frontal** /ˈfrɑːntəl/ adjective 1. referring to the forward part or surface area of something or the frontal area or frontal surface the boundary between two air masses 2. of or relating to a meteorological weather front or a frontal storm

**frontal depression** /ˈfrɑːntəl depərʃən/ noun 1. a series of rain-bearing changes in the weather 2. a deposit of very small ice crystals formed when water vapour condenses at a temperature below freezing

**frost** /frost/ noun a deposit of very small ice crystals formed when water vapour condenses at a temperature below freezing. Frost had to be cleared from training aircraft which had been parked outside overnight.

**foot** /fʊt/ abbreviation foot

**fuel** /ˈfjuːəl/ noun a substance such as gas, oil, petrol, etc., which is burnt to produce heat or power. Each wing tank holds 20 gallons of fuel. A fuel system includes tanks, fuel lines, fuel pumps, fuel filters and a carburettor or fuel injection system.

**fuel/air mixture** /ˈfjuːəl ˈeər mɪkstʃər/ noun a combination of fuel and air which is ignited in a piston engine to provide power

**fungal growth** /ˈfʌŋkəl ˈgrəʊθ/ noun a type of organism which lives and multiplies in particular fuels. Fuel contains chemicals for the inhibition of fungal growth.

**fuselage** /ˈfjuːzəlɑʒ/ noun the central body of a plane, to which the wings and tail assembly are attached and which accommodates the crew, passengers, and cargo.

**fuselage** /ˈfjuːzəlɑʒ/ noun the central body of a plane, to which the wings and tail assembly are attached and which accommodates the crew, passengers, and cargo.

**fuselage** /ˈfjuːzəlɑʒ/ noun the central body of a plane, to which the wings and tail assembly are attached and which accommodates the crew, passengers, and cargo.

**fuel gauge** /ˈfjuːəl ˈgærɪdʒ/ noun an instrument indicating fuel contents

**fuel injector** /ˈfjuːəl ɪnˈdʒɛktər/ noun an injector that sprays fuel into the combustion chamber of an engine

**fuel pump** /ˈfjuːəl pʌmp/ noun a device which moves fuel along pipes from the tanks to the engine

**fuel system** /ˈfjuːəl sɪstəm/ noun a series of rain-bearing changes in the weather.

**function** /ˈfʌŋkʃən/ noun 1. a specific occupation or role. Rota planning is one of the functions of the chief instructor. 2. purpose. Seals perform a very important function in a hydraulic system. The function of the flaps is to increase lift and drag.

**fundamental** /ˈfenəməntəl/ adjective 1. of or relating to the fundamental laws of aerodynamics. Central, forming or serving as an essential component of a system or structure. Electricity is one of the fundamental types of energy that exist in nature.

**fuselage** /ˈfjuːzəlɑʒ/ noun the central body of a plane, to which the wings and tail assembly are attached and which accommodates the crew, passengers, and cargo. The fire started in the fuselage but soon spread to the fuselage.
There is a gain of heat by the Earth due to solar radiation.

A gain in altitude is an increase in altitude.

A gain in signal power, voltage, or current is an increase in signal power, voltage, or current.

A benefit or advantage is a benefit or advantage.

He failed because the aircraft gained 100 ft in the 360° level turn.

Micro switches have a very small gap between make and break.

Gamma rays are given off when radioactive material breaks down.

It is necessary to move the rpm control lever through a feathering gate to the feathering position.

The pilot could see the airfield through a gap in the clouds.

Gases are any of a wide variety of seals or packings used between matched machine parts or around pipe joints to prevent the escape of a gas or fluid.

Seals, gaskets and packing make a seal by being squeezed between two surfaces.

The atmosphere is the gaseous envelope surrounding the earth.

Gasoline is a liquid made from petroleum, used as a fuel in an internal combustion engine.

The waste gate may be controlled manually by the pilot.

During a descent from altitude, with low power set, the turbocharger waste gate is fully closed.

A logic gate is almost the same as a switch.

The system delivers fuel at the rate of 100 to 2,000 gallons per hour.

A circuit with many inputs and one output that works only when a particular input is received is called a logic gate.

A device to prevent a lever from being moved to an incorrect setting is called a logic gate.

It is necessary to move the rpm control lever through a feathering gate to the feathering position.

A logic gate is almost the same as a switch.

A device to prevent a lever from being moved to an incorrect setting is called a logic gate.

An instrument for measuring or testing is called a pressure gauge.

A device to prevent a lever from being moved to an incorrect setting is called a logic gate.

A logic gate is almost the same as a switch.

A device to prevent a lever from being moved to an incorrect setting is called a logic gate.
diameter or width = **heavy gauge wire**

thick wire = **verb** calculate approximately by using the senses = **In fog, it is difficult to gauge horizontal distances.**

(NOTE: **gauging – gauged**)

**GCA** abbreviation ground-control approach

gear /gə(r)/ noun 1. a toothed wheel that turns with another toothed part to transmit motion or change speed or direction 2. a valve gear the mechanism for opening and closing valves 3. equipment and/or clothing

‘...as pilots, we understand the need for a convenient way to transport flight gear. That’s why we custom-designed this line of soft-sided flight bags in a variety of styles’ [Advert in Pilot]

**gearbox** /gɪəbɒks/ noun a device to allow changes in the ratio of engine speed to final drive speed = **The auxiliary power unit (APU) is a small gas turbine engine which is connected to a gearbox.**

**GEM** abbreviation ground-effect machine

genera /dʒənərə/ plural of genus

general /dʒənərəl/ adjective concerned with or applicable to a whole group of people or things = **a general description not a detailed description**

generals **general principles** main ideas = **a general purpose switches all-purpose switches**

generally **general weather situation** the overall weather picture without the detail = **as a general rule usually**

**general aviation** /dʒənərəl ərvɪʃən/ noun all aviation other than commercial airlines or the military = **The number of GA aircraft stolen is down sharply since the general aviation community has taken steps to enhance security.**

Abbreviation GA

general flying test /dʒənərəltест/ noun a test of aircraft-handling skills for student pilots. Abbreviation GFT

**generate** /dʒənərēt/ verb 1. to bring into being = **In an emergency, it may be necessary for crew to generate a little panic in passengers to motivate them to move.** 2. to produce something such as heat or electricity as a result of a chemical or physical process = **The passage of air around the wing generates lift.**

generation /dʒənərəʃən/ noun 1. the act or process of creating or making = **a generation of ideas** the process of producing or getting ideas = **generation of electricity** the production of electricity 2. a class of objects derived from an earlier class = **a new generation of computers** computers which share a recent development in computer technology which separates them as a class from earlier computers

generator /dʒənəreɪtər/ noun a power-operated device for making electricity = **Starter generators are a combination of a generator and a starter housed in one unit.**

genus /dʒənəs/ noun a class, group, or family = **Various types of cloud are grouped into ten basic cloud genera.**

(NOTE: The plural form is genera.)

general **geographic** /dʒəˈɡræfɪk/ geographic

globe **geographical** /dʒəˈɡræfi(k)əl/ adjective referring to geography = **a specific geographical area** = **the north geographic pole**

government **geography** /dʒəˈɡrɑːfi/ noun physical geography the study of the Earth’s surface and its features

general **geometric** /dʒəˈmɛtrɪk/ adjective referring to geometry = **A triangle is a geometric figure.**

Geometric pitch (US) is the distance which a propeller should move forward in one revolution.

generals **geometry** /dʒəˈmɛtri/ noun 1. the study of the properties, measurement, and relationships of points, lines, angles, surfaces, and solids = **An understanding of geometry is essential to the student of navigation.** 2. a configuration or arrangement = **the geometry of the engine nacelle**

general **geostationary** /dʒəˈsteɪʃənəri/ adjective referring to an object, such as a satellite in space, which rotates round the Earth at the same speed as the Earth and is therefore stationary with reference to a point on the Earth = **There are two main types of satellite that are used for collection and**
transmission of meteorological data, polar and geostationary.

**geostrophic wind** /dʒiːstrəfroʊfɪnk/ noun a wind which blows horizontally along the isobars, across the surface of the earth

**GFT** abbreviation general flying test

**GHz** abbreviation gigahertz

**giga-** /ˈɡɪgə/ prefix one thousand million. Symbol G

**gigahertz** /ˈɡɪgəhɛrtz/ noun a frequency of 10⁹ Hertz. Abbreviation GHz

**given** /ˈɡɪvn/ adjective 1. particular, specified, fixed. 2. a given (that) taking into account, considering.

**glare** /ɡleə/ noun a strong blinding light. Glare can be caused by diffuse reflection of sunlight from the top of a layer of fog.

**glass fibre reinforced plastic** /ˈɡlaːs fɪbər rɪnfrəʊd plæstɪk/ noun a composite material made of plastic which is strengthened by glass fibres, used in the manufacture of airframes and other aircraft components. Abbreviation GRP

**glide** /ɡlaɪd/ verb to fly without power. In the event of an engine failure, it is important to have enough altitude to be able to glide clear of houses, people, etc.

**glidepath** /ˈɡlaɪdpɑːθ/ glide path noun a path followed by the aircraft down the glide slope. Glidepath coverage the vertical and horizontal dimensions of the glide slope radio beam

**glider** /ɡlaɪdər/ noun a fixed wing aeroplane, normally with no power plant propulsion. Nowadays, gliders are often made of composite materials.

**glideslope** /ˈɡlaɪdsləʊp/ glide slope noun the part of the ILS which provides a radio beam at an angle of approximately 3° to the point of touchdown from the outer marker thus giving the pilot information about the height of the aircraft on final approach

**gliding** /ˈɡlaɪdɪŋ/ noun 1. flying in a glider. 2. a gliding club association of members who fly gliders as a pastime.

**global** /ˈɡloʊbəl/ adjective worldwide, referring to something related to the whole Earth. Global pressure patterns the pressure patterns of the whole planet.

**global positioning system** /ˈɡloʊbəl pəˈzɪʃənɪŋ sɪstəm/ noun a satellite-based navigation system. Abbreviation GPS

**globe** /ˈɡloʊb/ noun an object shaped like a ball. If the Earth were a uniform globe, the average temperature would vary only with latitude.

**GLONASS** noun a system of satellite navigation operated by Russia. Full form Global Orbiting Navigation Satellite System

**GMT** abbreviation Greenwich Mean Time

**GNSS** abbreviation global navigation satellite system

**go-around** /ˈɡəʊ ərəʊnd/ noun a climb into the circuit and manoeuvring into position for a new approach and landing. Because the plane was too high on the approach, the pilot executed a go-around.

**govern** /ˈɡəʊvərn/ verb to control or limit the speed, size or amount of something. The size and number of valves required for a particular type of aircraft is governed by the amount of air necessary for pressurisation and air conditioning. The type of undercarriage fitted to an aircraft is governed by the operating weight.

**governor** /ˈɡəʊvərnər/ noun a device for controlling or limiting the speed size or amount of something. Overspeed-
ing of the engine is prevented by a governor in the fuel system. **valve**

gph /ˈdʒɪtˈpiː ˈɛrɪtʃ/ **abbreviation** gallons per hour

GPS **abbreviation** global positioning system

GPWS **abbreviation** ground proximity warning system

**grade** /ˈgreɪd/ **noun** 1. a position in a scale of size or quality 2. KeVlar 49 is the grade used in aircraft composites 3. a mark indicating a student’s level of accomplishment 4. Students who scored below a particular grade in the examinations were not allowed to continue the course

**gradient** /ˈgreɪdʒənt/ **noun** the rate at which a quantity such as temperature or pressure changes relative to change in a given variable, especially distance 1. Because there is a temperature gradient across each front it is possible to draw isotherms which reduce in value from warm to cold air 2. A pressure gradient occurs aloft from land to sea.

**gradual** /ˈgreɪdʒuəl/ **adjective** happening slowly but continuously 1. Loss of cabin pressure may be gradual rather than sudden 2. **gradual change** a change which takes place over a period of time

**graduate** /ˈgreɪdʒjuˌɛt/ **verb** 1. to be granted an academic degree or diploma 2. She graduated from Oxford University with a first class honours degree 3. to advance to a new level of skill, achievement, or activity 4. After 50 hours of flying the single engine trainer, the student pilots graduate to flying the twin engine aircraft 5. to divide into marked intervals, especially for use in measurement 6. A thermometer has a scale graduated in degrees Celsius

**gram** /ɡreɪm/ **noun** a unit of measurement of weight, equal to one thousandth of a kilogram Symbol g

**graph** /ɡrɑːf/ **noun** a diagram that shows a relationship between two sets of numbers as a series of points often joined by a line 1. The graph shows the relationship between lift and drag at various airspeeds.

**graphic** /ˈɡræfɪk/ **adjective** 1. 2. **graphic solution** a technique of using geometric constructions to solve problems 3. One side of the calculator has a moveable slide which is used for the graphic solution of triangle of velocities problems 4. described in vivid detail 5. The eye witness provided a graphic description of the events leading to the accident 6. **noun** a picture used in a computer application 7. The instructor’s worksheets were greatly improved by the incorporation of graphics to aid comprehension of the subject matter

**grasshopper** /ˈɡræʃhɒpər/ **noun** a light, unarmed military aeroplane used for reconnaissance

**graticule** /ˈɡrætɪkjuəl/ **noun** 1. a series of fine lines in an optical instrument such as a telescope, used for measuring 2. the network of lines formed by the meridians and parallels of longitude and latitude of the Earth on a flat sheet of paper 3. A graticule of lines of latitude and longitude is imagined to cover the Earth

**gravity** /ˈɡrævəti/ **noun** 1. a natural force of attraction which pulls bodies towards each other and which pulls objects on Earth towards its centre 2. In order for an aeroplane to fly, lift must overcome the force of gravity 3. Seriousness 4. Throughout the crisis caused by the engine failure, the passengers were unaware of the gravity of the situation

**gravity feed** /ˈɡrævəti fid/ **noun** a feed which uses the force of gravity to move the fuel from the tank to the carburettor

**great** /ɡreɪt/ **adjective** 1. large in size, quantity, number, etc. 2. **great distances** long distances 3. a great deal of money 4. a large sum of money 5. a great importance 6. enormous importance 7. very good, enjoyable or exciting

**Greenwich Mean Time** /ˈɡrɛntʃmɛnˌtiː/ **noun** local time on the Greenwich Meridian. Abbreviation **GMT**

**COMMENT**: GMT is now called Coordinated Universal Time (UTC) and is also known as Zulu time. UTC is


expressed in 24-hour format; for example, 7:30 P.M. is 1900 hours (say: nineteen hundred hours).

grid /grid/ noun 1, a pattern of equally spaced vertical and horizontal lines, sometimes used on a map. Grid lines facilitate the quick location of a point of reference. 2. a metal cylinder in a cathode ray tube. 3. a pattern of equally spaced vertical and horizontal metal rods or bars. Lead-antimony alloy grid plates are components in a lead-acid battery.

ground /groun/d noun the solid surface of the earth. 1. Hail being much denser and heavier than snow, falls at a much faster rate and can reach the ground even with the 0° isotherm at 10,000 ft. 1. verb 1. to prohibit an aircraft or member of an aircrew from flying. 2. US to connect an electrical circuit to a position of zero potential. While refuelling a light aircraft it is important to ground the airframe to prevent sparking caused by static electricity. (Note: To earth is preferred in British English.)

ground crew /groun/d kru/ noun a team of employees who service and maintain the aircraft while it is on the ground.

ground-effect machine /groun/d ˈɛʃekt maʃərn/ noun a hovercraft. Abbreviation GEM.

ground elevation /ˈɡraʊnd ɪˌlevəʃən/ noun the vertical distance, in feet, of the ground above sea level.

ground instructor /ˈɡraʊnd ɪnˈstrʌktər/ noun a trained person who teaches support subjects such as meteorology in a classroom.

grounding /ˈɡraʊndɪŋ/ noun a member of the ground crew at an airport or air force base.

ground loop /ˈɡraʊnd lʌp/ noun a sharp unplanned turn made by an aircraft that is taxiing, taking off, or landing, caused by unbalanced drag.

ground movement /ˈɡraʊnd ˈmjuːvmənt/ noun a manoeuvre such as taxiing carried out by an aircraft while on the ground, or any movement on an airfield by people or surface vehicles.

ground position /ˈɡraʊnd pəˈzɪʃən/ noun the point on the surface of the Earth immediately beneath the aircraft.

ground proximity warning system /ˈɡraʊnd prəˈproʊtətiʃən ˈsɪstəm/ noun a system in aircraft which warns pilot, by means of an audible signal, that the aircraft is below a preset height. Abbreviation GPWS.

ground-running operation /ˈɡraʊnd rəˈprəʊting əlʃən/ noun a procedure of running the engine while the aircraft is stationary on the ground to check engine performance.

ground signal /ˈɡraʊnd ˈsɪgnəl/ noun a visual signal displayed on an airfield to give information about local traffic rules to aircraft in the air.

ground speed /ˈɡraʊnd spɪˈdər/ noun the speed of the aircraft in relation to the ground over which it is flying. Abbreviation GS, G/S.

ground temperature /ˈɡraʊnd ˈtɛmpərətʃər/ noun the temperature recorded by a thermometer placed at ground level.

ground visibility /ˈɡraʊnd ˈvɪzɪbɪlətɪ/ noun horizontal visibility near the surface of the earth.

group /ɡruːp/ noun 1. a number of individual items or people brought together because of similarities. 2. a collection of letters, numbers or symbols used in weather forecasting, etc.

growth /ɡrəʊθ/ noun an increase in size, number, amount, etc. The growth of ice crystals. The growth of air travel.

GRP abbreviation glass fibre reinforced plastic.

GS, G/S abbreviation ground speed.

guard /ɡɑːrd/ noun 1. a device to prevent injury or loss. 2. The thermocouple probes consist of two wires of dissimilar metal that are joined together inside a metal guard tube. 2. a person who protects or keeps watch. A security guard. verb to protect from harm by watching over. To guard against to take steps to ensure that
something does not happen ○ To guard against the risk of fire, passengers are requested not to smoke in the toilets.

guidance /'gaid(ə)ns/ noun 1. helpful advice ○ Guidance is provided to assist people in filling in the form. ○ The booklet contains guidance on the advisability of flying with a cold. 2. the action of giving directions to an aircraft

guidance system /'gaid(ə)ns ,sɪstəm/ noun a system which provides signals to the flight control system for steering the aircraft

guide /gaid/ noun something that directs or indicates ○ guide a simple explanation to help a person to find his or her own way through more complex information ■ verb to direct or to indicate ○ If there is smoke in the cabin, clear commands from the crew will help to guide passengers to the emergency exits.

gust /gaʊst/ noun a strong, sudden rush of wind ○ a gust of 30 feet per second ○ On final approach, the pilot must be prepared to counteract the effect of gusts in order to maintain a smooth descent along the extended centreline of the runway. ○ gust load an increased load to the airframe caused by a sudden increase in wind strength ■ verb to increase in strength suddenly ○ Wind is at 10 knots gusting to 20 knots.

gyro /'dʒaɪəroʊ/ noun same as gyroscope

gyro- /'dʒaɪəroʊ/ prefix gyroscopic

gyrocompass /'dʒaɪəroʊ,kæmpəs/ noun a compass which uses gyroscopic directional stability rather than magnetism to indicate direction ○ The gyrocompass should be checked against the magnetic compass and reset if necessary.

gyroplane /'dʒaɪərəplaɪn/ noun an aircraft fitted with an unpowered rotor for producing lift

gyroscope /'dʒaɪərəskəʊp/ noun a device consisting of a spinning wheel, mounted on a base so that its axis can turn freely in one or more directions and thereby maintain its own direction even when the base is moved ○ The traditional attitude indicator, heading indicator and turn coordinator contain gyroscopes. ○ directional (NOTE: The word is often shortened to gyro.)

COMMENT: A spinning gyro maintains its position even when an aircraft banks, climbs, or dives. Gyros drive the attitude indicator, direction indicator and turn coordinator to help pilots control an aircraft while flying in cloud or in poor visibility.

gyroscopic /'dʒaɪərəskəpɪk/ adjective referring to a gyroscope or using the properties of a gyroscope

gyroscopic compass /'dʒaɪərəskəmpəs/ noun a compass which uses gyroscopic directional stability rather than magnetism to indicate directions. Also called gyrocompass

gyroscopic precession /'dʒaɪərəskəprɪʃən/ noun a characteristic of a gyroscope, that the force applied to a spinning gyroscope will act at a point 90° in the direction of rotation, not at the point where the force is applied ○ Forces of gyroscopic precession act on the direction indicator to keep it aligned vertically and horizontally.
hail /heɪl/ noun precipitation as small pellets of ice. Precipitation is the falling of water, as rain, sleet, snow or hail onto the surface of the earth. Although hail, and in particular, heavy hail is rare and of short duration, damage to an aircraft may be severe.

COMMENT: In weather reports and forecasts, hail is indicated by the abbreviation 'GR'.

hailstone /heɪlstoʊn/ noun a small pellet of ice which falls from clouds. A hailstone starts as a small ice particle in the upper portion of a cumulonimbus cloud.

hailstorm /heɪlstɔrm/ noun a storm, where the precipitation is hail instead of rain or snow. Flying through the hailstorm damaged the leading edges.

hand flying /ˈhænd flɪŋ/ noun flying an aircraft by moving the flight controls with the hands rather than by using the autopilot.

hand-held /ˈhænd hɛld/ adjective possible to hold in the hand. Nowadays, headsets are usually used in preference to hand-held microphones.

hold handle /ˈhænd(ə)l/ noun a device for holding, or being operated, by the hand. a door handle. a fire control handle. verb 1. to touch with the hands. Cabin staff should not handle unwrapped food which is to be served to passengers. 2. to move or operate by hand. The student pilot handled the aircraft well in the turbulent conditions. 3. to deal with, or to manage. Flight crew must be able to handle any emergency when it occurs.

handling /ˈhændlɪŋ/ noun 1. the act of touching with the hands. 2. the use of the hands to move or operate something. 3. the act of dealing with or managing something. Her handling of a difficult situation won the admiration of the whole crew.

hand luggage /ˈhænd lædʒɪdʒ/ noun small bags that passengers can take with them into the cabin of an aircraft. The amount of hand luggage is limited to one bag.

hand signals /ˈhænd ,ˈsɪɡn(ə)lz/ plural noun same as marshalling signals.

hands off /ˈhændz ˈɒf/ adjective, adverb where the operator does not control the operation, which is automatic. Automatic flight control system capable of landing an aircraft hands off.

hangar /ˈhæŋə/ noun a large shelter for housing and maintaining aircraft. Light aircraft should be left with parking brakes off so that they can be moved quickly in the event of a fire in the hangar.

hard landing /ˈhɑːrd lɛndɪŋ/ noun an uncontrolled landing by an aircraft that results in its being damaged or destroyed.

HASELL mnemonic
haul /hɔːl/ noun long-haul, short-haul.

hazard /ˈhæzəd/ noun a possible danger. Thunderclouds are of special interest to aircrew because of the hazards they may pose to aircraft in flight.
hazardous /ˈhæzərədəs/ adjective possibly risky or dangerous  o Flying over mountainous terrain can be hazardous.  o Structural icing is a hazardous phenomenon for rotary wing as well as fixed wing aircraft.
haze /haɪz/ noun dust or smoke in the atmosphere  o Haze can seriously reduce air-to-ground visibility.
head /hɛd/ noun 1. the top part of the body above the shoulders 2. a person 3. the most senior person in the department 4. verb to fly in a particular direction  o head north to fly towards the north
heading /ˈhɛdɪŋ/ noun the direction in which the longitudinal axis of the aircraft is pointing, expressed in degrees from north
COMMENT: Wind affects an aircraft in flight, therefore heading does not always coincide with the aircraft’s track. The pilot must head the aircraft slightly into the wind to correct for drift.
heading bug /ˈhɛdɪŋ bʌg/ noun a movable plastic marker on the horizontal situation indicator
heading correction /ˈhɛdɪŋ kərˈɛktʃərn/ noun a change of heading in order to deal with a new situation. Also called course correction
heading indicator /ˈhɛdɪŋ ɪndɪkˈɛtər/ noun an instrument which gives course or direction information e.g. a horizontal situation indicator (HSI) or direction indicator (DI)
COMMENT: The heading indicator is driven by a gyro and provides steady, exact indications of heading.
heading to steer /ˈhɛdɪŋ tuː ˈstɪər/ noun a gyro-compass point in which to direct the aircraft
head-on /ˈhed ˈɒn/ adjective, adverb  o to approach head-on to approach from opposite directions
head-on collision /ˈhed ɒn kəlˈzɪʒən/ noun a collision between two things or vehicles coming from opposite directions

headphones /ˈhɛdəʊfɔʊnz/ noun small speakers with padding, worn over a person’s ears, used for private listening  o Headphones are used to monitor the signal.
headset /ˈhɛdset/ noun headphones with a microphone attached, used for RT communications  o Headsets are usually used in preference to hand-held microphones.
head-up display /ˈhɛdəp dɪˈsplɛɪ/ noun a cockpit system where data from flight instruments is projected onto a screen or the windshield so that the pilot can see it without having to look down. Abbreviation HUD
headwind /ˈhɛdwiːnd/ noun a wind which is blowing in the opposite direction to the direction of movement or flight. Compare tailwind (NOTE: The word is also written head wind.)
headwind component /ˈhɛdwiːnd kəmpənənt/ noun one of the three possible components of a wind, the other two being crosswind and tailwind
heap /hiːp/ noun a group of things piled or thrown one on top of another
heap cloud /ˈheɪp klaʊd/ noun same as cumulus cloud
heat /hɪt/ noun warmth, being hot  o The heat generated by combustion is considerable.  o verb to make warm or warmer  o The air leaving the turbocharger is very warm and can be used to heat the cabin.
heater /ˈhɛtər/ noun a device for heating  o Pilot heads contain heater elements to prevent icing.
heating /ˈhɛtɪŋ/ noun the process of making something warmer  o the heating action of the sun  o kinetic
heavier-than-air /ˈheviər ˈθiːn ˈeər/ adjective weighing more than the air it displaces, and so needing power to fly
heavy /ˈhɛvi/ adjective having a lot of weight  o a heavy load a load of great weight  o heavy rain rain which is dense and distributes a lot of water over the surface of the Earth in a relatively short time
heavy-duty /ˈhɛvi ˈdjʊtɪ/ adjective referring to something designed for
hard wear or use 

**heavy landing** /ˈhevi lənd/ noun a routine landing in which the aircraft makes contact with the surface with more force than usual, thereby possibly causing damage to the undercarriage. The pilot reported a heavy landing.

**height** /haɪt/ noun the vertical distance of a point, level or object measured from a particular point, e.g. sea level or object measured from a particular point. Pressure decreases with increasing height. **height of the aircraft** the vertical distance, measured in feet, of the aircraft above the surface of the earth.

**held** /hɛld/, hold

**helicopter** /ˈhɛlkəpər/ noun an aircraft with one or more rotors rotating around vertical axes which provide lift and thrust for a helicopter; **helicopter rotor** /ˈhɛlkəpər rəʊtə/ noun two or more rotating blades, known as the main rotor, which provide lift and thrust for a helicopter; **helideck** /ˈhɛlɪdɛk/ noun a deck on something such as a ship or offshore oil platform that is used as a landing area for helicopters.

**heliograph** /hɛliˈɡrɑːf/ noun an instrument with a mirror to send messages by reflecting the sun. **heliographs** enable reflected sunlight to be directed to a ship or aircraft in periods of direct sunlight.

**helipad** /ˈhelɪpæd/ noun an area where helicopters take off and land

**heliport** /hɛˈlɪpɔrt/ noun an airport designed for helicopters

**helistop** /hɛˈlɪstɒp/ noun a place where helicopters can take off and land, but usually one that does not have the support facilities found at a heliport

**helo** /ˈhelou/ noun 1. a rotary-winged aircraft, same as **helicopter** 2.

**hemisphere** /ˈhɛmɪsfɪər/ noun half a sphere

**Hertz** /ˈhɜːts/ noun the SI unit of frequency, defined as the number of cycles per second of time. Abbreviation **Hz**

**HF** abbreviation high frequency

**high** /haɪ/ adjective 1. having great vertical distance o a high mountain 2. great, large, a lot **high engine rpm** fast engine speed **high pressure** a lot of pressure **high reliability** good reliability **high speed** a fast speed **high temperature** a hot temperature **high frequency band** /ˌhaɪˈfrɪkwənsi bænd/ noun a radio communications range of frequencies between 3–30 MHz. Abbreviation **HF**

**high-performance** /ˌhaɪ pərˈfɔrəmns/ adjective a system which provides better-than-usual output o an engine with a high performance o Some high-performance engines have coolant and oil system thermostats which aid warming-up.

**high performance aircraft** /ˌhaɪ pəˈfɔrəmns ˈeɪrkrɑːft/ noun an aircraft capable of flying faster, higher or with more manoeuvrability than normal aircraft

**hijack** /ˈhɪdʒæk/ verb to take over control of an aircraft by one or several unauthorised person or persons with the intention of forcing the crew to fly it to a different destination. The airliner was hijacked on its way to Paris.

**hijacker** /ˈhɪdʒəkər/ noun a person who hijacks an aircraft or other vehicle

**hijacking** /ˈhɪdʒəkɪŋ/ noun the act of taking over control of an aircraft by one or several unauthorised person or persons with the intention of forcing the crew to fly it to a different destination. The crew must be alert at all times to the possibility of hijacking, bombs and stowaways.

**hill** /hɪl/ noun an easily-seen, natural elevation, smaller than a mountain. **Slopes on the side of a hill or mountain facing away from the sun receive less intense radiation.** Hill shading is pro-
hinder 112

duced by assuming that bright light is shining across the chart sheet so that shadows are cast by the high ground.

hinder /ˈhʌldər/ verb to make it difficult for something to happen. Free flow of fuel may be hindered by a blockage in the fuel line. Her illness hindered his progress on the course.

hinge /ˈhɪndʒ/ noun a device which allows a door, flap or lid to open and close on a stationary frame. Flying control hinges should be inspected before flight. verb to move against a stationary frame. Access to the engine compartment is normally via hinged cowling panels.

HIRF abbreviation high-intensity radiated fields
HMR abbreviation helicopter main route

hoar /ˈhɔːr, ˈhoʊr/ hoar frost noun a frozen dew which forms on outside surfaces when the temperature falls below freezing point. Rapid descent from cold altitudes into warm moist air may produce hoar frost on the aircraft.

hold /hɔːld/ noun an area or compartment within the aircraft for carrying freight. Carry-on baggage is limited by regulations as to size and weight and items in excess of this should be stowed in the luggage hold. verb 1. to keep and prevent from moving. The function of the autopilot system is to hold the aircraft on a desired flight path by means of gyroscopes and/or accelerometers. If the operating pressure falls or fails, a mechanical lock holds the reverser in the forward thrust position. 2. to keep an aircraft in a particular position on the ground or in the air while waiting for further clearance from air traffic control. It is normal practice for ATC to hold taxing aircraft well clear of the glide path and localiser antenna when visibility is poor. 3. to have and keep in the hand. Hold the microphone in your right hand. verb held possible to hold in the hand. In preference to hand-held microphones.

homeward /ˈhɔʊmwrəd/ adjective going towards home or homeward journey. Adverb homeward bound heading towards home

homewards /ˈhɔʊmwrədz/ adverb towards home. They were heading homewards when the accident happened.

homing /ˈhɔʊmɪŋ/ noun a flight towards or away from a radio station while using direction finding equipment. Where an RBI is fitted, homing to an NDB can be made by initially turning the aircraft until the relative bearing is zero.
homogeneous /ˈhɒməʊməʊdʒiənəs/ adjective of the same kind ○ If the air over a large region were homogeneous, there would be no horizontal differences in surface temperature. ○ The atmosphere is not homogeneous – pressure, temperature and humidity can all change with height.

can be seen in sound

Abbreviation panel below the attitude indicator.

which emits a loud warning noise

ing sound

which gives the pilot information about

The plot shows the effect of airmass on lift with airspeed shown on the horizontal axis.

The horizontal stabiliser

The horizontal motion of air is known as wind.

the line where the sky and the ground appear to join ○ visual horizon a horizon which can be seen

horizontal /ˈhɔːrɪzənt(ə)l/ adjective parallel to the horizon, or at right angles to the vertical ○ The horizontal motion of air is known as wind.

horizontal axis /ˈhɔːrɪzənt(ə)l ˈæksɪs/ noun a horizontal reference line of a graph ○ The pilot shows the effect of airmass on lift with airspeed shown on the horizontal axis and lift on the vertical axis.

horizontal situation indicator /ˈhɔːrɪzənt(ə)l ˈhɔːrɪztʃuˈeɪʃən ɪndɪkətər/ noun a cockpit instrument which gives the pilot information about the direction of the aircraft’s flight path ○ On the aircraft, the horizontal situation indicator is located on the instrument panel below the attitude indicator. Abbreviation HSI

COMMENT: The horizontal situation indicator combines the function of the heading indicator and a VOR/ILS display.

horizontal stabiliser /ˈhɔːrɪzənt(ə)l ˈstɪbəlizər/ noun a tailplane ○ The horizontal stabiliser provides stability about the lateral axis of the aircraft.

describing a device for projecting sound ○ warning horn device which emits a loud warning noise

describing a device for projecting sound ○ warning horn device which emits a loud warning noise

horn balance /ˈhɔːrn ˈbæləns/ noun part of a control surface forward of the hinge line which reduces the force needed by the pilot to move the surface.

horsepower /ˈhɔːrpɔːspuːər/ noun the accepted unit for measuring the rate of doing work ○ Horsepower is defined as

33,000 foot-pounds of work done in one minute. Abbreviation h.p., HP

describing a long, flexible pipe usually made of fabric, plastic or rubber for pumping gases or liquids ○ refueling hose a flexible pipe used to pump fuel from the bowser to the aircraft

hot /hɔt/ adjective very warm, having a high temperature ○ hot weather ○ hot air air introduced to melt ice forming in the carburettor in a piston engine aircraft

horizon /hɔrˈraɪzn(ə)/ noun the point at which the sky and the ground appear to join ○ visual horizon a horizon which can be seen

house /həʊz/ verb to contain or accommodate ○ The areas between the ribs in the wings are utilised to house fuel tanks. ○ The wing tips house the navigation lights.

housing /ˈhauzɪŋ/ noun a compartment or container ○ The crankcase is the housing that encloses the various mechanical parts surrounding the crankshaft ○ engine housing engine compartment

hopper /ˈhɔpər/ verb to remain stationary, relative to the earth, while in the air ○ During a hop, helicopter pilots must be able to coordinate movements of both hands and feet.

hovercraft /ˈhʌvəkrɑːft/ noun a vehicle that can travel over land and water supported on a cushion of air that is produced by a powerful engine that blows air downwards. Also called air cushion vehicle, ground effect machine

however /ˈhauvər/ adverb but ○ The wind was gusty, however the landing was good. ○ The incident was serious, however she escaped with only a warning.

hrs abbreviation hours

HSI abbreviation horizontal situation indicator

hub /ˈhʌb/ noun a major airport where international or long-distance flights take off and land
hub airport 114

hub airport /ˈhæb ˈɛəpɔːt/ noun same as hub

HUD abbreviation head-up display

human factors /ˈhjuːmən ˈfæktərz/ noun the study of the way in which humans handle, and react to, things in their environment. It is used in aviation to develop safer systems and procedures. (NOTE: Human factors is followed by a verb in the singular.)

humid /ˈhjuːmɪd/ adjective containing a lot of water vapour • humid weather weather which, although warm, feels damp and uncomfortable

humidity /ˈhjuːmɪdɪtɪ/ noun a measurement of how much water vapour is contained in the air • the humidity is high there is a lot of moisture or water vapour in the air

hydraulic /ˈhaɪdrəlk/ adjective referring to any system or device which uses fluids such as oil to transmit a force from one place to another using pipes • a hydraulic pump

hydraulic fluid /ˈhaɪdralɪk ˈfluːɪd/ noun thin oil used in hydraulic braking systems, etc.

hydraulic pressure /ˈhaɪdralɪk ˈpreʃər/ noun the pressure exerted by hydraulic fluid

hydraulic tubing /ˈhaɪdralɪk ˈtjuːbɪŋ/ noun system of tubes or thin pipes connecting the main components of a hydraulic system

hydro- /ˈhaɪdəroʊ/ prefix water • a hydro-mechanical governor

hygrometer /ˈhaɪgrəmətər/ noun an instrument used for the measurement of humidity • The most common type of hygrometer is the wet and dry bulb thermometer arrangement.

hypoxia /ˌhaɪpɒksɪə/ noun a medical condition in which not enough oxygen is supplied to the body • The symptoms of hypoxia are sometimes difficult to detect.

COMMENT: Cabin pressurisation or oxygen equipment is usually required for flying at altitudes at or above about 10,000 ft (3,048 m).

Hz abbreviation Hertz
which particular features on a chart, means by cross-section shaped like the letter ‘I’ or some other strong substance with a situation possible as can be expected or the best possible extremely hazardous to flight. 

Cloud. Frame icing can be encountered in wave controller to identify the aircraft transponder panel which helps a controller to identify the aircraft. The identification is suppressed until the standby VOR is fully run-up and has passed its monitor checks. Full form identity

Identification /aɪˈdɛntɪfɪkeɪʃən/ noun the process by which a person, aircraft, etc., is recognised: identification of ground features means by which particular features on a chart, such as railway lines or bridges, are matched with the real feature on the ground.

Identification beacon /aɪˌdɛntɪˈfeɪkJən/ noun an aeronautical beacon which gives out a Morse signal which enables a pilot to establish their location in relation to the beacon. Civil and military aerodrome identification beacons can be distinguished by colour.

Identifier /aɪˈdɛntɪfɪər/ noun a grouped number/letter code by which a weather station or beacon can be recognised. When a TAF requires amendment, the amended forecast is indicated by inserting AMD (amended) after TAF in the identifier and this new forecast covers the remaining validity period of the original TAF.

Identify /aɪˈdɛntɪfɪ/ verb to recognise. Crew members can be identified by their uniforms. In conditions of poor visibility, it is sometimes difficult to identify ground features.

Identity /aɪˈdɛntɪtɪ/ noun the name and details of a person, aircraft, etc. The air traffic controllers are trying to establish the identity of the aircraft.

Idle /aɪdəl/ noun the state of an engine when it is running but not delivering power to move the vehicle or aircraft. Idle verb to turn over slowly without providing enough power to move the vehicle or aircraft. After starting a piston engine from cold, it is good practice to allow it to idle for a short time before opening the throttle wide.

Idle cut-off /aɪˈdɛltʃəf/ noun a position on the mixture control of a
idle rpm

light aircraft which allows the engine to be shut down without leaving a combustible fuel/air mixture in the engine

idle rpm /ˈaɪdl ərp/ noun the speed at which a piston engine turns when it is not running fast enough to move the vehicle or aircraft, i.e. on a light aircraft when the throttle is almost closed

idling /ˈaid(ə)lɪŋ/ noun a state in which the engine is turning over slowly without providing enough power to move the vehicle or aircraft

idling speed /ˈaid(ə)lɪŋ spɪd/ noun the rpm of the engine when it is idling. After start-up, the engine accelerates up to idling speed. Before the engine is stopped, it should normally be allowed to run for a short period at idling speed to ensure gradual cooling.

IF abbreviation 1. instrument flying 2. intermediate frequency

IFR abbreviation instrument flight rules

ignite /ɪgˈneɪt/ verb to burn or cause to burn. The spark plug ignites the fuel/air mixture. The air/fuel mixture ignites.

igniter /ɪgˈnetər/ noun a device for starting gas turbine engines. An electric spark from the igniter plug starts combustion.

ignition /ɪgˈniʃ(ə)n/ noun 1. the starting of burning of a substance. 2. Combustion ignition depends on the quality of the fuel. 3. the moment, in an internal combustion engine, when a spark from the spark plug causes the fuel/air mixture to burn. 4. Ignition should occur just before top-dead-centre. 5. an electrical system, usually powered by a battery or magneto, that provides the spark to ignite the fuel mixture in an internal-combustion engine. 6. Ignition problems are a source of many engine failures. 7. a switch that activates the ignition system. 8. the key in the ignition. The key is in its position in the ignition lock.

ignition key /ɪgˈniʃ(ə)n ˈkiː/ noun a key used to switch on the ignition

ignition lock /ɪgˈniʃ(ə)n ˈlɒk/ noun a key-operated switch for activating the ignition circuit of an aircraft or a vehicle

illuminate /ɪˈljuːmɪnɪt/ verb 1. to give light to an otherwise dark area. A flare illuminates the ground below it. 2. to show a light or become bright. When the aircraft is 5 knots above stalling speed, a warning lamp illuminates.

illumination /ɪˌljuːmɪˈneɪʃ(ə)n/ noun light. Batteries provide about 20 minutes illumination for the lamp. Daylight illumination the amount of light in normal daytime conditions.

illustrate /ɪlˈstrɪteɪt/ verb 1. to demonstrate or explain clearly, often by using pictures. 2. The air/fuel mixture ignites, and the fuel/air mixture is burnt. The mechanics of the Föhn wind provide a good illustration of the adiabatic process in action.

ILS abbreviation instrument landing system

ILS glideslope /ˌaɪ lɛs ˈɡlaɪdslaʊp/ noun a radio beam in an ILS which gives vertical guidance. The angle of the glide slope is usually about three degrees to the horizontal.

ILS locator beacon /ˌaɪ lɛs ˈloʊ kaˈtɜr ˈbiːkən/ noun a non-directional beacon used for final approach. Power output can be as little as 15 watts for an ILS locator beacon.

IM abbreviation inner marker

image /ˈɪmɪdʒ/ noun a reproduction of the form of an object or person. Although difficult to see, the photograph shows the image of the aircraft with part of the fin missing. (NOTE: it suggests that the image has no detail and that it is the shape which is important.)
imaginary
adjective
don't be real. The equator is an imaginary line around the earth.

IMC
abbreviation
instrument meteorological conditions

immediate
adjective 1. happening at once or instantly. Fire extinguishers should be ready for immediate use in the event of an emergency. 2. in the immediate future. The immediate area surrounding the aircraft performance. (Note: The expressions of fundamental importance, of great importance, of prime importance, of utmost importance, of vital importance all mean very important.)

import duty
noun payment made to a government on particular goods imported or exported. Also called customs duty.

impose
verb 1. to force something upon a person or thing. The trimmer is used to ease the loads imposed on the flying controls during flight. 2. to impose a fine to require somebody to pay a sum of money as punishment. To impose restrictions to place limitations on somebody's actions.

improve
verb to make or become better. Turbochargers improve aircraft performance. The trainee's flying skills improved a lot in a short period of time.

improvement
noun the process of becoming better, or something that makes a thing better. An improvement in weather conditions enabled the flight to depart.

impulse
noun a force of short duration. A magneto is designed to produce electrical impulses one after another at precise intervals, so that each separate impulse can be used to provide a spark at a spark plug.

impulse magneto
noun a magneto with a mechanism to give a sudden rotation and thus produce a strong spark.

inability
noun the fact of being unable to do something.

inactive
adjective not switched on, in a passive state.

impedance
noun total electrical resistance to current flow in an alternating current circuit. Impedance will vary with changes in frequency.

impedance
noun to hinder or obstruct progress. Hills and mountains impede the horizontal flow of air.

impeller
noun a rotor used to force a fluid in a particular direction.

impact resistance
noun the ability of a material to withstand an impact.

impact
noun the striking of one body against another, a collision. On impact as soon as it hit something. One of the tyres burst on impact (with the ground). Super-cooled water droplets start to freeze on impact with an aircraft surface.

impair
verb to cause to become less effective. Constant exposure to very loud noise impairs the hearing. The pilot's vision may be temporarily impaired by lightning flashes. An incorrect grade of fuel impairs engine performance.

impairment
noun a lessening of effectiveness. De-icing equipment is used to prevent impairment of the lifting surfaces through ice formation.

impact
noun to give, to pass on. A rotating propeller imparts rearward motion to a mass of air.
inadvertent /ɪnˈvɜːst(ə)nt/ adjective not intended, not meant, accidental. A safety mechanism prevents inadvertent retraction of the undercarriage while the aircraft is on the ground.

inboard /ˈɪnboʊd/ adverb closer to the centre of an aircraft rather than the sides or edges

inbound /ˈɪnboʊnd/ adverb, adjective towards a destination. The aircraft flies outbound from the beacon along the airway and inbound to the facility at the other end of the leg. Inbound traffic aircraft flying towards an airfield.

incapacity /ɪnˈkæpsətɪ/ noun the inability to do what is needed, not having the necessary power to do something. A crew incapacity an injury to a crew member which prevents him or her from performing his or her normal duties. Accident research has shown that crew incapacity greatly increases the risk to passengers’ safety.

inch /ɪnst/ noun a British Imperial System unit of length, also used in the US, equal to 25.4 millimetres or 2.54 centimetres or 1/12 of a foot. Abbreviation in (NOTE: The plural form is inches, usually written in or " with numbers, 5ft 6in or 5’6’’). Say five foot six inches.

incidence /ɪnˈsɪdəns/ noun the frequency of occurrence. The incidence of structural failure has decreased with the introduction of modern construction materials and techniques.

incident /ɪnˈsɪdənt/ noun an event or happening which interrupts normal procedure. A violent passenger had to be removed from the aircraft before departure, and details of the incident were reported in the local newspapers.

'...in 1995, a pilot flying above Las Vegas was struck by a laser beam and incapacitated for more than two hours. It was one of over fifty incidents involving lasers and aircraft reported in the area that year' [Pilot]

inclination /ɪnˈklɪneɪʃn/ noun a slope or slant from the horizontal or vertical.

incline /ɪnˈklaɪn/ verb to slope or slant from the horizontal or vertical, to tilt. The runway inclines slightly upwards. ■ The runway inclines slightly from the horizontal or vertical. ■ There is a steep incline at the end of the runway.

inclinometer /ɪnˈklaɪnəmətər/ noun the lower part of a turn coordinator, in which a ball in a sealed curved tube indicates if a turn is coordinated. Also called rudder ball. ■ ball include /ɪnˈklud/ verb to take in as a part, to count along with others. Solid particles in the atmosphere include dust, sand, volcanic ash and atmospheric pollution. A fuel system includes tanks, fuel lines, fuel pumps, fuel filters and a carburettor or fuel injection system. Opposite exclude

inclusive /ɪnˈklʌsɪv/ adjective taking in the extremes in addition to the part in between. Bearings 180° to 270° inclusive. bearings 180° and 270° are part of the range of bearings mentioned.

incoming /ɪnˈkæmɪŋ/ adjective something which is being received, e.g. radio waves or solar radiation. incoming transmissions. incoming signal. There is a fall of temperature until about one hour after dawn when incoming solar radiation balances outgoing terrestrial radiation. Opposite outgoing

incorporate /ɪnˈkɔrəpəreɪt/ verb to include as part of something which alreadly exists. Some types of outflow valve incorporate safety valves. ■ Warning lamps often incorporate a press-to-test facility.

‘...the instrument panel on the Mooney Encore has been re-engineered to incorporate improvements’ [Civil Aviation Training]

incorrect /ɪnˈkɔrɛkt/ adjective not correct, not right. If the trim position is incorrect, a warning horn will sound when number three thrust lever is advanced.

increase noun /ɪnˈkrɪks/ a rise to a greater number or degree. Decreasing engine rpm results in an increase in the rate of descent. Opposite reduction.
inductance /indak'tans/ noun a measure of a conductor’s ability to bring a voltage into itself when carrying a changing current, e.g. during short times when the circuit is switched on or off. At low frequencies, the rate of collapse of the magnetic field will be slow and the inductance will be low.

indicated airspeed /'indikeitid 'ɛəspid/ noun the airspeed shown by the cockpit or flight-deck instrument. The aircraft stalls at an indicated airspeed of 50 knots. Abbreviation IAS.

indication /'indikeiʃən/ noun 1. pointing out. Indication of altitude is given on the altimeter. 2. a sign or symptom. A drop in engine rpm is an indication of ice forming in the carburettor. Audible indication a sound which serves as a warning, e.g. a bleep.

individual /'indi Tưdʒəl/ adjective existing as a separate thing. The hydraulic braking system consists of a master cylinder with individual brake cylinders at each wheel. There is a maintenance manual for each individual engine. Individual regards her trainees as a number of individuals rather than a group.

induce /'indjuːs/ verb to bring about, to cause to happen. If a coil carrying a changing current is placed near another coil, the changing magnetic fields cut the other coil and induces a voltage in it. Unequal deposits on moving parts can induce severe vibration especially on propellers and helicopter rotors.

induced drag /'indjuːd 'dræɡ/ noun part of total drag, created by lift. There are two basic types of drag, induced drag and parasite drag.

comment: Induced drag is created when high-pressure air below a wing rotates around the tip to the low-pressure area above and increases as airspeed decreases and angle of attack increases.

indicate /'indikeit/ verb 1. to show or point out. A lamp on the instrument panel will indicate when the pump is operating. The needle indicated to zero. 2. to serve as a sign or symptom. A drop in engine rpm is an indication of ice forming in the carburettor.

index /'indeks/ noun an alphabetical list of references to page numbers found at the end of a book or long document. (Note: The plural form is indexes or indices /'indyəs/.)

index letter /'indeks, 'letəl, 'indeks 'næmber/ noun a letter or number which makes it easier to reference or look up information. Each observing meteorological station is shown on the chart as a small circle, identified by its own index number.

increment /'ɪnkrɪmənt/ noun something added. The minimum detection level is carried.

incurred – incurred (incurring – incurred) adjective incurred if fuel surplus to requirements is carried by the aircraft. Fuel penalties can be incurred if fuel surplus to requirements is carried. When high-pressure air below a wing rotates around the tip to the low-pressure area above and increases as airspeed decreases and angle of attack increases.

opposite independent

opposite/adjec-
induction /ɪnˈdʌkʃən/ noun 1. the process by which the fuel/air mixture is drawn into the cylinders of an internal combustion engine ○ The four strokes of the engine are induction, compression, combustion and exhaust. 2. the production of electrical current in a conductor by a change of magnetic field ○ A transformer is a static device that changes the amplitude or phase of an alternating voltage or current by electro-magnetic induction.

inductive /ɪnˈdʌktɪv/ adjective referring to the production of electrical current in a conductor by a change of magnetic field ○ One side effect of low frequency in an inductive circuit is that excess heat may be produced.

inductor /ɪnˈdʌktər/ noun a component in the ignition system that produces electrical current in itself by a change of magnetic field

inert /ɪnˈɜːrt/ adjective not reacting with other substance

inert gas /ɪnˈɜːr t ˈɡæs/ noun a gas that does not react with other substances ○ Inert gases are helium, neon, argon, krypton and xenon.

inertia /ɪnˈɜːr t ɪə/ noun the tendency of a body at rest to stay at rest or of a moving body to continue moving in a straight line unless acted on by an outside force ○ Inertia switches operate automatically when a particular g (acceleration due to Earth’s gravity) loading occurs.

inertial /ɪnˈɜːr t ɪəl/ adjective referring to inertia

inertial navigation system / ɪnˈɜːr t ɪəl ˈnævɪdʒəs ɪn ˈsɪstəm/ noun a navigation system which calculates aircraft position by comparing measurements of acceleration with stored data, using gyro rather than radars. Abbreviation INS

inferential /ɪnˈfɛr ə nʃəl/ adjective obtained by deduction ○ The inferential method of ice detection is used in flight trials for aircraft certification.

flammable /ɪnˈfleɪməbl/ adjective easily set on fire ○ Petrol is an inflammable liquid. (NOTE: Flammable and inflammable mean the same thing.) ○ highly inflammable very easily set on fire, and therefore hazardous

inflate /ɪnˈfleɪt/ verb to blow air into something and thereby increase its size ○ A sharp pull on the cord will discharge the gas bottle and inflate the life jacket. Opposite deflate

inflation /ɪnˈfleɪʃən/ noun 1. the act of blowing air into something, e.g. a balloon or a tyre, and so increasing its size ○ Tyre inflation pressures should be maintained within 4% limits. 2. a continuing increase in the price of things and a decrease in the buying power of money ○ Annual inflation is 4%. Opposite deflation

in-flight /ˈɪn fliːt/ adjective taking place during a flight ○ in-flight emergency ○ in-flight oil loss

influence /ɪnˈfluəns/ noun a power which affects people or things ○ The Atlantic Ocean has a great influence on the climate of the British Isles. ○ verb to have an effect on, to change ○ In an emergency, a crew member’s power of command will influence the reaction of passengers.

inform /ɪnˈfɔːrm/ verb to tell somebody something ○ After a particularly heavy landing, the pilot should inform an engineer so that checks can be made to the aircraft structure.

information /ɪnˈfɔːr məʃən/ noun a collection of facts or data ○ Meteorological visibility gives information on the transparency of the atmosphere to a stationary ground observer. (NOTE: Information has no plural form.)

infra- /ɪnˈfərə/ prefix below or beneath

infrared /ɪnˈfɜːr ər/ infra-red, infra-red adjective referring to the range of invisible radiation wavelengths from about 750 nanometres to 1 millimetre ○ Solar radiation is short wave and of high intensity while terrestrial radiation is infra-red

infrequent /ɪnˈfrikrənt/ adjective not often ○ In northern Europe, thunderstorms are infrequent in winter time.
ingest /ɪnˈdʒest/ verb to take in, or to absorb into, something such as a jet engine through the intake o Jet engines may be damaged by ingested chunks of ice.

ingestion /ɪnˈdʒestʃən/ noun the act of taking something into something such as a jet engine through the intake o Ingestion of birds may seriously damage the blades of turbo-fan engines.

inherent /ɪnˈhɛrənt/ adjective existing as a basic or fundamental characteristic o A boiling point of 100°C is an inherent characteristic of water.

inhibitor /ɪnˈhɪbɪtər/ noun a device or substance which prevents or limits the effect of something o Icing inhibitor

inhibit /ɪnˈhɪbɪt/ verb to prevent or to limit the effect of something o Cloud cover inhibits cooling of the Earth’s surface at night.

inhibition /ˌɪn.hɪˈbɪʃ(ə)n/ noun the prevention or limitation of the effect of something o Fuel contains chemicals for the inhibition of fungal growth.

inhalation /ɪnˈhæltʃən/ noun the act of getting something by taking the first step, starting o Normally speaking, the captain is responsible for the initiation of emergency procedures.

initiative /ɪnˈdʒɪətɪv/ noun the power or ability to begin or to follow through competently with a plan or task o Crew members must be able to act collectively and with initiative in unusual situations.

inject /ɪnˈdʒɛkt/ verb to force or drive a fluid into something o An accelerator pump, operated by the movement of the throttle lever, injects fuel into the choke tube.

injection /ɪnˈdʒɛkʃən/ noun the forcing of fluid into something o Power output can be boosted to a value over 100% maximum power, by the injection of a water methanol mixture at the compressor inlet or at the combustion chamber inlet.

injector /ɪnˈdʒɛktər/ noun a device that will force or drive a fluid into something

injury /ˈɪn.dʒəri/ noun damage or harm done to a person o Escape slides are designed to minimise the risk of injury to passengers when leaving the aircraft.

inland /ˈɪn.lænd/ adjective, adverb referring to the interior of a country or land mass o Sea fog can extend for considerable distances inland.

inlet /ˈɪn.leɪt/ noun 1. an opening which allows an intake of something o Turbine inlet o Combustion chamber inlet o Air enters the cabin through an inlet. 2. a coastal feature such as at the mouth of a river

inlet valve /ˈɪn.leɪt ˈvælv/ noun the valve in a piston engine which allows fuel to enter the cylinder

inner /ˈɪnər/ adjective positioned farther inside o Inner wing the part of the wing near the fuselage

inner marker /ˈɪnər mɑrkrə/ noun an ILS marker beacon placed between the middle marker and the end of the ILS runway

inoperative /ɪnˌəʊpəˈreɪtɪv/ adjective not functioning o To prevent accidental retraction of the undercarriage, a safety switch is fitted in such a way to the oleo, that when it is compressed on the ground, the ‘undercarriage up’ selection is inoperative.

input /ˈɪn.puːt/ noun something such as energy, electrical power or information, put into a system to achieve output or a result o Pumps require high input cur-
installation /ɪnstəˈleɪʃ(ə)n/ noun 1. the act of putting equipment or devices into position and connecting them for use. 2. equipment or devices which are installed. In some auxiliary-power-unit installations the air intake area is protected against ice formation by bleeding a supply of hot air from the compressor over the intake surfaces.

instance /ɪnˈstɑːns/ noun an example which is used to provide evidence of something. Failure to check fuel levels before take-off is an instance of bad airmanship. For instance e.g.

instant /ˈɪnstænt/ adjective immediate, happening immediately. A very short period of time. The pilot has to act in an instant to counteract the severe down draughts of a microburst.

instinctive /ɪnˈstɪŋktɪv/ adjective natural, rather than thought-out. In most modern light aircraft, use of the trim wheel is instinctive, i.e. forwards for nose down and backwards for nose up.

insert /ɪnˈsɛrt/ verb to put in or into. To prevent tyre explosion due to overheating, fusible plugs are inserted into the wheel assemblies. Insert your telephone number in the space provided on the form. Insert the key in the lock and turn it.

insertion /ɪnˈsɛrʃ(ə)n/ noun the act of putting in or into. There is a space on the form for the insertion of a postal address. When the contours for a particular pressure level have been drawn in, the chart is completed by insertion of spot temperatures and wind speed information.

insignificant /ɪnˈsɪgnɪkənt/ adjective not important, of no consequence. Minor changes in wind speed or direction are insignificant.

inspect /ɪnˈspekt/ verb to look at something closely and to check for problems or defects. Propellers should be inspected prior to flight.

inspection /ɪnˈspekʃ(ə)n/ noun a careful check for problems. Before flight, the pilot should carry out a careful inspection of the aircraft.

instability /ɪnˈstæbiləti/ noun a condition in which a body or mass moves easily, and with increasing speed, away from its original position. Atmospheric instability often results in strong vertical currents of air. The built-in instability of some modern fighter aircraft makes them highly manoeuvrable but difficult to control without fly-by-wire technology.

install /ɪnˈstɛl/ verb to put in position, connect and make ready for use. Most carburettors are installed in a warm position to help against icing. An installed battery a battery in position in the aircraft.
on an instrument called the airspeed indicator.

**Instrument approach procedure** /ˌɪntrɪˈstrʌmpətʃ/ noun a set of procedures which a pilot must follow when approaching an airport under **instrument flight rules**

**Instrumentation** /ˌɪnstrəˈmɛnʃən/ noun a set of specialised instruments on an aircraft. Instrumentation in some basic light aircraft is restricted to a few instruments only. Some modern light aircraft have very sophisticated instrumentation.

**Instrument error** /ˌɪnstrəˈmɛnt ərə/ noun the difference between indicated instrument value and true value.

**Instrument flight rules** /ˌɪnstrəˈmɛnt ˈflaɪt rəldz/ plural noun regulations which must be followed when weather conditions do not meet the minima for visual flight. The flight from Manchester to Prestwick was conducted under instrument flight rules. Abbreviation **IFR**

**Instrument flying** /ˌɪnstrəˈmɛnt ˈflaɪŋ/ noun flying using no references other than the flight instruments. Some conditions require instrument flying. When in cloud, instrument flying is required. Abbreviation **IF**

**Instrument landing** /ˌɪnstrəˈmɛnt ˈlændɪŋ/ noun the landing of an aircraft when a pilot is relying on information obtained from instruments rather than from what can be seen outside the aircraft.

**Instrument landing system** /ˌɪnstrəˈmɛnt ˈlændɪŋ sɪstəm/ noun aids for an instrument landing approach to an airfield, consisting of a localiser, glide slope, marker beacons and approach lights. The instrument landing system provides both horizontal and vertical guidance to aircraft approaching a runway. Abbreviation **ILS**

COMMENT: The ILS is the most used precision approach system in the world.

**Instrument meteorological conditions** /ˌɪnstrəˈmɛnt ˌmɪtɪəˈrɒlɒgɪkəl ˈkændɪtɪʃənz/ plural noun meteorological conditions of visibility and distance from cloud ceiling which are less than those for visual meteorological conditions. Abbreviation **IMC**

**Instrument rating** /ˌɪnstrəˈmɛnt ˈreɪtɪŋ/ noun an additional qualification added to a licence, such as PPL, allowing a pilot to fly in instrument meteorological conditions. He gained his instrument rating in 1992. Abbreviation **IFR**

**Insufficient** /ˌɪnsəˈfɪʃnt/ adjective not enough. Insufficient height resulted in the pilot landing short of the runway.

**Insulate** /ɪnˈzjʊleɪt/ verb 1. to prevent the passing of heat, cold or sound into or out of an area. 2. to prevent the passing of electricity to where it is not required, especially by using a non-conducting material. Bus bars are insulated from the main structure and are normally provided with some form of protective covering.

**Insulating** /ɪnˈzjʊleɪtɪŋ/ adjective preventing the unwanted passage of heat, cold, sound or electricity.

**Insulating tape** /ˌɪnˈzjʊleɪtɪŋ tɛp/ noun special adhesive tape which is used to insulate electrical wires. Insulating tape was used to prevent the electrical wires from touching.

**Insulation** /ˌɪnˈzjʊleɪʃən/ noun an act of or state of preventing the passing of heat, cold, sound or electricity from one area to another. For continuous supersonic flight, fuel tank insulation is necessary to reduce the effect of kinetic heating.

**Insulator** /ɪnˈzjʊleɪtər/ noun a substance which will insulate, especially which will not conduct electricity. Wood is a good insulator.

**Intake** /ˈɪnteɪk/ noun an opening through which a fluid is allowed into a container or tube.
intake guide vane

intercept /ɪntəˈsɛpt/ verb to stop or interrupt the intended path of something. ○ When a radio transmission is made from a moving platform, there will be a shift in frequency between the transmitted and intercepted radio signals.

interconnect /ɪntəˈkəʊncɪkt/ verb to connect together. ○ The fire extinguishers for each engine are interconnected, so allowing two extinguishers to be used on either engine.

inter-crew /ˌɪntəˈkrjuː/ adjective inter-crew communications communications between members of the crew.

interfere /ɪntəˈfɪər/ verb to interfere with to get in the way of something or come between things and thus create a problem. ○ An engine intake close to another surface, such as the fuselage tail section, must be separated from that surface so that the slower boundary layer air does not interfere with the regular intake flow.

interference /ɪntəˈfɜːrəns/ noun the prevention of reception of a clear radio signal. ○ Some equipment, such as generators and ignition systems, will cause unwanted radio frequency interference. ○ precipitation interference interference caused by rain, snow or hail.

interlock /ˌɪntəˈlɒk/ noun a series of switches and/or relays. ○ Interlocks operate in a specific sequence to ensure satisfactory engagement of the autopilot.

inter- prefix between

interact /ɪntəˈrækt/ verb to act on each other. ○ Angle of attack and the profile of the wing section interact to produce lift. ○ Direct and reflected path signals can interact to cause bending of the localiser and/or generation of a false glidepath.

intermediate /ɪntəˈmiːdiət/ adjective 1. in a position between two others. ○ between beginners and advanced. ○ he is at an intermediate stage in his studies. 2. in his middle of his course of study. ○ an intermediate level language student. a second language learner who has reached a level between elementary and advanced level.

intermediate approach /ˌɪntəˈmiːdiət əˈprəʊʃ/ noun the part...
of the approach from arriving at the first navigational fix to the beginning of the final approach.

**Intermediate Frequency** (IF) is the frequency in a radio receiver to which the incoming received signal is transformed. Abbreviation IF.

**Intermittent** (/ɪntəˈmɪnt/) adjective stopping and starting at intervals.

The cycle of induction, compression, combustion and exhaust in the piston engine is intermittent, whereas in the gas turbine, each process is continuous.

**Internal** (/ɪnˈtɜːnəl/) adjective referring to the inside or interior of something.

**Internal Damage** Opposite to the steam engine.

**Internal Combustion Engine** (/ɪnˌtɜːnəl kəmˈbʌʃn ənˈdʒɪn/ noun) type of engine in which the fuel is burnt within the cylinders of the engine, as opposed to the steam engine.

**International** (/ɪntəˈnæʃənl/) adjective between countries.

**International Call** a telephone call between people in two different countries.

**International Air Transport Association** (/ɪntəˈnæʃənl əə ˈtrænsˈpɔːt ərəˈʃəʊn/ noun) an international organisation that supervises and coordinates air transport and to which most major airlines belong. Abbreviation IATA.

**International Calling Frequency** (/ɪntəˈnæʃənl ˈkælən ˌfrɪkwənsi/)

**International Distress Frequency** (/ɪntəˈnæʃənl ˈdɪstrəs ˌfrɪkwənsi/)

**International Civil Aviation Organization** (/ɪntəˈnæʃənl ˌsɪvɪl ˌɛərˈveɪjənˌɔrˌɡənɪˈzeɪʃən/ noun) an organisation established in 1947 by governments that "agreed on particular principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner." Air navigation obstructions in the United Kingdom are shown on ICAO aeronautical charts. Abbreviation ICAO.

**COMMENT:** ICAO is based in Montreal (Canada).
interrupted by variations which occur in pressure patterns.

interrupt /ɪn'tarʊpt/ noun a break in the continuity of something ○ Because of the summer holiday, there was an interruption in the flying training course.

intersect /ɪn'trəsekt/ verb to cut across each other ○ Meridians intersect at the poles and cross the equator at right angles.

intersection /ɪn'trəsekʃən/ noun the point at which two lines cross each other ○ The aircraft came to a stop at the intersection between runways 09 and 16. ○ The intersection of the drift line and the wind vector gives the drift point.

intertropical convergence zone /ɪntətrəpəl kən'verʒəns ˈziːn/ noun the boundary between the trade winds and tropical air masses from the northern and southern hemispheres ○ The intertropical convergence zone is the zone in which the trade winds from the two hemispheres approach each other. Abbreviation ITCZ

interval /ɪn'tervəl/ noun 1. the amount of space between places or points ○ The intervals at which contours are drawn depends on the scale of the chart and this interval, known as the vertical interval, is noted on the chart. 2. the period of time between two events ○ A precise interval is essential to obtain correct ignition timing on all cylinders.

introduction /ɪn'trədʌkʃən/ noun 1. something written which comes at the beginning of a report, chapter, etc., or something spoken which comes at the beginning of a talk ○ In his introduction, the chief executive praised the efforts of the workforce over the previous 12 months. 2. the act of bringing into use ○ The introduction of fly-by-wire technology has made the pilot’s task easier.

inverse /ɪn'vers/ adjective reversed in order or effect ○ There is an inverse relationship between altitude and temperature, i.e. temperature decreases as altitude increases.

inversion /ɪn'vers(ə)n/ noun 1. an atmospheric phenomenon where cold air is nearer the ground than warm air ○ Smog is smoke or pollution trapped on the surface by an inversion of temperature with little or no wind. 2. turning something upside down ○ Inversion of the aircraft in flight may result in fuel starvation.

inversion layer /ɪn'vers(ə)n 'leɪər/ noun a layer of the atmosphere in which the temperature increases as altitude increases

invert /ɪn'vernt/ verb to turn upside down ○ A glass tube is sealed at one end, filled with mercury and then inverted so that the open end is immersed in a bowl containing mercury.

investigate /ɪn'vestɪɡet/ verb to examine or look into something in great detail ○ If the starter engaged light stays on after starting, it means that power is still connected to the starter and, if it is still on after 30 seconds, the cause must be investigated.

investigation /ɪn'vestɪɡeɪʃən/ noun a detailed inquiry or close examination of a matter ○ Accident investigation process of discovering the cause of accidents

…accident investigation by the FAA and the German LBA revealed that the crashed aircraft had been completely repainted in an unauthorized paint shop' [Pilot]

investigator /ɪn'vestɪɡeɪtər/ noun a person who investigates ○ Accident investigators found poor coordination between controllers.

invisible /ɪn'vezɪbl/ adjective impossible to see ○ Oxygen is an invisible gas.

involve /ɪn'velv/ verb to include ○ In large transport aircraft, because of the distance and numbers of people involved, effective and rapid communications are required between flight crew and cabin crew and between cabin crew and passengers. ○ Two aircraft were involved in an accident.

involved /ɪn'velvld/ adjective overcomplex, difficult ○ The procedure for
replacing a lost passport is very involved.

inward /'ɪnwaːd/ adjective directed to or moving towards the inside or interior.

To provide protection against smoke and other harmful gases, a flow of 100% oxygen is supplied at a positive pressure to avoid any inward leakage of poisonous gases at the mask.

inwards /'ɪnwaːdz/ adverb towards the inside or the interior. The door opens inwards. Opposite outwards.

ion /'aɪən/ noun an atom or a group of atoms that has obtained an electric charge by gaining or losing one or more electrons. Negative ion - positive ion. Ultra-violet light from the sun can cause electrons to become separated from their parent atoms in the gases in the atmosphere, the atoms left with resultant positive charges being known as ions.

ionisation /ɪənaɪ'zɪʃn/ noun the process of producing ions by heat or radiation. The intensity of ionisation depends on the strength of the ultra-violet radiation and the density of the air.

ionosphere /'aɪənəʊsfər/ noun the part of the atmosphere 50 km above the surface of the earth. Since the strength of the sun's radiation varies with latitude, the structure of the ionosphere varies over the surface of the earth.

ionospheric /'aɪənəʊsfərɪk/ adjective referring to the ionosphere.

ionospheric attenuation /ɪənaɪə'neɪʃn/ noun loss of signal strength to the ionosphere.

ionospheric refraction /ɪənaɪə'nekrəʃən/ noun a change in direction as the wave passes through an ionised layer.

I/R abbreviation instrument rating.

irregular /'ɪrɛɡjʊəl/ adjective not regular. Pilots of long-haul flights are subject to an irregular sleep pattern.

irrespective /ɪrɪˈspektɪv/ adjective preposition. Taking no account of. Regardless of. Rescue flights continue their work irrespective of the weather conditions.

ISA /'aɪəsə/ abbreviation international standard atmosphere.

isobar /'aɪəsəˈbɑːr/ noun a line on a weather chart joining points of equal atmospheric pressure. Isobars are analogous to contour lines.

isobaric /'aɪəsəˈbærɪk/ adjective referring to or showing isobars. Isobaric charts.

isolate /'aɪəsəleɪt/ verb to separate something from other things or somebody from other people. The low-pressure fuel cock isolates the airframe fuel system from the engine fuel system to enable maintenance and engine removals to be carried out.

isolated /'aɪəsəleɪtɪd/ adjective separate. Isolated rain showers well spaced out rain showers.

isolation /'aɪəsəˈleɪʃn/ noun the state of being separated from something or somebody. Isolation of the aircraft's passengers and crew from the reduced atmospheric pressure at altitude is achieved by pressurisation of the cabin.

isotach /'aɪəsəʊtɑː/ noun a line of equal wind speed on charts (Note: Wind speed is normally given in the form of isotachs.)

isotherm /'aɪəsəθɜːm/ noun a line of equal temperature on charts. The article was in last month's issue of the magazine.

issue /'ɪʃu/ noun a number or copy. Issue 1. to give out. The captain issued the evacuate command.

2. to publish. The magazine is issued monthly.

3. to give out, to grant. The Civil Aviation Authority issue licences.

ITCZ abbreviation intertropical convergence zone.

item /'aɪtəm/ noun a single article or unit in a collection, on a list, etc.

Before practising stalls, the pilot should secure all loose items in the cockpit.
J

symbol joule

JAA abbreviation Joint Aviation Authorities

Jack /dʒæk/ noun a powered device to move heavy components, such as control surfaces of large aircraft

Jacket /dʒækt/ noun 1. a short coat with long sleeves worn with trousers or skirt 2. an outer covering or casing

Liquid cooling of a piston engine is achieved by circulating a liquid around the cylinder barrels, through a passage formed by a jacket on the outside.

Jam /dʒæm/ verb to cause moving parts to become locked and unable to be moved

A jammed door a door which has become fixed and unmovable

The investigation revealed that the accident had been caused by the controls being jammed due to a spanner caught in the control cables.

JAR abbreviation Joint Aviation Requirements

Jato /dʒətoʊ/ noun an auxiliary jet or rocket designed to aid the combined thrust of aircraft jet engines during take-off

Jeopardise /dʒəpədɪz/, jeopardize verb to put in doubt or danger

Injury to a crew member will seriously jeopardise the successful evacuation of the aircraft.

Jeppesen chart /dʒɛpsən/ noun a type of aeronautical chart produced by a US company and widely used in aviation

Jet /dʒet/ noun 1. a strong fast stream of fluid forced out of an opening 2. a type of engine used to power modern aircraft which takes in air at the front, mixes it with fuel, burns the mixture and the resulting expansion of gases provides thrust

The turbo jet engine was invented by Frank Whittle in 1941. 3. a type of aircraft which has jet engines

The de Havilland Comet was the first commercial jet.

Jetbridge /dʒetbrɪdʒ/ noun same as loading bridge

Jet fighter /dʒet ,fætər/ noun a fighter plane that is powered by a jet engine or engines

Jet lag /dʒet læg/ noun the temporary disturbance of body rhythms such as sleep and eating habits, caused by high-speed travel across several time zones

When I fly to Canada, it always takes me a couple of days to recover from jet lag.

Jetliner /dʒetlaɪnə/ noun a large passenger aircraft powered by jet engines

Jet plane /dʒet plɛrn/ noun an aircraft powered by jet engines

Jet-propelled aircraft /dʒet prə, pɛld /ə'kraft/ noun aircraft powered by jet engines

Jet propulsion /dʒet prə,pəlʃ(ə)n/ noun jet power which provides thrust for an aircraft

The first known example of jet propulsion was when Hero, a Greek engineer, made a machine as a toy in the year 120 BC.

Jet stream /dʒet strım/ noun 1. a band of strong winds at high altitude

The occurrence of the equatorial jet stream is due to a temperature gradient with colder air to the south. 2. the flow of gases from a jet engine
The undercarriage failed to retract and the captain had to jettison the fuel over the sea before landing the aircraft.

Join the two wires. With a pencil and ruler, join point A to point B. 2. to bring together to make one whole part. Wing panels are joined by rivets. 3. to become a member of a club, etc. She had to pay a membership fee to join the gliding club.

Fuselage frame rings are formed with only one joint.

Ignition units are measured in joules (1 joule = 1 watt per second). (Note: It is usually written J with figures: 25J.)

A large wide-bodied aircraft capable of carrying several hundred passengers.

A jet aircraft with fixed wings that can take off and lands vertically.

A place where two things meet. The Joint Aviation Authorities currently has 37 member states, including all the countries of the European Union.

A JAA requirement concerning design, manufacture, maintenance and operation of aircraft. Abbreviation JAR (Note: JARs of relevance to maintenance staff are JAR-145, JAR-OPS 1 and JAR-OPS 3.)
Due to katabatic effects, cold air flows downwards and accumulates over low ground. Compare anabatic katabatic wind, a wind which occurs when the air in contact with the slope of a hill is cooled to a temperature lower than that in the free atmosphere, causing it to sink. Compare anabatic wind.

Kelvin is the base SI unit of measurement of thermodynamic temperature. Symbol K (NOTE: Temperatures are shown in kelvin without a degree sign: 20K. Note also that 0°C is equal to 273.15K.)

Kerosene will only burn efficiently at, or close to, a ratio of 15:1.

Kevlar is a trademark for a light and very strong composite material. Kevlar and carbon fibre account for a large percentage of a modern jet airliner’s structure.

Key is a piece of metal used to open a lock.

Kilogram is a measure of weight equal to one thousand grams. Abbreviation kg (NOTE: It is written kg after figures.)

Kilometer is a measure of length equal to one thousand metres (NOTE: It is written km with figures: 150 km. The US spelling is kilometre.)

Kilowatt is a unit of measurement of electricity equal to 1000 watts. Abbreviation kW

Kilowatt-hour is a unit of 1000 watts of electricity used for one hour. Abbreviation kW-hr

Kinetic referring to motion or something produced by motion. Kinetic heating is the heating of aircraft skin by friction with the air as it moves through it.

Kinetic energy is energy of motion.

Kit is a set of items used for a specific purpose. A physician’s kit containing surgical equipment would be available to a qualified doctor assisting crew with major medical problems.

Knob is a rounded handle or dial. When the control knob is moved from the central position, the tendency of the engine to suddenly reverse the rotation of the propeller momentarily when being started. On most modern engines the spark is retarded to top-dead-centre, to ensure easier starting and prevent kick-back.
ailerons are moved. 3. a round button such as on a receiver. Turn the knob to increase the volume.

knot /nɒt/ noun a unit of speed equal to one nautical mile per hour, approximately 1.85 kilometres or 1.15 statute miles per hour. Abbreviation kt (NOTE: Wind speeds in aviation are usually given in knots.)

COMMENT: American light aircraft manufactured prior to 1976 had airspeed indicators marked in statute miles per hour. Knot means ‘nautical miles per hour’. It is therefore incorrect to say ‘knots per hour’.

knowledge /ˈnɒlɪdʒ/ noun familiarity, awareness or understanding gained through experience or study. A knowledge of the factors which affect surface temperatures will contribute a great deal to the understanding of meteorology.

kt abbreviation knot
label /ˈleɪb(ə)l/ noun a small piece of paper or cloth attached to an article with details of its owner, contents, use, destination, etc. ○ Hydraulic tubing has a label with the word HYDRAULIC. ○ verb 1. to identify by using a label ○ Parts are labelled with the manufacturer’s name. 2. to add identifying words and numbers to a diagram ○ There is a standard way of labelling the navigation vector.

lack /læk/ noun the absence of something or a need for something ○ The engine stopped because of a lack of fuel.

lag /læg/ noun a delay, especially the time interval between an input and the resultant output ○ There is a time lag between the piston moving down and the mixture flowing into the cylinder. ○ jet lag

Lambert’s projection /ˈlæmbərts prəˈdʒekʃ(ə)n/ a map projection of the earth based around two standard parallels of latitude. ○ Mercator’s projection

laminate /ˈlæmɪnət/ noun a sheet of man-made material made up of bonded layers ○ Direction of the fibres and types of cloth used in the laminate are all very important factors. ○ verb /ˈlæmɪnət/ to make by using bonded layers of material ○ laminated windscreens

lamp /læmp/ noun a small light ○ warning lamp a small light, often red, which informs of a possible danger by lighting up ○ The switch is connected to a warning lamp on the instrument panel which will illuminate if the oil pressure falls below an acceptable minimum.

land /lænd/ noun solid ground, as opposed to the sea ○ a large land mass such as Greenland ○ verb 1. to set an aircraft onto the ground or another surface such as ice or water, after a flight ○ to force land the aircraft to land the aircraft when it can no longer be kept in the air for any particular reason 2. to arrive on the ground after a flight ○ Flight BA321 landed at London Heathrow at 10.30 hours. ○ crash-land. Opposite take off

landing /ˈlændɪŋ/ noun the act of setting an aircraft onto the ground or another surface such as ice or water after flight ○ Take-off and landing are normally made into wind in order to reduce the length of the take-off and landing run. ○ In order to achieve a safe landing in a cross wind, the correct techniques must be used.

landing beacon /ˈlændɪŋ ˈbɪrɪkən/ noun a radio transmitter at an airfield that sends a beam to guide aircraft that are landing

landing beam /ˈlændɪŋ ˈbɪrɪm/ noun a radio beam from a beacon at a landing field that helps incoming aircraft to make a landing

landing charges /ˈlændɪŋ ˈtʃɑːndʒɪz/ plural noun money paid to an airport authority by an operator or private pilot for landing an aircraft

landing field /ˈlændɪŋ fɪld/ noun a place where aircraft can land and take off

landing gear /ˈlændɪŋ ˈgeər/ noun same as undercarriage

landing pad /ˈlændɪŋ ˈpæd/ noun same as helipad
landed carefully and serviced regularly. Laser ring gyro is used to detect laser light in a closed circuit to detect whether something is level or not.

A gust is a sudden increase in wind speed lasting only a few seconds. A piston engine lasts longer if it is handled carefully and serviced regularly.

The final chapter in a book. The chapter before the one being read.

Drift is the lateral movement of the aircraft caused by the wind.

The axis of the aircraft from wing tip to wing tip about which the aircraft pitches up and down.

The angular distance north or south of the Earth’s equator, measured in degrees, minutes and seconds, along a meridian, as on a map or chart, etc. Parallels of latitude are imaginary circles on the surface of the Earth, their planes being parallel to the plane of the equator.

The centre of London is latitude 51°30’N, longitude 0°5’W. Compare longitude

latter /ˈlætər/ adjective referring to something coming at the end or finish. The latter part of the take-off run.

The northern hemisphere consists largely of land.

The southern hemisphere consists largely of oceans.
launch 134

Airbus A320 and A340, the latter is the larger aircraft. The A340 is the larger of the two.

Launch /ləʊntʃ/ noun a small boat often used to transport people from a larger boat or ship to the shore. 1. To slide or drop a boat into the water to make it ready for use. 2. While passengers are fitting life jackets, crew will open exits and launch the life rafts. 2. To force something into motion. To launch a rocket.

Lavatory /ləvətri/ noun same as toilet 2.

Law /lɔː/ noun 1. A basic principle describing a relationship observed to be unchanged between things while particular conditions are met. 2. The law of gravity. 2. A set of agreed rules. Aviation law.

Layer /ˈleɪər/ noun 1. One horizontal part. 2. The lowest layer of the atmosphere is called the troposphere. 2. A thickness of something. Layers of fluid next to the surface over which it is flowing travels more slowly than layers further from the surface.

Layer cloud /ˈleɪər klaʊd/ noun same as stratus.

Layout /ˈleɪətʃ/ noun the way in which things are arranged. Cockpit layout is the design of the cockpit and the particular placement of controls, instruments, etc.

LC /ˈleɪdi/ abbreviation load controller

LCD /ˈleɪdi dɪˈziː/ abbreviation liquid crystal display

LDA /ˈleɪdi ˈeɪdi/ abbreviation landing distance available

LDR /ˈleɪdi ˈeɪdi/ abbreviation landing distance required

Lead /liːd/ noun a very heavy soft metallic element. Symbol Pb. Lead-free not containing lead; low-lead or lead-free fuel is used in most modern piston engines.

Lead /liːd/ noun 1. An electrical wire or narrow cable. 2. A lead connects the monitor to the computer. 2. To take the lead to take control of a situation. 2. A crew member should take the lead. Verb 1. To guide or show the way by going first. In an emergency situation, the aircraft commander may lead his passengers to safety. In a smoke-filled cabin, floor lighting leads passengers to the emergency exit. 2. To cause. In winter, the cold conditions often lead to frost and fog. 2. Contraction of metal parts and seals can lead to fluid leakage. (Note: Leading – led)

Lead-acid battery /ˈleɪd əsɪd ˈbæt(ə)rɪ/ noun a system of lead plates and dilute sulphuric acid, used as a starter battery or traction battery.

Leading edge /ˈleɪdi ɪŋ ɪdʒ/ noun the front part of the wing which meets the oncoming air first. In icing conditions, ice may build up on the leading edges.

Leak /liːk/ noun the escape of liquid or gas from a sealed container, or the amount of liquid or gas that has escaped. 2. Any failure of the aircraft structure may cause a leak of pressurised air which might be very difficult to cure. 2. Exhaust leak an escape of exhaust gases. Verb to escape from a sealed container. Fuel may leak from a fuel tank if the drain plug is not seated correctly.

Leakage /ˈliːkdiʒ/ noun the escape of liquid or gas from a sealed container. Any internal or external leakage of fuel will cause a reduction in the operating period. (Note: Leak is normally used for an individual instance while leakage is used more generally. There is a fuel leak from the central tank. Fuel leakage is a safety hazard.)

Lean /liːn/ adjective referring to a mixture in which the ratio of air to fuel is greater than usual. Moving the mixture control lever aft to the lean position reduces the amount of fuel mixing with the air.

Lean mixture /ˈliːn ˈmɪksʃər/ noun a fuel-air mixture in which the ratio of air to fuel is greater than usual.

LED /ˈleɪdi ɪd/ noun a semiconductor diode that emits light when current is applied. LEDs are used in cockpit displays. Full form light-emitting diode.
ward side. The flow of air over and to the lee of hills and mountains may cause particularly severe turbulence. Opposite windward

leg /leg/ noun part of a flight pattern that is between two stops, positions, or changes in direction. An airfield traffic pattern is divided into take-off, crosswind leg, downwind leg, base leg and final approach.

...their route was across the States to Canada, Greenland and the North Pole, into Norway, through Europe, back to Iceland, then two long legs across the Atlantic via South Greenland and back to Seattle [Pilot].

legal /ˈliːɡ(ə)l/ adjective lawful or within the law. Alcohol concentrations of 40 milligrams per 100 millilitres, i.e. half the legal driving limit in the UK, are associated with substantial increases in errors committed by pilots.

legend /ˈledʒənd/ noun a list explaining the symbols on a chart or a map. A legend is usually to be found at the edge or on the reverse side of most topographical charts.

length /ˈleŋθ/ noun 1. a measurement along something’s greatest dimension. The length of the aircraft. The runway is 3 kilometres. 2. a piece of something that is normally measured along its greatest dimension. A length of pipe. 3. the extent from beginning to end. The length of a book. 4. extent or duration, the distance between two points in space or time. The length of a briefing, how much time the briefing takes.

lengthwise /ˈleŋθwɔːz/ adjective, adverb along the length of something in a lengthwise direction. A lengthwise view.

lengthy /ˈleŋθi/ adjective 1. long, extensive. He wrote a lengthy report. 2. long, which lasts for a long time (NOTE: Lengthy often suggests a meeting or explanation which is longer than necessary and therefore uninteresting.) A lengthy meeting.

lengthy explanation a long explanation.

least /leɪst/ adjective, noun the least of something. The least important.

leaves /liːvz/ plural leaves.

leaves /liːvz/ plural leaves. (NOTE: Lengthy often suggests a meeting or explanation which is longer than necessary and therefore uninteresting.) A lengthy meeting.

lessen /ˈles(ə)n/ verb to make less. Reverse thrust is used to lessen the loads on brakes and tyres. Clean filters lessen the possibility of blockage.

letdown /ˈlɛtdaʊn/ noun the descent of an aircraft in preparation for landing, before the actual landing approach.

level /ˈlev(ə)l/ adjective 1. a position along a vertical axis. The level tone of an engine. The level of an aircraft in a climb. 2. a relative amount, intensity, or concentration. An advanced level of study. 3. on a scale. An advanced level of study.

levels /ˈlev(ə)lz/ plural levels.
level off 136

centration ○ an unsafe level of contamination ○ a reduced level of noise ○ A gas turbine engine has an extremely low vibration level.

level off /ˈlevəl/ verb to start to fly level with the ground after climbing or descending, or make an aircraft do this

lever /ˈlevər/ noun 1. a device with a rigid bar balanced on a fixed point and used to transmit force, as in raising a weight at one end by pushing down on the other ○ Push the lever fully up to activate the brake mechanism. ○ Push the button to release the lever. 2. a handle used to adjust or operate a mechanism ○ throttle lever ○ undercarriage selector lever ○ Feathering is accomplished by moving the pilot’s control lever; ■ verb to move as with a lever ○ The door would not open so the emergency services had to lever it open with specialised equipment.

LF abbreviation low frequency

licence /ˈlaɪs(ə)ns/ noun a document which is proof of official permission to do or to own something

COMMENT: Each licence has its own specific requirements and privileges. In the UK, one of the fundamental differences between a Private Pilot’s Licence and other types of licence is that the holder of a PPL is not allowed to fly for ‘hire or reward’, i.e. the pilot cannot receive payment for flying.

licence holder /ˈlaɪs(ə)ns hɑʊldə/ noun 1. a person who has a licence 2. a leather case, etc., in which to keep the licence document

license /ˈlaɪs(ə)ns/ noun US same as licence ■ verb to give somebody a licence or official permission to do or to own something

lie /laɪ/ verb 1. to be in a flat position, often horizontal ○ Seat rails are attached to the floor beams and lie level with the flooring. 2. to be situated ○ Great circles are represented by curves which lie on the polar side of the rhumb line. (NOTE: Care should be taken with the verbs to lie, as defined here: lie – lay – lain; to lie meaning ‘not to tell the truth’; lie – lied – lied and lay, meaning ‘to put down’ as in ‘lay the book on the table’: lay – laid – laid.)

life jacket /ˈlaɪf ˈdʒeɪkɪt/ noun an inflatable device, sometimes resembling a sleeveless jacket, to keep a person afloat in water ○ Pull down the toggles to inflate the life jacket.

life raft /ˈlaɪf rɑːft/ noun a small boat-like vessel for use on an emergency over water

life vest /ˈlaɪf vest/ noun same as life jacket ○ You will find a life vest under your seat.

lift /laɪft/ noun 1. a component of the total aerodynamic force acting on an aeroplane which causes an aeroplane to fly ○ In level flight, a lift force equal to the weight must be produced. ○ The pilot can achieve maximum lift by pulling hard back on the controls. 2. an electrically operated machine for moving people or goods between the floors of a building (NOTE: The US English is elevator.) ■ verb to move to a higher position ○ A foot-pound is the ability to lift a one pound weight a distance of one foot.

COMMENT: Bernoulli’s principle states that if the speed of a fluid increases, its pressure decreases; if its speed decreases, its pressure increases. Wings are shaped so that the high-speed flow of air that passes over the curved upper surface results in a decrease in pressure. Lift is created because of the pressure differential between the upper and lower surfaces of the wing. Lift is also created because the angle of attack allows the airflow to strike the underside of the wing. Daniel Bernoulli (1700–82) was a Swiss scientist.

light /laɪt/ noun 1. brightness produced by the sun, the moon, a lamp, etc. 2. electromagnetic radiation which can be sensed by the eyes ○ artificial light light made by using electrical, gas, etc., power 3. a source of light such as a lamp ○ Switch off the navigation lights. ■ adjective 1. without much weight, not heavy ○ Aluminium is a light metal. 2. of little force or requiring little force ○ a light wind a gentle wind ○ light controls flying controls which do not need much pilot effort to move them 3. of lit-
light aircraft /ˈlaɪtərˈkɒft/ noun a small, single engine aircraft generally for private not commercial use
lighting /ˈlaɪtɪŋ/ noun lights or a system of lights ○ Cabin lighting is switched off for take-off and initial climb ○ Emergency floor lighting guides passengers to the emergency exits.
lightning /ˈlaɪtnɪŋ/ noun a powerful and sudden electrical discharge from a cloud ○ Lightning is the most visible indication of thunderstorm activity.
lightning activity /ˈlaɪtnɪŋ əkˈtɪvətɪ/ noun a period of time when there are a lot of lightning flashes
lightning strike /ˈlaɪtnɪŋ straɪk/ noun the hitting of something by a discharge of lightning
light plane /ˈlaɪt pleen/ noun US same as light aircraft
likely /ˈlɪkli/ adjective probable ○ rain is likely rain will probably fall ○ icing is likely to occur in cumulonimbus clouds icing is often a problem if flying in cumulonimbus clouds.
limit /ˈlɪmɪt/ noun a point or line past which something should not go ○ There is a time limit of one hour for the examination ○ The minimum age limit for holding a PPL in the UK is 17 ○ the upper limit of cloud the highest point at which there is cloud ○ verb to restrict or to prevent from going past a particular point ○ The amount of cabin baggage is limited to one bag per passenger.
limitation /ˈlɪmɪteɪʃən/ noun the act of limiting or the state of being limited ○ Limitation of the maximum engine rpm to a little above maximum engine cruise rpm prevents compressor stall at the higher rpm range.
line /laɪn/ noun 1. a thin continuous mark as made by a pencil, pen, etc. or printed ○ Draw a line from point A to point B. 2. a real or imaginary mark placed in relation to points of reference ○ An isobar is a line joining points of equal pressure. 3. a long row of people, etc. ○ a line of people ○ a line of cumulus clouds ○ a row of written or printed words ○ Look at line 4 on page 26. 5. a telephone connection to another telephone or system ○ Dial 9 to get an outside line. 6. an electrical cable or wire ○ telephone line cable supported on pylons from one telephone exchange to another ○ On final approach to an unfamiliar airfield, pilots of light aircraft should keep a sharp lookout for power lines and telephone lines. 7. a system of pipes ○ a fuel line 8. a company which owns and manages a system of transportation routes ○ a shipping line ○ an airline such as KLM or QANTAS
linear /ˈlaɪnər/ adjective referring to a line, straight ○ Although air may appear to be still or calm it is, in fact, moving west to east in space, the linear velocity being zero at the poles and approximately 1,000 mph at the equator ○ linear scale a horizontal or vertical straight-line, rather than circular, scale on an instrument
linear actuator /ˈlaɪnər ˈækjʊətər/ noun an actuator which operates in a straight back and forth manner, e.g. to open undercarriage doors
line feature /laɪn ˈfiːtʃər/ noun a useful navigational landmark, e.g. a railway line, road or river
line of position /laɪn əv pəˈzɪʃən/ noun same as position line
line of sight /laɪn əv ˈsaɪt/ noun a clear path between sending and receiving antennas. Abbreviation LOS
line up /laɪn əp/ verb to move aircraft into position ready for departure ○ Line up with the nosewheel on the runway centre line.
link /laɪnk/ noun 1. a connection ○ Light aircraft can be steered while taxiing via a direct link from rudder pedals to nosewheel. 2. a relationship ○ There is a link between alcohol abuse and pilot error resulting in accidents ○ verb 1. to make a connection, to join ○ The connecting rod links the piston to the crankshaft. 2. to establish a relationship between two situations ○ They link alcohol abuse and pilot error.
linkage /lɪŋkd/ noun a system or series of mechanical connections such as rods, levers, springs, etc. ○ throttle linkage ○ rudder linkage ○ The linkage from the control column to the control surfaces should allow full and free movement.

liquid /ˈlɪkwɪd/ adjective having a consistency like that of water ○ Liquid oxygen is stored in cylinders. ■ noun a substance with a consistency like water ○ Water is a liquid, ice is a solid.

liquid crystal display /ˈlɪkwɪd ,krɪst(ə)l dɪˈskrɪpt/ noun liquid crystals that reflect light when a voltage is applied, used in many watch, calculator and digital displays. Abbreviation LCD

liquid fire /ˈlɪkwɪd ˈfɑːtə/ noun oil or petrol fire

list /lɪst/ noun a series of names, words, things to do, etc., arranged one after the other in a vertical column ■ verb to write a series of names, words, etc. one after the other in a vertical column ○ List the advantages of a stressed-skin construction.

liter /ˈlɪtər/ noun US same as litre

lithium /ˈlɪθiəm/ noun a soft silvery metallic element, the lightest known metal, often used in batteries ○ an alloy of aluminium and lithium

litmus /ˈlɪtməs/ noun a substance which turns red in acid, and blue in alkali

litmus paper /ˈlɪtməs ˈpeɪpə/ noun a small piece of paper impregnated with litmus to test for acidity or alkalinity

litre /ˈlɪtraɪ/ noun the volume of one kilogram of water at 4°C (= 1,000cc or 1.76 pints) (NOTE: It is written l after a figure: 10l; also written liter in US English.)

live /laɪv/ adjective carrying electricity ○ live wire

livery /ˈlɪvərɪ/ noun the colour scheme and markings on the outside of an aircraft that identify it as belonging to a particular airline

LMT abbreviation local mean time

load /ləʊd/ noun 1. the weight or mass which is supported ○ The load on the undercarriage decreases as lift increases and, when the aircraft rises into the air, the aircraft is supported by the wings. ○ load bearing supporting some weight 2. a force which a structure is subjected to when resisting externally applied forces ○ The load on the control column is increased when the aircraft is flown out of trim. 3. something that is carried in the aircraft ○ fuel load ○ passenger load the number of passengers on board 4. the power output of a generator or power plant 5. the resistance of a device or of a line to which electrical power is provided ■ verb 1. to put something into a container, often for the purpose of transportation ○ The aircraft is loaded with fuel before take-off. 2. to transfer data from disk into a computer main memory ○ She loaded the software onto the computer.

load-bearing structure /ˈləʊd ,bɛərɪŋ streɪktʃə/ noun a structure which supports the weight of the aircraft in flight or on the ground

load controller /ˈləʊd kənˈtrəʊlər/ noun a device which monitors the output of a generator

load factor /ˈləʊd ,fæktər/ noun the stress applied to a structure as a multiple of stress applied in 1g flight ○ The higher the angle of bank, the greater the load factor.

COMMENT: In straight and level, unaccelerated flight, the load factor is 1. When an aircraft turns or pulls up out of a dive, the load factor increases. An aircraft in a level turn at a bank angle of 60 degrees has a load factor of 2. In such a turn, the aircraft’s structure must support twice the aircraft’s weight.

loading /ˈləʊdɪŋ/ noun 1. the act or process of adding a load to an aircraft ○ loading is in progress passengers, baggage, freight, etc., are being put on the aircraft 2. the total aircraft weight or mass divided by wing area ○ Inertia switches operate automatically when a particular g (acceleration due to Earth’s gravity) loading occurs. 3. a force or stress acting on an object ○ centrifugal loading centrifugal force acting on something ○ Centrifugal loading
moves the valve towards the closed position. 4. The act of transferring data from disk to memory. Loading can be a long process.

loading bridge /ˈlɑːdɪŋ braidʒ/ noun a covered walkway from an airport departure gate that connects to the door of an aircraft, used by passengers and crew getting on and off the aircraft.

load manifest /ˈlɑːd mænɪfest/ noun a detailed list of the cargo on a flight. Also called load sheet.

loadmaster /ˈlɑːdmeɪstər/ noun the person who is in charge of the work of loading cargo onto a military or commercial transport aircraft.

load sheet /ˈlɑːd fɪʃt/ noun same as load manifest.

lobe /ˈlɑːb/ noun one of two, four or more sub-beams that form a directional beam. any system employing beam sharpening is vulnerable to side lobe generation at the transmitter.

LOC abbreviation: localiser.

local /ˈlɒskəl/ adjective not broad or widespread. □ local meteorological conditions. weather conditions in the restricted area of a particular place.

local authority /ˈlɒskəl ˈɔrɪti/ noun a government body responsible for the various services of an area.

localised /ˈlɒskəlaɪzd/ adjective restricted in area or influence. □ a localized fire. a fire which has not spread.

localiser /ˈlɑːskər/ noun a component of the instrument landing system that provides horizontal course guidance to the runway. if, during the approach, the aircraft deviates beyond the normal ILS glideslope and/or localiser limits, the flight crew are alerted. Abbreviation LOC.

locality /ˈlɑːskəti/ noun a small geographical area. □ The highest point in a locality is marked by a dot with the elevation marked alongside.

local mean time /ˈlɑːskəm ˈmænɪ, tæm/ noun the time according to the mean sun. Abbreviation LMT.

logic /ˈlɒdʒɪk/ noun electronic circuits which obey mathematical laws. □ Circuits packs consist of basic decision-making elements, referred to as logic gates, each performing operations on their inputs and so determining the state of their outputs.
logical /ˈlɒdʒɪk(ə)l/ adjective referring to something which, because of previous experience or knowledge, is natural or expected. Pre-flight checks on light aircraft are made in a logical manner from one side of the aircraft to the other.

longeron /ˈlɒŋdʒərən/ noun the main structural part of an aircraft fuse-lage extending from nose to tail. Long-erons are normally used in aircraft which require longitudinal strength for holds underneath the floor.

long-haul /ˈlɒŋ ˈhɔːl/ adjective travelling over a long distance. Crew flying long-haul routes have to adapt to time changes. Opposite short-haul

longitude /ˈlɒŋɡət̬ ˈjuːdʒ(ə)n/ noun the angular distance on the Earth’s surface, measured east or west from the prime meridian at Greenwich, UK, to the meridian passing through a position, expressed in degrees, minutes, and seconds. The centre of London is latitude 51°30’N, longitude 0°5’W. Compare latitude

longitudinal /ˈlɒŋɡəl ˈjuːdʒ(ə)n(ə)/ adjective in a lengthwise direction

longitudinal axis /ˈlɒŋɡəl ˈjuːdʒ(ə)n(ə)l ˈæksɪs/ noun the axis of the aircraft which extends from the nose to the tail. Opposite axis, roll

long-range /ˈlɒŋ ˈrɛntʒ/ adjective 1. covering a long distance. Long-range radar 2. long-range weather forecast covering a period more than 5 days ahead

lookout /ˈluːkaut/ noun a careful watch. To keep a careful lookout for other aircraft. To be on the lookout for to watch carefully for something

loop /luːp/ noun a flight manoeuvre in which the aircraft rotates, nose up, through 360° while holding its lateral position

loop antenna /ˈluːp ənˈtɛnə/ noun circular-shaped conductive coil which rotates to give a bearing to a ground station

LORAN abbreviation long-range air navigation system

lose /luːz/ verb not to have something any longer. (NOTE: losing – lost) to lose altitude to descend from higher to lower altitude

loss /lɒs/ noun no longer having something. The pilot reported loss of engine power. Loss of control no longer being able to control. Loss of life death in an accident. Loss of a signal disappearance of a signal. The term attenuation means the loss of strength of a radio signal.

loudspeaker /ˈlaoʊdˌspeɪkər/ noun an electromagnetic device that converts electrical signals into audible noise. Also called speaker

lounge /ˈlauŋ/ noun VIP lounge a special room at an airport for VIPs. Opposite departure lounge

louvre /ˈluːvə/ noun thin, horizontal openings for air cooling. Cold air can be let into the cabin through adjustable louvres. (NOTE: The US spelling is louver.)

low /ləʊ/ adjective 1. not high, not tall. Low building. Low cloud clouds relatively near the surface of the earth. Low ground an area of land which is not high, as opposed to mountains. Low pressure a low temperature a temperature which shows that it is cold. Quiet, not loud. Low an area of low atmospheric pressure. Polar low an area of low atmospheric pressure over polar regions

lower /ˈləʊər/ adjective 1. referring to something that is at a low level or towards the bottom. Lower the layers of the atmosphere. Lower the surface of the wing. Lower the undercarriage. Move the undercarriage move the undercarriage into position ready for landing. Lower the flaps set the flaps to a down position. To reduce in amount or intensity. To lower the temperature to reduce the temperature. To lower the pressure to decrease the pressure.
the volume (of sound) to make something such as a radio quieter or less loud

lower airspace /ˌləʊər ˈɛəspərs/ noun the airspace below FL245 (approximately 24,500 ft)

lower atmosphere /ˌləʊər ˈætmosfər/ noun the layer of the atmosphere in which changes in the weather take place. Also called troposphere

low frequency /ˌləʊ ˈfrɪkwənsi/, low frequency band /ˌləʊ ˈfrɪkwənsi ˈbænd/ noun a radio communications range of frequencies between 30–300 kHz. Abbreviation LF

lubricate /ˈlʌbrɪkeɪt/ verb to oil or to grease moving parts in order to reduce friction. Oil passes through the hollow crankshaft to lubricate the big-end bearings. Turbo chargers are lubricated by the engine oil system.

lubrication /ˈlʌbrɪkeɪʃən/ noun the act or process of covering moving surfaces with oil or grease in order to reduce friction. Lubrication system the tank, pipes, pumps, filters, etc., which together supply oil to moving parts of the engine

luggage /ˈlʌɡidʒ/ noun baggage, i.e. cases and bags that somebody takes when travelling
M

m\(^1\) abbreviation metre
m\(^2\) abbreviation minute
Mach /mæk/ noun the ratio of the speed of an object to the speed of sound in the same atmospheric conditions. Mach 2 equals twice the speed of sound.
COMMENT: Named after E. Mach, the Austrian physicist who died in 1916.
machine /məˈʃi:n/ noun a device with fixed and moving parts that takes mechanical energy and uses it to do useful work. A drill is a machine for making holes in things. An electrical circuit is designed to carry energy to a particular device or machine which can then perform useful work.
Machmeter /ˈmækmitər/ noun an instrument for measuring the Mach number of an aircraft
Mach number /mæk/ noun a number that expresses the ratio of the speed of an object to the speed of sound
magnesium /mægˈnɪzɪəm/ noun a light, silvery-white metallic element that burns with a brilliant white flame. Symbol Mg (NOTE: The atomic number of magnesium is 12.)
magnesium flare /mægˈnɪzɪəm flɛr/ noun a device for distress signalling at night or to send off magnesium flares
magnet /ˈmæɡnɪt/ noun an object that produces a magnetic field, and attracts iron and steel. Magnetism in a magnet appears to be concentrated at two points called the poles.
magnetic /mæɡˈnetɪk/ adjective referring to or having the power of a magnet or something with a magnetic field. A freely suspended magnet – not influenced by outside forces – will align itself with the Earth’s magnetic lines of force which run from the north magnetic pole to the south magnetic pole.
magnetic bearing /ˈmæɡ,netɪk ˈberɪŋ/ noun the angle measured in a clockwise direction of a distant point, relative to magnetic north
magnetic declination /ˈmæɡ,netɪk ˈdeklɪnəʃən/ noun same as magnetic variation
magnetic pole /ˈmæɡ,netɪk ˈpəʊl/ noun one of the two poles which are the centres of the Earth’s magnetic field
magnetic variation /ˈmæɡ,netɪk ˈvɛrətʃən/ noun differences in the Earth’s magnetic field in time and place. To convert magnetic bearing into true bearing it is necessary to apply magnetic variation at the point at which the bearing was taken. Also called magnetic declination
magnetise /ˈmæɡˌnɪtaɪz/, magnetize verb to convert an object or material into a magnet. Ferro-magnetic materials are easily magnetised.
magnetism /ˈmæɡˌnɪtɪz(ə)m/ noun a force exerted by a magnetic field. An electric current produces magnetism,
and movement of a magnet can produce electricity.

magneto /mægnɪˈtəʊ/ noun a device that produces electrical current for distribution to the spark plugs of piston engines.

COMMENT: The crankshaft turns the magneto, which provides the electrical energy to create a spark from the spark plugs. This ensures that the spark plugs work even if the aircraft’s battery and electrical system fail. Most aircraft have two magnetoos per engine in case one fails.

magnify /ˈmægnɪfaɪ/ verb 1. to increase the size of, especially by using a lens, microscope, etc. 2. to increase the effect of something. The stress level is magnified at times of high workload, for example, preparation for landing. (NOTE: magnifying – magnification)

magnitude /ˈmægnɪtjuːd/ noun greatness in size or extent. 1. The magnitude of the pressure gradient force is inversely proportional to the distance apart of the isobars. 2. When the surface wind speed reaches a particular magnitude the term gale is used.

maiden flight /ˈmeɪdn ˈflaɪt/ noun the first flight of a new aircraft. The maiden flight of the A340 was in October 1991.

main /meɪn/ adjective most important; principal. main disadvantages principal negative points

main gear /ˈmeɪn ˈɡeə/ noun two main landing wheel assemblies

mainplane /ˈmeɪnplɛn/ noun an aircraft wing, compared with the tailplane. The region between the mainplane front and rear spars is commonly sealed off and used as tanks.

maintain /meɪnˈteɪn/ verb 1. to keep up, to carry on or continue. 2. to maintain the present heading to continue on the same heading. 3. to maintain a constant selected engine speed not to change the engine speed. 4. to maintain the aircraft and/or engine. Aero-engines must be maintained regularly to maximise engine life.

maintenance /meɪntəˈmænʃə/ noun a regular periodic inspection, overhaul, repair and replacement of parts of an aircraft and/or engine. The gas turbine is a very simple engine with few moving parts when compared with a piston engine, giving it a high reliability factor with less maintenance. A maintenance manual is the manufacturer’s instruction book of maintenance procedures.

maintenance crew /meɪntəˈmænʃə kruː/ noun ground staff whose responsibility it is to keep the aircraft serviceable. The maintenance crew worked through the night to complete the work.

major /ˈmeɪdʒə/ adjective important. There are two major cloud groups, stratus and cumulus. Opposite minor. 3. major airport a large, important or international airport. 4. major problem a serious problem. Opposite minor.

majority /ˈmeɪdʒərɪti/ noun the greater number or larger part – anything more than 50%. The majority of passengers prefer to sit in a non-smoking area of the cabin.

malfunction /ˈmeɪlˈfʌŋkʃən/ noun a failure to work or to function correctly. The oil pressure and temperature of the CSDU can be monitored by the pilot and if a malfunction occurs, the pilot can then choose to disconnect the CSDU from the engine. 2. to function incorrectly or fail to function. Oscillating outputs from the alternators could cause sensitive equipment to malfunction.

mandatory /ˈmændət(ə)ri/ adjective compulsory, required or ordered by an official organisation or authority. Fire detection systems in toilets are mandatory.

maneuver /ˈmænuːvər/ noun US same as manoeuvre
maneuverability 144

maneuverability /məˈnuːvərəˈbɪlɪti/ noun US same as manoeuvrability

maneuvering area /məˈnuːvərɪŋ ˈɛərɪə/ noun US same as manoeuvring area

manifold /ˈmænfəuld/ noun a system of pipes for a fluid from single input to multiple output or multiple input to single output or inlet and exhaust manifolds of a piston engine

manifold pressure /,mænˈfəuld pəˈrɛʃər/ noun absolute pressure in the induction system of a piston engine measured in inches of mercury

manner /ˈmænər/ noun a way of doing something ○ Wind is said to be veering when it changes direction in a clockwise manner ○ Pre-flight checks should be done in the correct manner.

manoeuvrability /məˈnɔːvəˈrəbɪlɪtɪ/ noun the ability and speed with which an aircraft can turn away from its previous path ○ Light training aircraft do not have great manoeuvrability but they are stable and therefore easier to fly. (NOTE: The US spelling is manoeuvrability.)

manoeuvre /məˈnuːvər/ noun any deliberate or intended departure from the existing flight or ground path (NOTE: It is also written maneuver in US English.) ○ flight manoeuvre turns, loops, climbs and descents ○ ground manoeuvre taxiing and turning onto runways and taxiways, etc.

manoeuvring area /məˈnuːvərɪŋ ˈɛərɪə/ noun the part of the aerodrome used for the take-off, landing and taxiing of aircraft

manual /ˈmænjuəl/ adjective referring to the hands, or done or worked by hand ○ The electronic flight instrument system has two self-test facilities – automatic and manual. ● noun a reference book giving instructions on how to operate equipment, machinery, etc. ○ maintenance manual ○ aircraft operating manual

manual control /ˌmænjuəl kənˈtroʊl/ noun hand-flying an aircraft equipped with an autopilot or automatic flight control system

manually /ˈmænjuəli/ adverb by hand ○ The system is switched on manually.

manufacture /ˌmænjuˈfæktər/ verb to make a product for sale using industrial machines ○ The centrifugal compressor is usually more robust than the axial flow type and also easier to develop and manufacture.

map /mæp/ noun a representation of the Earth’s surface on a flat surface such as a sheet of paper ○ a map of Africa

verb to make measurements and calculations of part of the Earth’s surface in order to produce a map

MAP abbreviation missed approach point

margin /ˈmɑːdʒərn/ noun 1. a blank space bordering the written or printed area on a page ○ Write notes in the margin of the book. 2. an amount allowed in addition to what is needed ○ safety margin ○ In some configurations, it is possible for the buffet speed to be less than the required 7% margin ahead of the stall.

maritime /ˈmɑːrətɪm/ adjective referring to the sea ○ maritime wind a wind blowing from the sea ○ The Rocky Mountains of North America act as a barrier to the cool maritime winds from the Pacific Ocean.

mark /mɑrk/ noun 1. a visible trace on a surface, e.g. a dot or a line ○ There are marks on tyres and wheel rims which are aligned and indicate the extent of tyre creep. 2. the number of points or a percentage given for academic work ○ noun 1. to make a visible line, dot, etc., on a surface ○ Mark the departure point on the chart. 2. to show or indicate ○ The weather front marks the boundary between the two air masses. 3. to correct or check academic work done by a student ○ The instructor marked the exam papers.

marked /ˈmɑːkt/ adjective very noticeable, clear and definite ○ a marked increase a noticeable, therefore possibly large, increase ○ a marked change in the weather a significant change in the weather
**marker** /ˈmɑːkər/ noun 1. something which acts as an indicator of something such as distance or position 2. a radio beacon that is part of the ILS

**COMMENT:** The outer marker (OM) is indicated on the instrument panel, by a blue light. The middle marker (MM) is indicated by an amber light and the inner marker (IM) by a white light.

**marker dye** /ˈmɑːkər deɪ/ noun a brightly coloured substance used by people adrift at sea to draw the attention of flight crews to their position

**marshaling signals** /ˈmɑːʃlɪŋ/ plural noun hand signals used by a marshaller /ˈmɑːʃlər/ a member of ground staff whose job is to direct aircraft into parking positions by means of hand signals

‘...when under a marshaller’s control, reduce speed to a walking pace’ | Civil Aviation Authority, General Aviation Safety Sense Leaflet

**marshaller** /ˈmɑːʃlər/ noun a member of ground staff whose job is to direct aircraft into parking positions by means of hand signals

*m/ashs* is an abbreviation for *marshalling signals*

**masps** abbreviation middle airspace service

**mask** /ˈmæsk/ noun 1. a device to cover the face 2. oxygen mask  a device to cover the nose and mouth which is connected to an oxygen supply 3. Anoxia at high altitudes can be overcome by breathing through an oxygen mask. 4. verb to hide or cover up: When practising instrument flying, the aircraft windows are masked to prevent the (student) pilot from seeing out of the aircraft.

**MASPS** abbreviation minimum aircraft system performance specifications

**mass** /ˈmæs/ noun 1. the physical volume of a solid body 2. Mass is a basic property of matter and is called weight when it is in a field of gravity such as that of the Earth. 3. a large body of something with no particular shape 4. a land mass such as the continent of Africa 5. adjective involving a large number of people or things 6. mass exit the departure of everybody, or nearly everybody, from a place

**mass ascent** /ˈmæs əˈsent/ noun a slow ascent of a large body of air in regions of low pressure and of warm air rising over a cold air mass

**mass** /ˈmæst/ noun 1. a vertical pole for a flag or antenna 2. Ice accretes on the leading edge of the detector mast. 2. a tube projecting from the underside of the aircraft from which liquid can drain well away from the airframe

**master** /ˈmɑːstər/ adjective main or principal 1. master cylinder a hydraulic cylinder from which pressure is transmitted to smaller slave cylinders 2. verb to overcome the difficulty of something 3. It takes practice to master crosswind landings in light aircraft.

**master key** /ˈmɑːstər ˈkiː/ noun a key which can open a number of doors, etc.

**master switch** /ˈmɑːstər swɪtʃ/ noun the most important of a number of switches operating a system

**match** /ˈmætʃ/ verb 1. to go well together 2. The most important factor when matching a propeller to an engine is tip velocity. 2. to be equal to 3. The polarisation of the antenna must match that of the transmitter.

**material** /ˈmætrɪəl/ noun a substance out of which something can be made 1. Wood, fabric and paper are all free-burning materials.

**MATO** abbreviation military air traffic operations

**matrix** /ˈmætriks/ noun a grid-like arrangement of circuit elements 1. Oil coolers consist of a matrix, divided into sections by baffle plates.

**matter** /ˈmætər/ noun 1. a physical substance 2. Mass is a basic property of matter. 3. foreign matter something unwanted which is found in a substance or a device (such as sand or water in fuel) 4. Turbine blades can be damaged by foreign matter such as stones entering through the engine intake on take-off. 5. solid matter solid substances 2. a subject for discussion, concern or
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action ○ Safety is a matter of great importance. ○ troubie or difficulty ○ what's the matter ○ what's the problem? ○ it doesn't matter ○ it isn't important, so don't worry.

MATZ abbreviation military aerodrome traffic zone

maximum /ˈmeɪksɪməm/ adjective greatest possible ○ The maximum daily temperature is 35°C. ○ The maximum speed of the aircraft is 200 kt. ○ noun the greatest possible quantity, amount, etc. ○ There is a net gain of heat by the Earth until terrestrial radiation balances solar radiation when the daily temperature is at its maximum.

maximum total weight authorised /ˌmeɪksɪmətʃərəˈɔttəməzd/ noun the maximum authorised weight of aircraft fuel, payload, etc., given in the Certificate of Airworthiness. Abbreviation MTWA

mb abbreviation millibar

MDA /ˈmiːdiə/ abbreviation minimum descent altitude

mean /ˈmiːn/ adjective referring to something average, midway between two extremes ○ mean daily temperature ○ mean wind the average speed of a wind ○ noun something having a medium or average position, midway between two extremes ○ arithmetic mean the average value of a set of numbers ○ verb 1. to signify or to have something as an explanation ○ Airspeed means the speed of the aircraft in relation to the air around it. 2. to intend to do something ○ I meant to telephone the reservations desk this morning but I forgot. 3. to result in ○ Installing a new computer network means a lot of problems for everybody. (NOTE: meaning – meant)

mean effective pressure /ˈmiːn ɪˌfektɪv ˈpreʃər/ noun the average pressure exerted on the piston during the power stroke. Abbreviation MEP

means /ˈmiːnz/ noun a way of doing something which brings a result ○ A clear window fitted in the reservoir provides a means of checking hydraulic fluid level during servicing. (NOTE: Means has no plural form.) ○ by means of by using ○ Fuel is transferred from the tanks to the carburettor by means of pipes. ○ there are various means for navigation there are various different methods used for the purposes of navigation

mean sea level /ˈmiːn ˈsiːˈlɛv(ə)/ noun the average level of the sea taking tidal variations into account ○ Below FL50 cloud heights are referred to a datum of mean sea level. Abbreviation MSL

mean sun /ˈmiːzn ˈsʌn/ noun the position of an imaginary sun in a solar day of exactly 24 hours, behind the real sun in February and in advance of the real sun in November ○ Local mean time (LMT) is the time according to the mean sun.

mean time between failures /ˈmiːntɪmˈbiːtər feɪljuər/ noun a way of assessing ○ The way he dealt with the in-flight emergency is a measure of his skill as a pilot. 2. a reference for discovering the dimensions or amount of something ○ The litre is a measure of capacity. 3. a device used for measuring ○ a 1-metre measure a ruler that is 1 metre long 4. an action taken to get a result ○ Stricter safety measures were introduced. 5. an amount of something ○ To be a good pilot, you need a measure of self-confidence. ○ verb 1. to find the dimensions or amount of something ○ to measure a distance ○ to measure an angle ○ to measure the speed of an aircraft ○ Wind directions are measured from magnetic north. 2. to be of a particular size, length, quantity, etc. ○ How much does the pipe measure?

measurement /ˈmiːzəmənt/ noun 1. an act of measuring ○ Measurement of relative humidity is done using an instrument called a hygrometer. 2. the result of measuring ○ The measurements of the room are: height = 4 metres, length = 10 metres, width = 4 metres.
mechanical /ˈmekənɪk(ə)/ adjective referring to machines. ○ Activation may be electrical or mechanical. ○ mechanical, pertaining to machines.

mechanical advantage /ˈmɪkənɪk(ə) ədˈvæntɪdʒ/ noun the ratio of the output force produced by a machine to the input force.

mechanical engineering /ˈmɪkənɪk(ə) ˌɪ ndʒɪˈnɪəri/ noun the study of design, construction, and use of machinery or mechanical structures. ○ She gained a degree in mechanical engineering from university.

mechanical linkage /ˈmɪkənɪk(ə) ˈliŋkɪdʒ/ noun a system of rods, cables and levers in a light aircraft, which connect the control column in the cockpit to the control surfaces on the wings, tailplane and fin.

mechanics /ˈmɪkənɪks/ noun 1. the study of the action of forces on matter or material systems. 2. the way something works. ○ The mechanics of the fohn wind provide a good illustration of the adiabatic process.

mechanism /ˈmekənɪzəm/ noun 1. the arrangement of connected parts in a machine or system. ○ the landing gear mechanism. ○ the nose wheel steering mechanism. 2. a physical process. ○ the mechanism by which thunderstorms develop.

MEDA abbreviation military emergency division aerodrome.

medical certificate /ˈmedɪk(ə) ˈsəˌfrɪfɪkat/ noun a document which confirms that the named person has been medically examined and declared to be in good physical condition.

medical emergency noun a situation when somebody is unwell and quickly needs medical care.

medium /ˈmɪdɪm/ adjective referring to something that has a position or represents a condition midway between extremes. ○ high, medium and low frequencies. ○ medium level cloud. ○ a noun a substance through which something else is transmitted or carried. ○ Tubes convey the cooling medium. ○ The cooling medium for cooling oil can be ram-air or fuel.

medium frequency /ˈmɪdɪm ˈfriːkwənsi/ noun radio frequency range between 300 kHz and 3000 kHz – often referred to as medium wave (MW). Abbreviation MF.

melt /melt/ verb to become liquid by heating. ○ Ice melts at temperatures above freezing. ○ melting point. noun the temperature at which a solid turns to liquid. ○ Magnesium has a melting point of 1204°F.

member /ˈmembər/ noun 1. a large, important structural unit. ○ The skin in bonded to the internal members. ○ A beam is a member which is designed to withstand loading applied at an angle to it, often perpendicular. 2. a person who joins a club or organisation. ○ He is a member of the gliding club. 3. a person in a team or crew. ○ Most large passenger aircraft are now operated by two crew members.

memorise /məˈməraɪz/, memorize verb to fix in the memory, to learn by heart. ○ It is helpful if a student pilot can memorise certain items, such as downwind checks, early in his training.

memory /ˈmɛməri/ noun 1. the mental ability of remembering and recalling past events or information. ○ he has a good memory. he remembers things easily. 2. part of a computer which is used for the fast recall of information. ○ The computer cannot run many programs at the same time because it doesn’t have enough memory.

mental /ˈment(ə)/ adjective referring to the mind or brain. ○ Anoxia severely limits physical and mental performance. ○ mental calculation. a calculation.
projection. To represent the poles on Mercator’s parallel straight lines, it is impossible on this projection are represented by length as the equator the parallels of latitude are the same geographic poles. Lambert’s projection. Since meridians on this projection are represented by parallel straight lines, it is impossible to represent the poles on Mercator’s projection.

COMMENT: Named after the Latinised name of G. Kremer, the Flemish-born geographer who died in 1594.

Mercator’s projection /məˈkrɛtər/ noun a map projection of the Earth onto a cylinder so that all the parallels of latitude are the same length as the equator. Since meridians on this projection are represented by parallel straight lines, it is impossible to represent the poles on Mercator’s projection.

meridian /ˈmɜːrɪdiən/ noun an imaginary great circle on the Earth’s surface passing through the north and south geographic poles.

mesh /meʃ/ noun a net-like structure. Mesh (of gears) to link together with cogs on another wheel.

message /ˈmesɪdʒ/ noun a short written, coded or verbal communication.

Mercury /ˈmɜːrkri/ noun a silver-coloured metallic element, liquid at room temperature, used in thermometers. Manifold pressure gauges are calibrated in inches of mercury.

Mercury barometer /ˈmɜːrkri ˈbærəmətər/ noun type of barometer where the atmospheric pressure is balanced against a column of mercury. The principle of a mercury barometer has not changed since 1643 when Torricelli demonstrated that the atmosphere can support a column of liquid.

mediation /ˈmedʃən/ noun a short written, coded or verbal communication.

The crew can use the public address system to broadcast messages to the passengers. There’s a message from Mr. Jones on your desk.

Metal /ˈmɛtl/ noun one of the metallic elements e.g. iron, gold, mercury, copper, aluminium.

Metals such as aluminium, titanium, steel, etc. Some fire extinguishers do not harm metallic, wooden, plastic or fabric materials. Non-metallic materials wood, plastics, fabrics, etc., which are not made of metal.

Mention /ˈmɛntʃən/ verb to refer to something briefly.

Mr. Jones on your desk.

Mention 148 as I mentioned yesterday.

No one mentioned the incident.

Mention of a water/methanol mixture.

Meteorological conditions /ˌmiːtəˈrɒlɒdʒɪkəl/ noun a person who studies, reports and forecasts the weather.

The analysis of the surface chart is the procedure in which the meteorologist completes the chart by inserting the fronts and isobars in their correct positions.

Meteorologist /ˌmiːtəˈrɒladʒɪst/ noun a person who studies, reports and forecasts the weather. Terrestrial radiation plays an important part in meteorology.

Meter /ˈmiːtər/ noun 1. US same as metre. 2. a device to measure current, rate of flow, vertical distance, speed, etc. a gas meter. 3. altimeter, ammeter. Flowmeter.

Methanol /ˈmiːθənl/ noun a colourless, toxic, flammable liquid, CH₃OH, used as an antifreeze, a general solvent, and a fuel, also called methyl alcohol or wood alcohol. Power output can be restored, or can be boosted to a value over 100% maximum power, by the injection of a water/methanol mixture.
at the compressor inlet or at the combustion chamber inlet.

**method** /ˈmethəd/ noun a particular way of doing something, especially if it is well thought out and systematic. The most common method of displaying radar information is on a cathode ray tube.

**metre** /ˈmiːtər/ noun an international standard unit of length, approximately equivalent to 39.37 inches. Abbreviation m (NOTE: It is also written meter in US English.)

**MHz** symbol megahertz

**micro-** /ˈmɪkrəʊ/ prefix small. Opposite mega- (NOTE: The prefix micro- is used in front of SI units to indicate a one millionth part: microsecond = one millionth of a second.)

**microburst** /ˈmɪkrəbɜːrst/ noun a particularly strong wind-shear especially associated with thunderstorms. The investigation revealed that the crew lost control of the aircraft as it flew through the microburst.

**microlight** /ˈmɪkrəlaɪt/ noun a small light aircraft, often with an open fuselage, that can carry one or two people at low speeds and is used for flying for pleasure or reconnaissance

**micro-switch** /ˈmɪkrəswɪtʃ/ noun a miniature switch used to govern systems automatically. Operation of an aircraft may also be seriously affected by the freezing of moisture in controls, hinges and micro-switches. (NOTE: The plural form is micro-switches.)

**microwave landing system** /ˌmɪkrəˈweɪv ˈlændɪŋ ˈsɪstəm/ noun an extremely accurate guidance system for landing aircraft that uses microwaves. Abbreviation MLS

**mid-** /ˈmɪd/ prefix middle. The middle of the summer

**mid-air** /ˈmɪd ˈɛə/ adjective mid-air collision collision between aircraft in the air rather than on the ground
minimum flying speed 150

to a minimum, the difference between cabin pressures and the external atmospheric pressures should be kept to a minimum. (NOTE: The plural form is minima or minimums.)

minimum flying speed /ˌmɪnɪməm ˈflaiən ˈspiːd/ noun the lowest true air speed at which an aircraft can maintain height

minimum fuel /ˌmɪnɪməm ˈfjuːəl/ noun the amount of fuel required to reach destination and land without delay

minimum sector altitude /ˌmɪnɪməm ˈsektər əˈlɪtjuːt/ noun the lowest altitude at which an aircraft may fly under emergency conditions and which will provide a minimum clearance of 1000 ft above all obstacles located within a particular sector

minimum separation /ˌmɪnɪməm ˌsepəˈretʃ(ə)n/ noun the minimum vertical or horizontal distance allowed between two aircraft

minor /ˈmɪnər/ noun a person under the age of legal adulthood • adjective small in size or amount and therefore relatively unimportant. Opposite major • minor repairs repairs which can be made quickly and with the minimum amount of equipment

minus /ˈmɪnəs/ preposition reduced by • 6 minus 2 equals 4 (6 – 2 = 4). • noun a minus sign (−) • minus forty degrees Celsius (−40° Celsius)

minute noun /ˈmɪnɪt/ 1. a time period of 60 seconds • There are 60 minutes in one hour. • wait a minute wait a while or a short period of time 2. a unit of angular measurement equal to one sixtieth of a degree • 20 degrees and 20 minutes east (20° E). • adjective minute very small indeed • Metal fatigue begins as minute cracks, too small to be seen, at the point of maximum stress.

miscellaneous /ˌmɪskəˈlemənəs/ adjective various, mixed, not all the same • The first aid box contains miscellaneous items for use in a medical emergency.

miss /mɪs/ verb not to get or catch • Two passengers arrived so late that they missed the flight.

missed approach /ˈmɪst əˈprəʊtʃ/ noun an approach that does not result in a landing and is followed by a go-around

missed approach point /ˈmɪst əˈprəʊtʃ ˌpɔɪnt/ noun the point at which a pilot must carry out a missed approach procedure if a particular visual reference has not been made

missed approach procedure /ˈmɪst əˈprəʊtʃ prəˈsiːdʒ/ noun the action and flight path to be followed after a missed approach at a particular aerodrome

mist /ˈmɪst/ noun 1. visible water vapour, in the form of very fine droplets, in the atmosphere • Mist is thinner than fog. 2. liquid in spray form • an air/oil mist • verb • to mist up to become covered in tiny water droplets and therefore prevent clear vision through a surface • The windscreen misted up.

mix /mɪks/ verb to put together in order to form one mass • It is a fact of nature that different air masses do not mix together

mixture /ˈmɪkstʃər/ noun something which is the result of a number of things mixed together

mixture control /ˈmɪkstʃər ˈkənˌtrəʊl/ noun a device for controlling the ratio of fuel to air entering an engine’s carburettor or fuel injection system. The mixture control is a knob or lever marked in red usually to the right of the throttle lever. • In order to stop the engine, the mixture control should be moved fully aft.

MLS abbreviation microwave landing system

mm abbreviation millimetre

MM abbreviation middle marker

MMR /ˈmiː, ˈmiːr/ abbreviation multimode receiver

mnemonic /ˈmɪnəmɪk/ noun something such as a word, sentence or little poem which helps the memory
MODERN /′mɒdərən/ adjective up to date, referring to the present day. Modern engines are far more powerful than engines used in the past.

MODIFICATION /′mɒdfɪˈkeɪʃən/ noun an alteration or change in character or form which is normally an improvement. There have been many modifications to the simple carburettor over the years. As a result of the crash, modifications were made to the rudder linkage.

MODULATE /′mɒdjuˈleɪt/ verb to change the frequency, amplitude, phase, or other characteristic of an electromagnetic wave. The ground station transmits a code in two short bursts, each of which is modulated with two tones.

MODULATION /′mɒdjuˈleɪʃən/ noun a change in a property of an electromagnetic wave or signal, such as its amplitude, frequency, or phase. Pulse modulation is a series of quick, short bursts of energy which are radiated from an antenna which serves both the transmitter and the receiver.

MOIST /′mɒst/ adjective a little wet, damp or humid. Warm moist air from the Gulf of Mexico can extend into Canada.

MOISTURE /′mɒstʃər/ noun water or other liquid. When the air passing through the carburettor is reduced below 0°C (Celsius), any moisture in the air changes into ice.

MOISTURE CONTENT /′mɒstʃər kəntent/ noun the amount of water in the atmosphere or as seen when it condenses onto cold surfaces.

MOULD /′mɒld/ noun, verb US same as MOLD.

MOLECULE /′mɒlɪkjʊl/ noun the smallest particle into which an element or a compound can be divided without changing its chemical and physical properties. The molecules of a gas...
moment /ˈmʌnɪmt/ noun 1. a short period of time 2. a point in time 3. at the moment at this particular time 4. He’s not in the office at the moment. 3. the product of a quantity and its perpendicular distance from a reference point 4. A load on the end of a beam creates a bending moment. 4. the tendency to cause rotation about a point or an axis The tailplane provides a pitching moment to keep the aircraft level.

momentum /ˈmɒməntəm/ noun a measure of the motion of a body equal to the product of its mass and velocity In rain, the faster an aircraft travels the more water it meets and the greater the relative momentum of the water droplets.

monitor /ˈmɔnɪtər/ noun a display unit for a computer ■ verb to check, on a continuing basis ■ Flowmeters are fitted which allow crew to monitor the flow of fuel to each engine.

monitor system /ˈmɔnɪtoʊr sɪstəm/ noun system for checking and warning

monocoque /ˈmɒnəkuːk/ noun a three-dimensional body with all the strength of the skin and immediately underlying framework In monocoque construction there is no internal stiffening, as the thickness of the skin gives the strength and stability.

monoplane /ˈmɒnəpleɪn/ noun an aircraft that has only one pair of wings

monsoon /ˈmɒnˈsuːn/ noun a wind from the south-west or south that brings heavy rainfall to southern Asia in the summer 4. Although the monsoon winds are thought of as being Asiatc phenomena, they do occur over Africa and parts of North America, especially the Gulf of Mexico. 4. monsoon season a season of wind and heavy rainfall in tropical countries

morning mist /ˈmɔrɪŋ mɪst/ noun a mist which usually disappears before midday, as the result of warming from the sun

Morse /mɔːrs/ noun a code used for transmitting messages in which letters of the alphabet and numbers are represented by dots and dashes or short and long signals VOR (very high frequency omni-directional radio range) stations transmit a 2 or 3-letter aural Morse callsign on the reference signal at least every 30 seconds. (NOTE: Morse is still used for identifying some radio beacons.)

motion /ˈmɔtʃ(ə)n/ noun movement, the act of changing position or place ■ horizontal motion movement from side to side ■ rotary motion circular movement ■ vertical motion up and down movement

MOTNE noun a network for the exchange of meteorological information needed by meteorological offices, VOLMET broadcasting stations, air traffic service units, operators and other aeronautical users. Full form Meteorological Operational Telecommunications Network Europe

motor /ˈmɔtər/ noun a machine which provides power for moving a vehicle or device with moving parts 4. an electric motor 4. a hydraulic motor (NOTE: Piston or jet power plants for aircraft are referred to as engines not motors.)

mould /ˈmɔʊld/ noun a hollow shape for forming plastics, etc. Moulds are used in the manufacture of plastic components. ■ verb to shape, often using a mould 4. Thermo-plastic material become soft when heated and can be moulded again and again. (NOTE: It is also written mold in US English.)

mount /mɔːnt/ verb to fix to a support 4. A propeller consists of a number of separate blades mounted in a hub.

mountain /ˈmɔːntæn/ noun a mass of rock rising above ground level, higher than a hill 4. They flew over mountains in the south of the country.

Mountain Standard Time /ˈmɔːntæn ˈstændərd ˈteɪm/ noun a time zone of the west-central part of the USA and Canada, 7 hours behind GMT
mounted /ˈmaʊntɪd/ adjective fixed to a support • rear-mounted mounted at the rear of the aircraft • Some aircraft such as the Boeing 727 have rear-mounted engines.

mounting /ˈmaʊntɪŋ/ noun a supporting component or attachment point • Airbus aircraft have engine mountings under the wings.

movement /ˈmɛvmənt/ noun a change in place or position • The upward movement of the piston compresses the fuel/air mixture. • movement of the crankshaft the rotation of the crankshaft • the downward movement of cool air the downward flow of cool air

mph abbreviation miles per hour

MTA /ˈɛm tiː/ abbreviation military training area

MTBF /ˈɛm tiː biː/ time to 'fail' noun the average period of time that a piece of equipment will operate between problems. Full form mean time between failures

MTTR /ˈɛm tiː tiː/ time to 'fail' noun the average period of time required to repair a faulty piece of equipment. Full form mean time to repair

MTWA abbreviation maximum total weight authorised

muff /mʌf/ noun an acoustic ear muffs

multi- /ˈmʌlti/ prefix multiple or many

multi-engine /ˈmʌlti ˈendʒɪn/• multi-engined /ˈmʌlti ˈendʒɪnd/ adjective • multi-engine(d) aircraft aircraft with more than two engines

multi-function display /ˌmʌlti fʌŋkʃən diˈspel/ noun an electronic cockpit instrument which displays information such as weather radar or navigation data. Abbreviation MFD

multi-mode receiver /ˌmʌlti ˈrɛsɪvər/• multi-mode receiver a type of radio receiver used in navigation and landing that can receive signals from a variety of different transmission systems

multiplane /məˈplɛn/• multiplane an aircraft with more than one pair of wings

multiple /ˈmʌltəpl/ adjective many • Autoland system redundancy employs multiple systems operating in such a manner that a single failure within a system will have little effect on the aircraft’s performance during the approach and landing operation.

multiplication /ˌmʌltiˈplɪkʃən/ noun a mathematical operation to work out a specified number of times the value of a number (NOTE: The multiplication sign is ×.)

multiply /ˈmʌltiplaɪ/ verb to work out a specified number of times the value of a number • To multiply 20 by 6 is to calculate what is 6 times 20 (6 x 20). • 4 multiplied by 2 is 8 (4 x 2 = 8). To calculate fuel required, multiply the duration of the flight by the consumption of the engine at the required power.

multi-purpose /ˈmʌlti ˈpɜːpəs/ adjective suitable for many different uses • multi-purpose tool a tool which can be used in many different ways

multi-wheel combinations /ˌmʌlti ˈwɛl ˈkəmbiˈneɪʃənz/ plural noun undercarriages consisting of a number of wheels on each unit

mutual /ˈmjuːtʃʊəl/ adjective directed and received in equal amount

mutual inductance /ˈmjuːtʃʊəl ɪnˈdʌktəns/ noun electro-magnetic field in one circuit caused by a quickly changing magnetic field in another circuit
N abbreviation north
nacelle /ˈnæsəl/ noun a streamlined housing for an engine. The ram air intake is located in a wing leading edge or an engine nacelle fairing.

narrow band of cloud. A narrow beam of electrons.

narrow aisles of passenger aircraft makes it difficult to evacuate an aircraft quickly.

Opposite: wide, broad

NAS abbreviation national airspace system

National Aeronautics and Space Administration (NAS)/ˈnæsə/ abbreviation National Aeronautics and Space Administration

National to a country. KLM is the national airline of the Netherlands.

National Aeronautics and Space Administration /ˈnæʃ(ə)nəl ˌɛəˈrɑːnəstɪks ən ˈspeɪs əd ˌministər(ə)ni/ noun a US organisation for flight and space exploration. Abbreviation NASA

national airspace system /ˈnæʃ(ə)nəl ˈɛərɑːsps ˌsɪstəm/ noun an integrated system of control and communications facilities that is responsible for ensuring the safe and efficient movement of aircraft through the national airspace of the US. Abbreviation NAS

National Air Traffic Services /ˈnæʃ(ə)nəl əˈtræfɪk ˌsɛrvɪsiz/ plural noun the organisation that is responsible for air traffic control at most UK airports. Abbreviation NATS

NATS abbreviation National Air Traffic Services

nature /ˈnetʃər/ noun 1. the world, especially plants, animals and their environment in general. Electricity is one of the fundamental forces of nature.

2. sort or type. Action taken by the crew will depend on the nature of the emergency.

3. the essential qualities of something. The convective nature of thunderstorms.

Magnesium is a fire hazard of unpredictable nature.

nautical /ˈnɔːtɪk(ə)l/ adjective referring to the sea. The terms pitch, roll and yaw are nautical in origin.

nautical mile /ˈnɔːtɪk(ə)l miːl/ noun 1.852 kilometres. One knot is equal to one nautical mile per hour. Abbreviation nm. Compare statute mile (NOTE: A nautical mile is precisely defined as the length of an arc on the Earth’s surface subtended by an angle of one minute at the centre of the Earth.)

NAVAID /ˈnɛvəɪd/ abbreviation navigational aid

navigation /ˌnɛvərɪˈgenreɪn/ noun the theory and practice of planning, controlling and recording the direction of an aircraft. The basis of air navigation is the triangle of velocities.

navigational /ˌnɛvərɪˈgenreɪnəl/ adjective referring to navigation. The accuracy of modern navigational equipment is much greater than older systems.

navigational aid /ˌnɛvərɪˈgenreɪnəl əd/ noun a mechanical or electronic device designed to help a pilot navigate. Any type of navigational aid but particularly electronic aids, for example ADF (automatic direction finding) and
NDBs (non-directional beacons). Abbreviation NAVAID

NDB abbreviation non-directional beacon

NDBs (non-directional beacons). Abbreviation NAVAID

navigational line /ˌnæviˈɡeɪʃənl/ noun lines/ plural noun lines on an aircraft consisting of a red light on the left wing tip, a green light on the right wing tip and a white light on the tail

COMMENT: Navigation lights must be used between sunset and sunrise.

Navigation lights /ˌnæviˈɡeɪʃən/ plural noun lights on an aircraft including a removable ground fine pitch propeller, the propeller mechanism which also serves as a navigation log.

flight plan is a composite document coloured black rather than red marked with the symbol – and normally of a battery the terminal of a battery

neoprene /ˈnɪəprən/ noun a type of synthetic rubber

net dry weight /ˈnet draɪ/ noun the basic weight of an engine without fluids and without accessories not essential for the engine to function

network /ˈnetwɜrk/ noun 1. a complex interconnected group or system of computers 2. a network of meteorological stations around the world exchange information. 3. a system of lines or channels which cross each other. On a map, meridians of longitude and parallels of latitude form a network of lines called a graticule. 3. a system of computers interconnected in order to share information

neutral /ˈnjuːtrəl/ adjective, noun 1. indicating an electrical charge which is neither positive nor negative 2. indicating the position of a switch or lever which leaves a system active but not engaged, e.g. an engine gear lever position in which the engine is disconnected from the driven parts 3. indicating the middle position of a control surface providing no aerodynamic effect other than that as part of the wing 4. After a turn, the auto-control will return the ailerons to neutral as the aircraft returns to straight flight.

neutralize /ˈnjuːtrəlaɪz/, neutralize verb to cancel the effect of spillage from a lead acid battery may be neutralised by washing with a diluted solution of sodium bicarbonate.

never-exceed speed /ˈnevər ɪk/ noun a speed which must not be exceeded. Also called Vne (Velocity Never Exceeded)
**night rating**

night rating /nɜːt ˌretɪŋ/ noun an additional qualification gained from a course of training for night flying

nil /nɪl/ noun nothing, zero ◦ nil drizzle no drizzle

nimbostratus /ˈnɪmbəʊstrətəs/ noun a cloud forming a low dense grey layer from which rain or drizzle often falls

nitrogen /ˈnɪtrədʒən/ noun a colourless, odourless gas which makes up four fifths of the Earth’s atmosphere ◦ Some aircraft have high pressure air or nitrogen bottles provided in the undercarriage and flap circuits for emergency lowering. (NOTE: The atomic number of nitrogen is 7.)

**nm** abbreviation nautical mile

do-nocturnal /ˈnɒkˈtɜːrnl/ adjective happening or appearing during the night ◦ Because there is a requirement for a cold ground, a katabatic wind tends to be nocturnal, but if the slope is snow-covered, it can also occur during the day.

**no-fly zone** /ˈnəʊˌflai ˈziːn/ noun an area over which aircraft, especially those of another country, are forbidden to fly

nominal /ˈnɒmɪn(ə)l/ adjective 1. not significant or not important ◦ a nominal increase a very small increase 2. named, specific ◦ As an installed battery becomes fully charged by the aircraft generator, the battery voltage nears its nominal level and the charging current decreases.

**non-** /ˈnɒn/ prefix not or no

**non-directional beacon** /ˈnɒn ˈdɛkər,ˌrɛkər/ noun a radio beacon transmitting a signal by which the pilot can determine his or her bearing. Abbreviation NDB

**non-essential** /ˈnɒn ɪˌsɛns(ə)l/ adjective not necessary ◦ In order to ensure the shortest possible take-off run, all non-essential equipment was removed.

**non-return valve** /ˈnɒn ˈrɪtʃəl ˈvalv/ noun a valve which allows fluid to pass in one direction only ◦ As the piston moves upwards in the cylin-
der, fluid is drawn in through a non-return valve.

**non-smoking area** /ˈnɒn ˈsmɒkɪŋ ˈɛriə/ noun an area where smoking is not allowed

**normal** /ˈnɒrəm(ə)l/ adjective referring to something which is usual and is to be expected ◦ under normal conditions when everything is as it usually is

**normal room temperature** /ˈnɒrəm(ə)l ˈrʊm ˈtɛmprətʃər/ noun the temperature regarded as comfortable for usual daily activity

**north** /nɔːθ/ noun compass point 360°, the direction towards which the magnetic needle points on a compass ◦ Fly towards the north. ◦ The wind is blowing from the north. ◦ north facing mountain side the face of the mountain which looks towards the north ◦ advective 1. referring to areas or regions lying in the north, referring to the compass point 360° or the north coast of France 2. The northern part of a region or country ◦ North America ◦ adverb towards the north ◦ compass, magnetic, true northbound /ˈnɔːθbaʊnd/ adjective travelling towards the north ◦ a northbound flight

**north-east** /ˈnɔːθ ɪˈisted/ noun the direction between north and east ◦ After take-off, the aircraft turned to the north-east. ◦ adjective 1. situated in the north-east ◦ the north-east coast of England 2. blowing from or coming from the north-east ◦ a north-east wind ◦ adverb towards the north-east ◦ We are heading north-east.

**north-easterly** /ˈnɔːθ əˈstiːli/ adjective 1. blowing from or coming from the north-east ◦ A north-easterly wind was blowing. 2. moving towards the north-east ◦ Follow a north-easterly direction.

**north-eastern** /nɔːθ ˈɛstiːn/ adjective referring to or situated in the north-east ◦ the north-eastern part of the United States

**northerly** /ˈnɔːθəli/ adjective 1. situated towards the north ◦ the most northerly point of a country 2. blowing from or coming from the north ◦ northerly airflow airflow coming from the north
We are flying in a northerly direction. A north-westerly airflow from the polar regions is moving towards the north. The aircraft turned towards the north-west. A north-western wind was blowing from or coming from the north-west. A north-west wind was blowing. Twenty minutes' notice was given to inform the student pilot that he or she should request assistance. A north-westerly wind was blowing. A north-western wind was blowing from or coming from the north-west. We are heading north-west. One of the aircraft was flying northwards. A north-west coast of England was flying northwards. The aircraft flew towards the north-west. A north-western part of the United States was flying northwards.

**northern** /ˈnɔːðən/ adjective referring to or situated in the north. A northern hemisphere. The aircraft was flying northwards. A north-westerly wind was blowing. A north-western wind was blowing from or coming from the north-west. A north-western part of the United States was flying northwards. A north-western part of the United States was flying northwards.

**north wind** /ˈnɔːθ wɪnd/ noun a wind blowing from or coming from the north.

**nose** /nəʊz/ noun the extreme forward end of the aircraft.

**nose cone** /ˈnəʊz kən/ noun the foremost part of the nose of a multi-engine aircraft, but not an engine.
doing the pre-flight checks. Captain Smith noticed that there was a leak of hydraulic fluid from one of the brake cylinders.

noticeable /ˈnɔtisəb(ə)/ adjective catching the attention, easily noticed. A noticeable increase an increase which is important enough to be observed. There was a noticeable improvement in the trainee’s recent exam results.

notice board /ˈnɔtɪs bɔ/ noun a usually wooden board in a corridor or classroom, etc., where information on paper can be displayed.

notification /ˌnɔtɪfɪˈkeɪʃ(ə)n/ noun the act of informing somebody about something. Notification of the new procedures will follow in a few days. She received notification that she had been accepted for the job.

notify /nəˈtɪfɪ/ verb to inform. Students were notified of their exam results by post. The authorities must be notified of all in-flight incidents.

nozzle /ˈnɔzl(ə)/ noun a projecting part with an opening at the end of a pipe, for regulating and directing a flow of fluid. The nozzle of a portable fire extinguisher should be pointed at the base of the fire.

nucleus /ˈnjuːklɪəs/ noun the central part around which other parts are grouped. An atom consists of a nucleus with orbiting electrons. Condensation occurs on very small particles suspended in the air which are known as condensation nuclei. (NOTE: The plural form is nuclei.)

null /nəl/ noun an instrument reading of zero. The null position the zero position. Nulls are used for direction sensing because they are better defined than the maxima.

numerical /ˈnjuːmərɪk(ə)/ adjective referring to numbers or digits.

numerical value /ˈnjuːmərɪkl vælju/ noun a number.

numerous /ˈnjuːmərəs/ adjective very many, a lot. Large transport aircraft have numerous clearly-marked exits to facilitate rapid evacuation of passengers. Numerous refinements to the simple actuator will be found in use.

nut /nʌt/ noun a metal ring which screws on a bolt to hold it tight. Turn the nut anticlockwise to loosen it.
OAT abbreviation 1. operational air traffic 2. outside air temperature

obey /əˈbɛɪ/ verb 1. to carry out or comply with a command 2. to follow a physical law

obey /əˈbɛɪ/ verb to carry out or comply with a command 1. Pilots must obey landing instructions. 2. to follow a physical law Winds obey Buys Ballot’s Law.

OBI abbreviation omni-bearing indicator

object /ˈɒbɪdʒekt/ noun 1. something that you can touch and see and that has a particular form and dimensions 2. intention or aim

object /ˈɒbɪdʒekt/ to raise or voice opposition

oblong /ˈɒblɒŋ/ adjective rectangular

obstruct /ˈɒbstrʌkt/ verb to block a path or to prevent the progress of something

observer /ˈɒbstrəʊvə/ noun a person working in a meteorological station who assesses weather conditions by visual means

obscure /ˈɒbskjʊər/ adjective not clearly understood 1. the explanation was obscure the explanation was difficult to understand because it wasn’t clear 2. verb to make difficult to see 3. Deposits of ice crystals on the windscreen will obscure vision.

obscured /ˈɒbskjʊərd/ adjective

obstruction /ˈɒbstrʌkʃən/ noun 1. the act or process of obstructing 2. something which blocks a path or prevents progress

observation /əbˈzævəʃən/ noun careful watching 1. The type of cloud is established by observation and comparison with cloud photographs.

observe /əbˈzæv/ verb to watch carefully 1. Local wave action can be observed from a height of 200 feet. 2. Wing deflection can be observed from the passenger cabin.

observer /əbˈzævə/ noun a person working in a meteorological station who assesses weather conditions by visual means

obstacle /ˈɒbstəkl/ noun something which blocks a path or prevents progress 1. Low frequency transmissions can penetrate obstacles such as mountains. 2. Knowing the heights of obstacles en route, it must be ensured that in the event of an emergency, the flight may be continued in safety.

obstacle clearance /ˈɒbstəklklərəns/ noun the fact of being at a sufficient height to be able to fly over any obstacles in the area

obstruct /ˈɒbstrʌkt/ verb to block a path or to prevent the progress of something 1. Bags and luggage must not obstruct the aisles. 2. A safety valve is normally provided, in case the water separator assembly becomes obstructed by ice.

obstruction /əbˈstrækʃən/ noun 1. the act or process of obstructing 2. something which blocks a path or prevents progress

before start-up, the
obtain /ə'bɪtn/ verb to acquire, to get

- Telephone the meteorological office in order to obtain the latest weather forecast.
- The probes are positioned in the gas stream in order to obtain an accurate temperature reading.

obvious /ə'vɪəs/ adjective clear and easily seen or understood

- It is obvious that high ground will disturb the smooth horizontal flow of air.

occasion /ə'kɛʒ(ə)n/ noun the time at which an event or happening occurs

- In recent months the aircraft suffered two engine failures, on the first occasion the aircraft force-landed safely.
- The maiden flight of an aircraft is a great occasion.

- on occasions sometimes

occasional /ə'kɛʒ(ə)nl/ adjective happening from time to time

- occasional rain periodic rain
- occasional turbulence turbulence happening from time to time

occluded front /ə'kludid frɑnt/ noun a weather front created when air is forced upward from the Earth’s surface, as when a cold front overtakes and undercuts a warm front. Jet streams are very rare near occluded fronts because of the much smaller temperature gradient across the fronts.

occlusion /ə'kljuʃ(ə)n/ noun the forcing of air upward from the Earth’s surface, as when a cold front overtakes and undercuts a warm front.

- If the air ahead of the warm front is less cold than the air behind the cold front, the cold front will undercut the less cold air and form a cold occlusion.

occupant /ə'kjuːpənt/ noun a person who has a seat in an aircraft

- The crew plus passengers.
- In-flight emergency procedures are designed to successfully combat airborne emergencies which threaten the safety of the aircraft and its occupants.

occupy /ˈɒkjʊpə/ verb 1. to have a position, to be in a place
- The passenger is occupying the wrong seat.
- The evacuation process is under way the crew will be fully occupied carrying out emergency drills.

occur /ə'kɜːr/ verb to happen

- Heavy rains occur during the monsoon season.
- Tropical revolving storms generally occur from June to October.
- An accident occurred on June 12th.

occurrence /ə'kɜːrəns/ noun a happening or event

- There were a number of occurrences of hijacking in the eighties.
- The occurrence of the equatorial jet stream is due to a temperature gradient with colder air to the south.

ocean /ˈoʊʃ(ə)n/ noun 1. the body of salt water which covers the Earth (NOTE: This is a chiefly American usage: British English prefers the word sea.)

- any of the major sea areas of the world
- the Atlantic Ocean

COMMENT: The five oceans are: the Atlantic, the Pacific, the Indian, the Arctic and the Antarctic (or Southern) Ocean.

octane rating /ˈɑktn, rɛtɪŋ/ noun the ability of the fuel to resist detonation, i.e. the higher the number, the greater is the fuel’s resistance to detonation.

odd /əd/ adjective 1. strange, peculiar

- an odd situation
- The fact that moist air is lighter than an equivalent volume of dry air seems odd to many people.
- odd tenth an odd decimal, e.g. 0.1, 0.3, etc.
- Frequency allocation of localisers in the VHF band is 108–112 MHz at odd tenths e.g. 108.1 and 109.3, the even decimals being allocated to VOR facilities.

3. indicating a number a little greater than the approximate number given. For example, it is 60–odd miles to our destination it is a little more than 60 miles to our destination.
odd number /ˈɒd ˈnʌmbə/ noun a number which cannot be exactly divided by two, e.g. 1, 3, 5, 7, etc. ▶ A (battery) cell contains an odd number of plates.

OEM /ˈoʊm/ abbreviation original equipment manufacturer

offer /ˈɒfər/ noun something, e.g. a sum of money, that is presented for acceptance or rejection ▶ He made an offer of $85,000 for the aircraft. ▶ verb 1. to show readiness to do something ▶ He offered to pick up the tickets in advance. 2. to present for acceptance or rejection ▶ The company offered her a job and she accepted it. 3. to provide ▶ The battery offers a short term power capability.

official /ˈɒfɪʃ(ə)l/ adjective referring to an authority, such as the government or a recognised organisation ▶ an official weather report a weather report produced by a meteorological station ▶ noun a person employed by a government authority or a corporation ▶ An official of the civil aviation department will be visiting today.

offshore /ˈɔfʃɔr/ adjective at a distance from the shore

offshore wind /ˈɔfnɔːrd/ wind/ noun a wind which blows from the coast towards the sea. Compare onshore wind

ohm /ˈɔhm/ noun a unit of measurement of electrical resistance. ▶ ampere

COMMENT: Ohm’s Law states that the current in a circuit is directly proportional to the voltage causing it and inversely proportional to the resistance of the circuit.

oil /ˈɔil/ noun a thick mineral liquid used as a fuel or to make mechanical parts move smoothly

oil pan /ˈɔil pæn/ noun US same as sump

okta /ˈɔktə, ˈɔktə/ noun a unit of visible sky equal to one eighth of total area visible to the horizon ▶ The amount of cloud cover is given in oktas.

COMMENT: To measure cloud cover, the sky is divided into imaginary sections, each covering one eighth of the total. A cloudless sky is ‘zero okta’, and a sky which is completely covered with clouds is ‘eight oktas’ or ‘eight eighths’.

oleo /ˈoʊliəʊ/ noun a telescopic strut in the undercarriage which absorbs impact loads on landing ▶ A safety switch is fitted in such a way to the oleo, that when the oleo is compressed on the ground, the ‘undercarriage up’ selection cannot be operated. Full form oleo-pneumatic

OM abbreviation outer market

omit /ˈəʊmɪt/ verb to leave out, not to include ▶ High charts show only information relevant to high altitude flights and many beacons/laids which are provided for low operations are omitted to keep the chart clear. (NOTE: omitting – omitted)

omni-bearing indicator /ˈɒmniˌbɛərɪŋ ˈɪndɪkətər/ noun a cockpit instrument that displays a cockpit network that allows pilots to choose and fly on any bearing relative to a transmitter on the ground

omni-bearing selector /ˈɒmniˌbɛərɪŋ ˈsɛktər/ noun a knob on an omni-bearing indicator which the pilot turns to select a radial from a VOR station. Abbreviation OBI

omni-range /ˈɒmniˌrɛndʒ/ noun a very-high-frequency radio navigation network that allows pilots to choose and fly on any bearing relative to a transmitter on the ground

one-in-sixty rule /ˌwʌn ˈɪn ˈwʌnti ˈruːəl/ noun in navigation, every 1° of track error, and every 60 nautical miles flown, results in the aircraft being 1 nm off track

onshore /ˈɒnʃɔr/ adjective towards the coast

onshore wind /ˈɒnʃɔr ˈwʊnd/ noun a wind which blows from the sea towards the coast. Compare offshore wind

opacity /ˈɑpəsɪti/ noun the state of not allowing light to pass through ▶ Sometimes, it is possible to estimate the depth and opacity of the layer of mist or fog from the ground observations.

opaque /ˈɑpək/ adjective not allowing light to penetrate or pass through ▶ Rime ice is an opaque, white, granular ice which forms on leading edges.
opening /ˈɔp(ə)nɪŋ/ noun 1. a space which acts as a passage through which something or somebody can go ○ an inlet valve opening 2. a formal start of operation ○ the opening of the new flying school 3. a vacancy for a job ○ There’s an opening for a new chief ground instructor.

open-skies /ˌɔpənˈskɛiz/ adjective referring to a policy of allowing aircraft belonging to any country to fly over an area, without restrictions on surveillance of military installations

operate /ˈɔpəreɪt/ verb 1. to control the working of ○ The control column operates the ailerons and elevator. ○ The flaps are operated by a switch. 2. to use or manage ○ The airline operates a fleet of Boeing aircraft. 3. to perform or function ○ Jet transports operate at high altitudes. 4. to perform a surgical procedure, by cutting into the body ○ The surgeon operated on the patient.

operating jack /ˌɔpəreɪtɪŋ dʒæk/ noun a device which converts rotary motion into linear or reciprocating motion in order to move heavy control surfaces

operating weight /ˌɔpəreɪtɪŋ wıt/ noun the total mass of aircraft ready for flight but excluding fuel and payload ○ The type of undercarriage fitted to an aircraft is governed by the operating weight.

operation /ˈɔpərəʃən/ noun 1. the process of making something work ○ The operation of the ignition system in a light aircraft is quite simple. 2. a long-haul operations flying over long-distance routes 3. an effect ○ to come into operation to come into effect ○ The new procedures come into operation on 1st January. 4. a surgical procedure ○ The doctor performed an operation. 5. a procedure such as addition or subtraction ○...periodically check the carburettor heating system and controls for proper condition and operation [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

operational /ˈɔpərəʃənal/ adjective 1. working or functioning ○ Air traffic control facilities were not operational at the time of the accident. ○ the operational life of the aircraft the expected working life of an aircraft 2. ready for use, referring to an aircraft in a suitable condition to fly ○ an operational aircraft an aircraft that can be used for its assigned purpose

operational air traffic /ˌɔpəreɪʃənˈɛə fəˈtræfɪk/ noun flights operating in accordance with military air traffic service procedures. Abbreviation OAT

operations department /ˌɔpərəˈeɪʃən dəˈpɑːrtmənt/ noun the part of an airline or airport organisation which deals with flight operations

operative /ˈɔpərətɪv/ adjective functioning or working ○ The system is now operative after the recent maintenance.

operator /ˈɔpərətər/ noun a person who operates or uses equipment ○ A ring graticule around the edge of the cathode ray tube enables the operator to read the bearing directly.

oppose /ˈɔpəz/ verb 1. to work against ○ In level flight, the force of lift opposes the force of gravity. 2. to reject, be in conflict with or try to prevent ○ The local people oppose the building of the new runway. 3. as opposed to in contrast with ○ over sea as opposed to over land

opposite /ˈɔpəzɪt/ adjective 1. situated or placed directly across from something, facing ○ opposite sides of a building the back and front of a building 2. completely different, the reverse ○ For every action there is an equal and opposite reaction. ○ noun something completely different, the reverse ○ The opposite of a katabatic wind is an anabatic wind. ○ The opposite of starboard is port. ○ going in opposite directions 1. moving away from each other 2. moving towards each other

opposition /ˌɔpəˈzɪʃən/ noun ○ in opposition against ○ Drug acts in opposition to thrust. ○ The electromotive force that is produced by all motors is in opposition to supply voltage and is
orbit round the sun.

the option of going around.

4. later

higher numbers (25, 26, 27, etc.) come

numbers (1, 2, 3, etc.) come first and

order

arrangement in which the lowest

come first, followed by those beginning

in which words beginning with letter A

come first, followed by those beginning

with letter B, then C, etc.

order

alphabetical order

arrangement in which words begin with letter A come first, followed by those beginning with letter B, then C, etc.

numerical order

arrangement in which the lowest numbers (1, 2, 3, etc.) come first and higher numbers (25, 26, 27, etc.) come later.

3. a condition or state

Although the aircraft is old, it is in good working order. 

out of order

not working. The telephone is out or order.

4. in the order of approximately

OGR (very high frequency omni-directional radio range) beacons of 200 watts have a range in the order of 200 nm (nautical miles). in order to so as to

Indicated airspeed must be corrected in order to obtain true airspeed.

Verb 1. give a command. Before impact, the captain will order the crew to secure themselves at their assigned emergency stations. 2. to put in a sequence

Order the items in importance from 1 to 10.

organisation

an association of people working together for the same cause. The World Meteorological Organization The International Civil Aviation Organization.

2. the act of putting things into a structured and systematic form. The organisation of training materials for the new self-access learning centre is under way.

planning

Captain Scott is responsible for the organisation of examinations.

organise

1. to arrange into a system. Organise your notes so that you can find things easily. 2. to plan. The trip was well organised and everybody enjoyed themselves.

orientate

verb to locate in relation to the compass. The first step in map reading is to orientate the chart by relating the direction of land features to their representation on the chart.

orientation

a position in relation to the compass. The horizontal situation indicator (HSI) presents a selectable, dynamic colour display of flight progress and plan view orientation.

orifice

an opening, mouth or vent. The liquid expands and builds up a pressure differential across an orifice which leads to the expansion chamber.

origin

1. a source, the place where something starts. An air mass takes on the characteristics of its place of origin. 2. the base from which a map projection is drawn. The value of convergence used is correct at the parallel of origin.

original

before all others, the first. The atmosphere is said to be stable if, when a parcel of air is displaced vertically, it tends to return to its original level.

originate

verb to be created or to come into being. Tropical revolving storms originate within 5–15° of the equator. Aircraft fires after an
emergency landing, often originate in the wing area.

orographic /ˌɔrəˈɡraʊfɪk/ adjective referring to mountains or orographic uplift the lifting of air masses in contact with mountain regions

orographic cloud /ˌɔrəˈɡraʊfɪk 'klɔud/ noun a cloud formed by air being forced upward over mountainous areas

orthomorphic /ˌɔrθəˈmorɪfɪk/ adjective of the correct shape o An orthomorphic chart is one which has meridians and parallels which intersect at right angles and, at any point on the chart, the scale must be the same in all directions.

orthomorphism /ˌɔrθəˈmɔrɪfɪzm/ noun a shape representation on a map o Orthomorphism means that bearings may be measured correctly at any point on a chart.

oscillate /ˈɒsɪleɪt/ verb 1. to move regularly between extremes 2. to increase or decrease regularly so as to produce oscillations o Instability protection is incorporated to guard against oscillating outputs from the alternators.

oscillation /ˌɒsɪləˈʃən/ noun 1. a regular movement between extremes o Ridge waves can be thought of as oscillations about the stable state of the undisturbed air flow with the range of hills providing the disturbance. 2. a regular increase and decrease of electrical current o The supply is subject to oscillation.

oscillator /ˈɒsɪleɪtər/ noun an electronic circuit that produces a pulse or a signal at a particular frequency o The local oscillator replicates the radio frequency of the frequency generator at the transmitter.

out /aʊt/ adverb 1. out of away from, no longer in

outboard /ˈaʊtbaʊrd/ adverb in a direction away from the centre of an aircraft o A shape, or escape, easy to recognize from its outline in elevation. o Cumulus cloud has detached domes or towers which are generally dense and have sharp outlines. o verb to explain simply and briefly o The changes in conditions outlined in the next paragraph.
out-of-balance turn /'aut əv 'taɪn/ noun a turn in which the aircraft "skids" upwards and outwards from the turn or "slips" inwards and downward. During an out-of-balance turn, the ball in the slip indicator will be deflected to the left or right.

out of trim /'aut əv 'trɪm/ adjective referring to a situation in which the aircraft is not in static balance in pitch, so that if the pilot releases the yoke or control stick, the aircraft will start to climb or descend.

output /'aut pʊt/ noun the product of a process. The function of the supercharger is to increase the power output. The power output of an engine depends on the weight of mixture which can be burnt in the cylinders in a given time.

outrigger /'autrɪɡə/ noun a projection attached to an aircraft to stabilise it or to support something.

outward /'autwɔːd/ adjective moving away from the centre or starting point. The piston draws fluid into the cylinders on the outward stroke and expels fluid into the system on the inward stroke.

outwards /'autwɔːdz/ adverb away from the centre or starting point, towards the outside. The door opens outwards.

overall /'ɔːvərəl/ adjective including everything. The total aerodynamic losses result in an overall turbine efficiency of 92%. Although the student failed in one of the five exams, her overall result was a pass.

overheat /'ɔːvərhiːt/ verb to get too hot. An acceleration/deceleration control is fitted to prevent the turbine assembly from overheating during acceleration, and to prevent flame-out during deceleration.

overlap noun /'ɔːvərlæp/ part of one thing covering something else.

overload noun /'ɔːvərloʊd/ an excessive amount of work or electricity. Resettable circuit protective devices should be designed so that when an overload or circuit fault exists, they will open the circuit.
overload operations 166

to load a device or system, such as an electrical circuit, with too much work; to demand more than a system is capable of. Operating pressure is maintained in that part of the system which leads to the selector valves, and some method is used to prevent overloading the pumps. 2. to load too heavily. The aircraft failed to gain height after take-off because it was overloaded.

override /əʊvəˈraɪd/ verb to take over control of the operation of an automatic device or system. A circuit-protective device must not be of a type which can be overridden manually. (NOTE: overriding – overrode – overrun)

overshoot /əʊvəʃʊt/ verb to fly past a target. The pilot tried to land but the aircraft overshot the runway. (NOTE: overshooting – overshot)

overspeed verb /əʊvəˈspɪd/ to go too fast. A fault in the constant speed drive unit causes the generator to overspeed. A noun /əʊvəˈspɪd/ a speed that is too fast. Overspeed is usually a fault in the constant speed drive unit which causes the generator to overspeed.

overspeeding /əʊvəˈspɪdɪŋ/ noun the act of going too fast. Overspeeding of the engine is prevented by a governor in the fuel system.

overstressed /əʊvəˈstrɛst/ verb to subject to too much force. It takes less g force to overstress a heavy aircraft than a light one.

owing to /əʊvɪŋ tu/ preposition because of. Integral tanks are now favoured for aircraft owing to the very high utilisation of space and saving of weight. Owing to the aerodrome being unserviceable, the landing was made at another aerodrome some distance away.

oxidation /ˌɒksɪdəʃən/ noun the combination of a substance with oxygen, with loss of electrons. When aluminium surfaces are exposed to the atmosphere, a thin invisible oxide skin forms immediately that protects the metal from further oxidation.

oxygen /ˌɒksɪdʒən/ noun a colourless, odourless gas, which is essential to human life, constituting 21% by volume of the Earth’s atmosphere. Our bodies can get oxygen through the lungs. At very high altitudes the flying pilot must be on oxygen at all times, unless an aircraft dispensation has been obtained. (NOTE: The atomic number of oxygen is 8.)

ozone /ˌɔːzəʊn/ noun a poisonous form of oxygen found naturally in the atmosphere which is toxic to humans at concentrations above 0.1 parts per million. The maximum concentration of ozone is between 20 and 25 km above the Earth’s surface. Symbol O₃
PA  abbreviation  public address
Pacific Standard Time  /pekstid/  'stændəd  'taɪm/  noun  the time zone of the west coast area of the USA and Canada, 8 hours behind Greenwich Mean Time
pack  /pek/  noun  1.  a detachable system  
   Circuit packs consist of basic decision-making elements, referred to as logic gates, each performing combined national operations.  
   A power pack system is one in which most of the major components, with the exception of the actuators and, in some systems, the pumps, are included in a self-contained unit.  
   2.  a small package containing a set number of items  
   The survival pack includes heliographs, sea marker dyes, day/night distress flares and parachute flares.

pad  /pæd/  noun  same as helipad
pair  /peə/  noun  two matched items, similar in appearance and function  
   A brake control valve usually contains four elements, one pair for the brakes on each side of the aircraft, to provide duplicated control.

pancake  /'pænki/  (informal) noun  same as pancake landing  
verb  to make a pancake landing, or cause an aircraft to make a pancake landing

pancake landing  /'pænki/  'lændɪŋ/  noun  a landing in which an aircraft drops suddenly straight to the ground from a low altitude, usually because of engine failure

panel  /'pæn(ə)l/  noun  1.  a flat, often rectangular piece of the skin of the aircraft  
   Access to the engine compartment is normally via hinged cowling panels.  
   2.  a board with switches, dials, control knobs, etc.  
   The pilot is trained to scan an instrument panel.

panic  /'pænɪk/  noun  a sudden overpowering fear or terror.  
   In order to prevent mass panic amongst passengers in an emergency situation, crew may have to use force.

PAPI  abbreviation  precision approach path indicator
PAR  abbreviation  precision approach radar

parachute  /'pærəʃət/  noun  a device used to slow down free fall from an aircraft, consisting of a light piece of fabric attached by cords to a harness and worn or stored folded until used in descent

parachute flare  /'pærəʃət  'flɛə/  noun  a distress signal, suspended from a parachute to allow more time for the flare to be seen, which is fired to a height of 1200 ft

parachutist  /'pærəʃətɪst/  noun  a person who returns to the ground from an aircraft using a parachute

parallel  /'pærəlel/  adjective  1.  side by side and having the same distance between them at every point  
   As one aircraft flew round to attempt another landing, a Boeing 757 was taking off on the parallel runway.  
   The runway is parallel to the main road.  
   2.  in parallel arranged so as to join at common points at each end  
   When batteries are connected in parallel, voltage remains constant but capacity increases.  
   noun  a line which is parallel to another  
   parallels of latitude  imaginary lines of
increases as speed increases.

canic ash and atmospheric pollution.

the atmosphere include sand, dust, volcanic ash and atmospheric pollution.

are permanently displayed on the screen.

brake is on before doing engine run-up checks.

a particular part of a camulonimbus cloud.

pass 2. a successful result in an exam

pass 2. to pass an exam to be successful in an exam

pass 2. a successful result in an exam

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patch /pætʃ/ noun a small area ○ a patch of fog ○ a patch of cloud ○ Patches of early morning fog made identification of ground features difficult.

path /pɑːθ/ noun a route or course along which something moves ○ Projection of the path of the aircraft over the ground is called its track.

pattern /ˈpæt(ə)rən/ noun a form or method which shows particular, consistent characteristics ○ Pressure pattern changes in pressure areas which take place regularly, e.g. every year.

pavement /ˈpævəmənt/ noun a prepared concrete or tarmac surface for ground manoeuvring of aircraft, including taxiways and runways (Note: The bearing strengths of pavements intended for aircraft of 5,700 kg MTWA (maximum total weight authorised) or less are reported as the maximum allowable weight and maximum allowable tyre pressure.)

pavement classification number /ˈpævəmənt ˈklaʊsəfɪkeɪʃən ˈnʌm(b)ər/ noun a number expressing the bearing strength of a pavement for unrestricted operations. Abbreviation PCN

PAX abbreviation passengers

payload /ˈpɛləʊd/ noun the money-earning load carried by the aircraft including the passengers, baggage and freight ○ The shape of an aircraft is determined by the requirement to provide an aerodynamic lift force great enough to support the weight of the aircraft and payload whilst in flight.

PCN abbreviation pavement classification number

PDC abbreviation pre-departure clearance

peak /piːk/ noun the highest point ○ The intensity of solar radiation reaches a peak around noon. ○ Peak value maximum value

PED abbreviation portable electronic device

pedal /ˈped(ə)l/ noun a foot-operated lever

penalty /ˈpen(ə)lɪti/ noun 1. an unwanted result of an action ○ The penalty of using a circular polarisation transmission may be some loss of definition. 2. a punishment or fine ○ Fuel penalties can be incurred if fuel surplus to requirements is carried.

penetrate /ˈpɛnɪtret/ verb to force a way into ○ Cool air from the Atlantic can sometimes penetrate far into Europe. ○ Occasionally, thunder cloud will penetrate through the tropopause.

penetration /ˌpɛnɪˈtreʃ(ə)n/ noun the act of forcing a way into or through ○ Long-range radars are little affected by weather interference and have good cloud penetration characteristics.

per /paːr/ preposition for each, for every ○ feet per minute (fpm) ○ gallons per hour (gph)

per cent /paː ˈsent/ noun the number out of each hundred ○ Fifty per cent (50%) half or ½ or 50 out of 100 ○ Twenty-five per cent (25%) one quarter or ¼ or 25 out of 100

percentage /ˌpaːsɛntɪs/ noun 1. a fraction with 100 as the understood denominator ○ Volumetric efficiency is usually expressed as a percentage. 2. part of the total ○ Only a small percentage of passengers take in the pre-departure safety briefing.

perform /pərˈfɔːm/ verb to do ○ Circuit brakes perform the same function as a fuse. ○ The pilot performed a loop to conclude his flying display.

performance /pərˈfɔːrəns/ noun the ability of a system such as an aircraft or an engine to function as required ○ The performance of the turbojet engine is measured in thrust produced at the propelling nozzle or nozzles.

period /ˈpɛriəd/ noun a length of time ○ a 24 hour period ○ a period of 3 minutes
peripheral

periodic /ˈpərɪdɪk/ adjective happening from time to time or at regular intervals, occasional • periodic maintenance maintenance made at a particular time interval • Periodic calibration of ILS (instrument landing system) installations is recommended.

perimetric /ˌpərɪˈmɛtrɪk/ adjective of a document or a body of text that is measured in two dimensions only.

permanent /ˈpɜr.mənənt/ adjective lasting or remaining without change • permanent deformation damage to a structure which must be repaired by replacing the damaged part • permanent magnet a metal component which always has a magnetic influence. Opposite temporary

permissible /ˈpɜr.mɪsəbl/ adjective allowable, not prohibited • Great care must be taken to ensure that the aircraft operates within regulated or permissible weight limits.

permission /ˌpɜr.mɪʃən/ noun consent or authorisation • A passenger who is drunk can be refused permission to board the aircraft.

permit /ˈpɜr.mɪt/ a document or pass that is proof of official permission to do or have something • You need a permit to enter the restricted area.

verb • When oxygen mask are pulled down to the usable position, valves are opened which permit oxygen to flow. • Information passed to the operations department will be sufficient to permit the flight to be planned.

Permit to Fly /ˌpɜr.mɪt tʊ ‘flai/ noun a certificate issued by the Civil Aviation Authority in the UK for aircraft which do not qualify for a Certificate of Airworthiness

perpendicular /ˈpɜr.pən.dərəl/ adjective at right angles or 90° to a base or a line • The vertical grid lines are perpendicular to the horizontal ones. • The air is acted upon by a force perpendicular to the isobars in the direction of low pressure.

persist /pəˈsɪst/ verb 1. to continue to exist • Snow cover tends to persist on north-facing slopes of mountains. 2. to continue without giving up • She persisted with her request until it was granted.

persistence /ˈpər.sɪstəns/ noun 1. the fact of continuing to exist and not disappearing • The persistence and movement of cols is governed by the movement of the adjacent pressure systems. 2. the act of continuing to do something and not giving up • He managed to overcome his difficulties through persistence and hard work.

personnel /ˈpɜr.soʊnəl/ noun a body of people involved in a common purpose such as work • Smoke masks are available for use by personnel within the aircraft.

PFCU abbreviation power flying control unit

PFD abbreviation primary flight display

phase /feɪz/ noun 1. a stage or part • An emergency situation may occur during any phase of the flight. 2. the relationship between voltage and current • The CSDU (constant speed drive unit) drive shaft turns the permanent magnet generator and single phase AC (alternating current) is induced in the winding on the stator.

phase angle /ˈfeɪz, ˈfeɪsɪŋ/ noun the difference between two periodic phenomena expressed as an angle

phase difference /ˈfeɪz, dɪˈfɜrnəns/ noun a measure of phase angle from any VOR radial related to that on bearing 360°

phenomenon /ˌfɪnəˈmənən/ noun an occurrence or circumstance which can be perceived by the senses • Metal fatigue is not a modern phenomenon. • Of all meteorological phenomena, thunderstorms present the greatest hazard to aviation. (Note: The plural form is phenomena.)

photographic film /ˌfəʊtəˈɡræfɪk ˈfɪlm/ noun a celluloid material usually contained in a small metal cylindrical casing for use in cameras

physical /ˈfɪzɪk(ə)l/ adjective 1. referring to matter and energy or the sciences dealing with them, especially physics • Oxygen and nitrogen together constitute 99% of the atmosphere and
obey the physical laws as any other gas. 2. referring to the human body. In some aircraft operating for long periods at high altitudes, physical discomfort may arise from low relative humidity.

**Physical fitness** the state of health of the body

**PIC** abbreviation pilot in command

**Piece** /ˈpiːs/ noun a bit, portion or part of a whole. **Piece** is often used to show one item of something which has no plural: a piece of equipment, a piece of information. 1. **Piece of equipment** an item of equipment which locks the blades at whatever angle they are at if there is a failure of the pitch change mechanism. **NOTE:** Some manufacturers use the term to describe a device which locks the blades at whatever angle they are at if there is a failure of the pitch change mechanism.

**Piston** /ˈpɪstən/ noun a solid cylinder that fits into a larger cylinder and moves under fluid pressure, as in petrol and diesel engines or compresses fluids, as in pumps and compressors.

**Piston engine** /ˈpɪstən ˈendʒɪn/ noun a petrol or diesel engine in which pistons are moved by combustion of fuel, this reciprocating movement producing rotating movement.

**Piston ring** /ˈpɪstən rɪŋ/ noun one of the metal rings which seals the space between the piston and the cylinder wall.

**Pitch** /ˈpɪtʃ/ noun 1. a nose up/down movement of the aircraft about its lateral axis. 2. the distance a propeller would advance in one rotation if there was no slip. **Fine pitch setting** and **coarse pitch setting** angular propeller-blade settings. **Variable pitch propellers** were originally produced with two blade-angle settings – fine pitch to enable full engine speed to be used on take off and coarse pitch to allow an economical engine speed to be used for cruising. **Verb** to move about the lateral axis. **Move the yoke forward and aft to pitch down and up.**

**Pitch angle** /ˈpɪtʃ ˈæŋɡəl/ noun the angle between the blade element chord line and the plane of rotation of the propeller.

**Pitch lock** /ˈpɪtʃ ˈlɒk/ noun a means of holding the fine pitch stop in a prescribed position. **NOTE:** Some manufacturers use the term to describe a device which locks the blades at whatever angle they are at if there is a failure of the pitch change mechanism.

**Pitch trim** /ˈpɪtʃ ˈtrɪm/ noun the trim of the aircraft in the lateral axis so that
pilot head

there are no forward/ aft forces on the control stick or yoke

pilot head /ˈpɪtəʊ hɛd/ noun an externally mounted device which senses and sends airspeed information to the airspeed indicator in the cockpit

pilot-static system /ˈpɪtəʊ ˈstætɪk ˌsɪstəm/ noun a pressure system for the airspeed indicator, altimeter and vertical speed indicator

pilot tube /ˈpɪtəʊ tjuː/ noun an open-ended tube used to measure the speed of flow of a fluid or device to sense pitot pressure created by the movement of air over the aircraft

pivot /ˈpɪvat/ noun a short rod on which another part rotates: verb to turn on a point: The rocker arm pivots on a bearing and opens the valve.

place /pleɪs/ noun 1. a space or area: Greenwich is a place on the 0° meridian. 2. a position: decimal place. 3. in place of instead of: to take place to happen: The explosion took place just before the aircraft landed. ■ verb to put: Place the chart on the seat next to you. ○ Rotate the grid to place the wind direction under true.

plain /pleɪn/ adjective without pattern or marking or writing: a plain sheet of paper: a sheet of paper with nothing on it

plane /pleɪn/ noun 1. a drawing or diagram of a place viewed from above: The horizontal situation indicator presents a selectable dynamic colour display of flight progress and plan view orientation. 2. a scheme or programme worked out in advance of putting something into operation: to organise a scheme or programme: Jeppesen charts are used to plan and fly a safe route to a destination.

plane /pleɪn/ noun 1. an imaginary surface containing all the straight lines that connect any two points on it: The planes of parallels of latitude are parallel to the plane of the equator. ○ The pitch angle is the angle between the blade element chord line and the plane of rotation of the propeller. 2. an airplane (note: because of possible confusion with meaning 1, plane as in meaning 2 is considered bad usage by some. The word aircraft is preferred in that case.)

planning /ˈplænɪŋ/ noun making plans: The instructor gave a talk on flight planning.

plan position indicator /ˌplæn po ˈzɪʃ(ə)n ˌɪndɪkətə/ noun the normal type of display for a radar signal, which resembles a map with the radar site at the centre

plant /plant/ noun large and usually heavy equipment or tools used for doing something

plate /pleɪt/ noun a smooth, flat rigid object with the same thickness all over: The basic construction of a lead-acid cell consists of a positive electrode and negative electrode, each of which is made up of lead-antimony alloy grid plates.

play /pleɪ/ noun a slightly loose fitting of engineering parts which allows them to move freely: Some play should be felt in the aileron actuator rod linkage.

plot /plɒt/ to play a part to be part of a whole which has an effect on something: Contrast and colour play a part in identifying coastlines.

plot /plɒt/ noun a graph or diagram that shows a relationship between two sets of numbers as a series of points joined by a line: a plot of applied stress and resulting strain: verb to calculate and mark a line on a graph or chart, etc.: to plot a course to calculate and draw the desired route of an aircraft on a chart

plug /plʌg/ noun 1. a device for making an electrical connection: Alternating current ground power can be fitted to an aircraft via a six-pin ground power plug. ○ a 3-pin plug an electrical supply plug with three electrodes: live, neutral and earth. 2. a device for igniting fuel in an engine: An electric spark from an igniter plug starts combustion.

The fuel/air mixture is ignited by a spark plug. 3. a device to prevent liquid flowing out of a container: oil drain plug: spark plug: verb 1. to plug a hole to fill a hole so that fluid cannot escape. 2. to plug something in to
make an electrical connection, often by inserting the plug on an electrical device such as a computer into an electrical supply socket

**plunger** /ˈplændʒə/ noun a machine part that operates with a thrusting or plunging movement, e.g. a piston ○ A flow indicator valve comprises a body, a spring-loaded plunger connected to an actuator arm, and a micro-switch.

**plus** /plʌs/ preposition added to ○ At the selected decision height plus 50 feet, an aural alert chime sounds. ○ Four plus four equals eight (4 + 4 = 8).

**pneumatic** /ˈniːmətɪk/ adjective operating by means of air under pressure or compressed air ○ High-pressure pneumatic systems are generally fitted on the older types of piston-engine aircraft to operate the landing gear, wing flaps, wheel brakes.

**pneumatically** /ˈniːmətkli/ adverb by using air under pressure or compressed air ○ Clamshell doors are hydraulically or pneumatically opened.

**PNR** abbreviation point of no return

**POB** abbreviation persons on board

**pocket** /ˈpɒkɪt/ noun same as air pocket

**pod** /ˈpɒd/ noun a streamlined casing or housing ○ The engine bay or pod is usually cooled by atmospheric air.

**POH** abbreviation Pilot’s Operating Handbook

**point** /ˈpɔɪnt/ noun 1. a particular figure on a scale ○ The melting point of ice is 0°C (Celsius). 2. a particular place ○ a point on a map a particular place on a map 3. the sharp end of something ○ a pencil point □ verb 1. to direct towards ○ Point the aircraft towards the airfield. 2. to indicate direction, often with a finger ○ point to the east 3. □ to point out to draw attention to ○ The instructor pointed out the dangers of not keeping a good lookout.

**pointer** /ˈpɔɪntər/ noun an indicating device on an instrument, e.g. a needle ○ The pointer centralises to indicate that the aircraft is aligned with the runway centre line.

**point of no return** /ˈpɔɪnt əv nəʊ rɪn t/ noun a place on the route where the aircraft does not have enough fuel to return to the starting place ○ The point of no return is calculated before departure to cover the chance that both the terminal airfield and its alternate become unavailable during flight. Abbreviation PNR

**polar** /ˈpɔʊər/ adjective 1. located in or coming from the region around the north or south pole ○ polar air ○ a polar region ○ The greatest horizontal gradients of mean temperatures of a layer are found at the boundaries between cold polar and warm tropical air masses. 2. referring to the pole or poles of an electrical device or of a magnet ○ Bar magnets attract each other because of polar differences.

**polar diameter** /ˈpɔʊər daɪəmətər/ noun the distance from one pole, passing through the centre of the Earth, to the other pole ○ The Earth’s polar diameter is shorter than its average equatorial diameter.

**polar ice cap** /ˈpɔʊər ˈaɪs ,ˌkeɪp/ noun the permanent area of ice at north or south pole

**polarisation** /ˌpɔʊəralɪˈzeɪʃən/, **polarization** noun 1. a characteristic of light or radio or other electromagnetic waves in which the waves are aligned in one direction and show different properties in different directions ○ The antenna must have the same effective length and the same polarisation as the transmitter. 2. partial or complete polar separation of positive and negative electric charges

**polarise** /ˈpɔʊərəraɪz/, **polarize** verb 1. to align in one plane ○ The frequency allocation for VOR (very high frequency omni-directional radio range) is 108–117.975 MHz (megahertz) and transmissions are horizontally polarised. 2. to separate positive and negative electric charges

**polarity** /ˈpɔʊərələrɪtɪ/ noun the direction of flow of flux or current in an object ○ During discharge, when the
pole

polarity of the supply changes, the stored energy is returned to the supply.  a polarity test a test to see which terminal is positive and which is negative.

pole /pəʊl/ noun 1. the north or south point of the Earth’s axis o a meridian is a line joining pole to pole. 2. a terminal, e.g. of a battery o negative pole. 3. a long, rounded piece of wood or metal o a flag pole

pollution /pəˈljʊʃ(ə)n/ noun the presence of unusually high concentrations of harmful substances in the environment

pontoon /pɒntuːn/ noun same as float

poor /pɔːr/ adjective bad o poor weather conditions o poor visibility o Air is a poor conductor.

poppet valve /ˈpɒpɪt vælɪv/ noun an intake or exhaust valve of a piston engine, operated by springs and cams

porous /ˈpərəs/ adjective referring to substances which allow fluid to pass through them o The de-icing fluid passes through a porous plastic sheet.

port /pɔːt/ noun 1. an entrance which is opened periodically o inlet port. 2. the left-hand side of an aircraft when facing forwards when inside the aircraft o Unless an aircraft is flying in the same or exactly opposite direction to the wind, it will experience either port or starboard drift. Opposite starboard.

portable /ˈpɔrəbəl/ adjective capable of being carried in the hands o a portable fire extinguisher o The aneroid barometer is a more portable device than a mercury barometer.

portable electronic device /ˌpɔrəˈbəul ɪˌdʒɪvəntɪk dəˈvæs/ noun a piece of electronic equipment such as a mobile phone or laptop which is small enough to be carried onboard an aircraft, and which may cause problems with the aircraft’s systems during flight. Abbreviation PED

portion /ˈpɔʃən/ noun a part or section o A hailstone starts as a small ice particle in the upper portion of a cumulus cloud.

position /ˈpɔzɪʃ(ə)n/ noun 1. a place or location where something is o The Greenwich or prime meridian and the equator are the axes of the system called latitude and longitude which is used for expressing position on the Earth. 2. the setting of a control, etc. o the neutral position. 3. In a sitting position seated. a verb to place something in a special location o The magnetic compass is positioned away from magnetic sources.

position line /ˈpɔzɪʃ(ə)n lайн/ noun a line along which an aircraft is known to be at a particular time, usually by taking a VOR bearing. Also called line of position, navigational line

position report /ˈpɔzɪʃ(ə)n rɪpɔ:rt/ noun a report over a known location as transmitted by an aircraft to an air traffic control station

positive /ˈpəʊzətɪv/ adjective 1. definite, without doubt o The pinpoint is a very positive means of establishing aircraft position. 2. referring to a number greater than zero o Oil is ducted to the front of the pitch change piston and the blades move to a positive angle. 3. referring to the + symbol o positive terminal the terminal of a battery marked +

positive idling speed /ˌpəʊzətɪv ˈaɪdlɪŋ spɪd/ noun idling speed selected with the throttle to ensure that the engine runs correctly without spark plug fouling o An adjustable stop on the throttle control ensures a positive idling speed.

possibility /ˈpɔsɪbəlɪti/ noun a chance occurrence o Anti-skid systems are designed to prevent the wheels from locking during landing thus reducing the possibility of wheel skid.

possible /ˈpɒsəbl/ adjective capable of happening o If possible, control surfaces should be moved by hand. o There will be a possible delay. o Fire in a toilet could present difficulties due to the confined space and possible smoke accumulation.
potential /pəˈtenʃəl/ adjective capable of being, but not yet in existence  
A designated fire zone is a region where a potential fire risk may exist.  

power  
the power supply from the amplifier to the gauge fails, the needle slowly falls to zero.

potter /ˈpətər/ noun  
A designated fire zone is a region where a potential fire risk may exist.

power-assisted /ˈpauə ˈɑːsɪstɪd/ adjective  
power-assisted controls controls which require less human effort to move

power dive /ˈpauə dɜrv/ noun  
a steep dive made by an aircraft with its engines at high power to increase the speed

powered /ˈpauəd/ adjective  
driven by something such as a type of energy or motor

power line /ˈpauə laɪn/ noun  
a thick cable, supported by pylons, which carries electricity for long distances

powerplant /ˈpauəplaɪnt/ noun  
an engine used to move a vehicle or aircraft  
additional strength is required for the powerplant attachment point.  

pre /priː/ prefix  
before

pre-arrange /priː əˈreɪnɡ/ verb  
to decide or to plan in advance, to pre-determine  
selective calling uses the four-letter code pre-arranged with the controlling authorities.

precaution /ˈprekəʃən/ noun  
an action taken to prevent or avoid a dangerous situation or failure  
Personnel concerned with fuelling should take every precaution to prevent outbreaks of fire.
When the droplets grow and become droplets are small and light at first, but to be more important than precedence over to have priority over, to be more important than Emergency landings take precedence over all others. preceding /prɪˈsid(ə)n/ adjective taking place or coming before something else as as mentioned in the preceding paragraph as written in the paragraph before the one being read precipitation /prɪˈspɛʃ(ə)n/ noun water falling as rain, drizzle, hail, sleet and snow from the atmosphere onto the surface of the Earth. Cloud droplets are small and light at first, but when the droplets grow and become heavier, they fall as precipitation. Precipitation is classified as light, moderate or heavy according to its rate of fall. precise /prɪˈsɛs/ adjective exact or accurate a A pinpoint is an indication of the precise position of the aircraft. A precise interval is essential to obtain correct ignition timing on all cylinders during engine running. precision /prɪˈsɪʃ(ə)n/ noun exactness or accuracy a Precision flying is only achieved by constant practice. a with precision with exactness precision approach path indicator /prɪˈsɛʃ(ə)n əˈprɒfs/ noun a set of lights that enables pilots to judge whether their glide slope is correct on the final approach to landing precision approach radar /prɪˈsɛʃ(ə)n əˈreɪdər/ noun a ground-based primary radar system to give vertical and lateral information about an aircraft’s final approach path. Abbreviation PAR precision area navigation /prɪˈsɛʒ(ə)n əˈnɜːvər/ a standard of performance for navigation that requires an aircraft to remain within 1 nautical mile of the centreline of its course for 95% of the time. Abbreviation PRNAV pre-departure /priˈdɪpət/ a taking place before a departure a Only a few passengers absorb the pre-departure safety information. pre-departure clearance /priˈdɪpət/ noun a message that the pilot must receive from air traffic control before the plane is allowed to take off predetermined /priˈdɪtəm/ verb to decide and set or fix beforehand predetermined /priˈdɪtəm/ a decided and set beforehand a When the roll control knob is returned to the central position, the aircraft rolls out on to a predetermined heading. predictable /priˈdɪktəb(ə)l/ adjective 1. reliably regular and therefore foreseeable a Only the high frequency band has predictable, reliable sky wave propagation by day and by night. 2. capable of being foreseen, expected or anticipated a the accident was predictable it was possible to know that the accident would happen before it happened prediction /priˈdɪkʃ(ə)n/ noun the act of saying what will happen in the future a The map display combines current ground speed and lateral acceleration into a prediction of the path over the ground to be followed over the next 30, 60 and 90 seconds. predominance /priˈdərnəns/ noun greatest importance or influence a The predominance of a cold northerly airstream during the winter months. predominant /priˈdərnənt/ adjective most important or influential, more powerful than others a The ocean surface usually consists of a predominant
swell three or four feet high and 500 to 1,000 feet between crests.

predominate /prɪˈdəʊmɪneɪt/ verb to have greater number or importance, or to be more powerful than others o A cold northerly airstream predominates during the winter months.

prefer /prɪˈfɜːr/ verb to like more, to favour o Of the two basic types of fuel pump, where lower pressures are required at the burners, the gear-type pump, where lower pressures are preferred because of its lightness. (NOTE: preferring – preferred)

preferable /prɪˈfɜːrəbl/ adjective better than, more desirable o Three position lines are preferable to two. o If there is a choice between two courses of action, the safest is the most preferable.

preference /prɪˈfɜːrəns/ noun o in preference to by choice, rather than o For some applications, e.g. landing gear and flaps, hydraulic systems are used in preference to mechanical or electrical systems.

prefix /prɪˈfɪks/ noun part of a word added at the beginning of a word to alter the meaning – a prefix meaning ‘before’. (NOTE: The plural form is prefixes.)

COMMENT: The prefixes for cloud types are: alto- medium level cloud (6,500 feet to 23,000 feet); cirro- high cloud (16,500 feet and above); nimbo- any height, but rain-bearing as for example nimbostratus: rain carrying, low-level cloud; strato- low cloud (up to 6,500 feet).

pre-flight /prɪˈfliːt/ adjective taking place before a flight o pre-flight briefing a short instructional talk before a flight o pre-flight checks checks made on the aircraft structure and systems before taking off o During pre-flight checks, control surfaces should be moved by hand to ascertain that they have full and free movement. o noun the set of procedures and checks that pilots and ground crew must carry out before an aircraft takes off o verb to inspect an aircraft before it takes off to ensure that it is airworthy

pre-ignition /prɪˈsaɪɡnɪʃən/ noun the ignition of the fuel/air mixture in the combustion chamber, occurring before the spark o Pre-ignition is often caused by a hot spot in the combustion chamber which ignites the mixture.

preparation /prɪˈprɛərəʃən/ noun a state of readiness or act of making something ready for use beforehand o Normal aircraft preparation are actions and precautions taken by the cabin crew on every flight to ready the aircraft for any abnormal or emergency situation which may occur during any phase of the flight.

prepare /prɪˈpɛər/ verb 1. to make ready beforehand for a particular purpose, as for an event or occasion o The instructor prepared the students for the exams. o prepare for take-off to get ready for take-off 2. to make by putting various elements or ingredients together o Regional area forecasting centres use information about upper wind speeds and temperatures to prepare specific forecasts and significant weather charts.

prescribe /prɪˈskraɪb/ verb to set down as a rule or a guide o prescribed procedures a set or fixed pattern of doing something o A means of holding the fine pitch stop in a prescribed position is also called ‘pitch lock’.

pre-select /prɪˈsɛlt/ verb to select or to choose in advance

pre-selected /prɪˈsɛltəd/ adjective selected or chosen in advance o The CSU (constant speed unit) maintains the pre-selected propeller speed.

presence /prɪˈzɛns/ noun existence o The presence of cloud by day decreases the value of the maximum temperatures. o A fuel sample hazy or cloudy in appearance would indicate the presence of water.

present /prɪˈzɛnt/ 1. in place, existing o Fuel, oxygen and heat must all be present for fire to exist. 2. the period in time through which we are now living, between the past and the future o at the present time at this time, now o present day aircraft modern aircraft o present weather the weather at the moment of speaking o verb /prɪˈzent/ 1. to create or to make o A fire in a toilet could present difficul-
presentation /prɛz(ə)n'teɪʃ(ə)n/ noun showing, a display. The most widely acceptable presentation of flight fuel data is in a tabular form.

presently /prɛz(ə)əntli/ adverb 1. soon o I’ll be there presently. 2. US now, at the present time o he’s presently in France at the present time, he is in France o a number of methods are presently in use a number of methods are currently in use

preset /prɪ'sɛt/ verb to set in advance o Radios allow the user to preset a number of different frequencies. (NOTE: presetting – preset) a number of methods are currently in use

press /prɛs/ verb to push or exert pressure on o press to test/talk (PTT) button o Press the button. pressure /prɛfə/ noun force applied uniformly over a surface, measured as force per unit of area o fuel pressure pressure exerted by fuel as it is pumped from the tanks to the engine o pressure switch a switch which is activated when a preset pressure is attained o On some engines a fuel differential pressure switch fitted to the fuel filter senses the pressure difference across the filter element. o absolute pressure pressure altimeter /prɛfəˌæltɪˈme(r)ətər/ an instrument on the hydraulic panel which electrically indicates pressure on a component which transmits fluid pressure to a direct reading pressure gauge, or to a pressure transmitter which electrically indicates pressure on an instrument on the hydraulic panel. pressure altitude /prɛfəˌæltɪˈtjuːd/ noun the altitude indicated when the altimeter is set to 1013.2 mb or 1013.2 mbar o When using flight levels, the altimeter should be set to 1013.2 mb to give the pressure altitude.

COMMENT: Pressure altitude is used in determining density altitude, true altitude and true airspeed.

pressure bulkhead /prɛfəˌbʌklək/ noun a partition inside the aircraft which separates pressurised from non-pressurised areas

pressurisation /prɛzəˌrɪzəʃ(ə)n/ noun the act of increasing the air pressure inside a space, e.g. an aircraft cabin, so that it feels normal for the occupants when the outside air pressure decreases.

pressurise /prɛzəˈraɪs/, pressurize verb to increase the pressure of o When air pressure is used to transfer fuel, it will be necessary to pressurise the fuel tanks.

prevail /prɪˈvɛl/ verb to be most common or frequent o Hot dry conditions prevail in the Middle East in summertime. o the prevailing wind is from the south-west the wind blows from the south west more often than from any other direction

prevent /prɪˈvent/ verb to stop from happening o Heated air provides sufficient heat in the outer skin to melt ice already formed and prevent any further ice formation.

previous /prɪˈvɪəs/ adjective coming before, earlier o the previous chapter the chapter before the one being read or referred to o previous reports earlier reports

primarily /prɪˈmərɪli/ adverb most often, mainly o Dry chemical fire extinguishers are primarily used for electrical fires.

primary /prɪˈmæri/ adjective first or most important o of primary importance of greatest importance o primary coil an induction coil

primary flight display noun same as primary flight instruments

primary flight instruments /prɪˈmæri flɪt ,ɪnstrəˌmənts/ plural noun the six instruments displayed on the instrument panel immediately in front of the pilot: airspeed indicator, attitude indicator, altimeter, turn coor-
after the first flight of the day, it is not
urgent in the circumstances
truth or law
Private Pilot’s Licence / praɪvɪт ˈpɒlɪt/ noun the basic licence for flying light aircraft. Abbreviation PPL
PRNAV / prɛnæv/ abbreviation precision area navigation
priority / prəʊˈraɪətri/ noun the order of importance or urgency • high priority important or urgent in the circumstances • low priority not important or urgent in the circumstances

179 product

Pilot error was

After the first flight of the day, it is not urgent in the circumstances.
production /prə'dækʃən/ noun 1. The process of manufacturing something. 2. The movement of air over the aeroplane is necessary for the production of lift. 3. The process of forming something.

circuit is a product of voltage and current (P = VI watts).

project noun /prə'dʒɛkt/ a large-scale plan or scheme. A project to modernise the airport.

programme /prə'dʒʊm/ noun the schedule of events to take place or procedures to be followed. Every part of the aircraft must be designed to carry the load imposed on it and in order to determine such loads a programme of stress analysis is always carried out. (NOTE: The word is also written program in US English.)

progress /prə'grɛs/ noun movement towards an end or aim. The progress of an aircraft in flight. In progress taking place. Embarkation is in progress. Passengers are boarding the aircraft.

progression /prə'ɡɛʃən/ noun a continuous series or sequence. The instruments are checked in logical progression from left to right.

progressive /prə'gresiv/ adjective gradual, in stages. Throttle movements should be kept to a minimum and be smooth and progressive.

prohibit /prə'hɪbit/ verb to disallow or forbid. Smoking is prohibited in toilets.

Ice is allowed to protrude or jut out. Ice is allowed to accumulate on a probe which projects into the airstream.

Throttle movements should be kept to a minimum and be smooth and progressive.
propeller pitch /ˈprəpɛlə pɪtʃ/ noun the distance a propeller would advance in one rotation if there was no slip

propeller tip /ˈprəpɛlə tɪp/ noun the part of the blade of a propeller furthest from the central hub

propelling nozzle /ˈprəpɛlnəz/ noun the extreme rear part of the jet engine where the jet exhaust enters the atmosphere

properly /ˈprɒpəli/ adverb correctly

property /ˈprɒprəti/ noun 1. a characteristic or quality o Mass is a basic property of matter. o One of the properties of mercury is that it is liquid at room temperature. 2. the things that somebody owns, possessions o personal property things belonging to a particular person

propjet /ˈprɒpʒet/ noun same as turboprop

proportion /ˈprɔprəʃn/ noun 1. part of the whole compared with another part o Only a small proportion of passengers absorb the pre-departure safety information. 2. in proportion to directly related to o The force required to move the control column is in proportion to the force being exerted by the control surface.

proportional /ˈprɔprəʃn(ə)l/ adjective 1. comparable 2. related o (directly) proportional directly related o The wind blows along contours with low values on the left, and the speed is directly proportional to the contour gradient. o inversely proportional so that as one thing increases and another decreases by the same amount o Temperature is inversely proportional to altitude. o The magnitude of the pressure gradient force is inversely proportional to the distance apart from the isobars.

propulsion /ˈprɔpʃəlʃn/ noun an act or instance of pushing or driving forwards (NOTE: The verb is to propel.)

propulsive /ˈprɔpʌlsiv/ adjective pushing or driving o The propeller is a means of converting engine power into a propulsive force called thrust. (NOTE: The verb is to propel.)

propulsive power /ˈprɔpʌlsiv pərəluw/ noun the power needed to produce thrust

protect /ˈprɔkt/ verb to keep from harm, injury or damage o Gloves are worn to protect the hands in the event of a fire.

protection /ˈprɔtekʃn/ noun the act of keeping something from harm, injury or damage o Busbars are insulated from the main structure and are normally provided with some form of protective covering.

protrude /ˈprɔtrud/ verb to extend above a surface o Prominent mountains frequently protrude above low-lying cloud and mist.

propulsion /ˈprɔprəʃn/ noun something which protrudes or extends above a surface o When it has been necessary to physically remove a layer of snow, all protrusions and vents should be examined for signs of damage.

prove /pruːv/ verb 1. to show that something is true o The pilot proved that she was not at fault. 2. to be found to be, to be discovered to be (NOTE: proving – proved – has proved or has proven) o to prove useful to be discovered as useful by experience o dry chemical extinguishers are used primarily for electrical fires and have also proved effective on liquid fires it was discovered that, although these extinguishers were designed for electrical fires, they were good at putting out liquid fires such as petrol fires

provide /prəˈvərd/ verb to supply or to give o Radio altimeters provide a continuous indication of height above the surface immediately below the aircraft up to a maximum of 5,000 feet. o Flight crews are frequently provided
provision /pra'vɪʒ(ə)n/ noun 1. providing something, or what is provided ○ The provision of fresh air is important for passengers' comfort. ○ Catering companies are responsible for the provision of food. ○ There is a generator for the provision of emergency power. ○ The oil tank has provision for filling and draining. 2. a legal statement which provides for something such as particular circumstances

proximity /prək'smiti/ noun nearness in space or time ○ The two aircraft were in close proximity.

psychological stress /saɪkələ'dʒest/ noun a mentally or emotionally upsetting condition which affects one's health

PTT abbreviation press to test/talk

public /'pʌblɪk/ noun people in general ○ adjective referring to the people in general

public address system /'pʌblɪk ə'dres ,sɪstəm/ noun a microphone, amplifier and loudspeaker set up to allow one person to be heard by a group of people ○ The captain made a public address (PA) system announcement asking passengers to remain seated. Abbreviation PA system

publication /'pʌblɪkju:'ʃən/ noun 1. the act of making something public, publishing ○ the publication of the latest figures 2. a book, magazine, chart, etc., which has been published ○ The book is a Civil Aviation Authority publication

public relations /'pʌblɪk 'rɛləʃənz/ noun the task of maintaining good relations with the public. Public relations may also involve putting across a point of view or publicising a product ○ The arrangements for the VIPs are being handled by the public relations department. Abbreviation PR

publish /'pʌblɪʃ/ verb to prepare and issue a book, magazine, chart, etc., and sell or distribute it to the public ○ All known air navigation obstructions in the UK are published in the Air Pilot.

pull out /pʊl 'aʊt/ verb to stop a dive in an aircraft and return to level flight

pullout /'pʊləut/ noun a manoeuvre in which an aircraft changes from a dive to level flight

pulse /pʌls/ noun a single vibration of electric current

pulse modulation /'pʌls ,mɒdju'leɪʃən/ noun the use of a series of short pulses, which are modified by an input signal, to carry information

pump /pʌmp/ noun a device with rotary or reciprocating action which is used to move fluids along pipes or for compressing fluids ○ verb to move or compress a fluid by means of a pump ○ Fuel is pumped from the tanks to the carburettor.

COMMENT: Most modern aircraft are fitted with hydraulic pumps driven from the engine. Other types of pumps may be found, but these are usually used to power emergency systems. Pumps can be driven directly from the engine gearbox, by an electric motor, or by air.

pure /pjʊə/ adjective not mixed with something else ○ Inner tubes for tyres are made of pure rubber. ○ Magnesium does not possess sufficient strength in its pure state for structural uses. ○ pure aluminium aluminium which has not been combined with any other metal to create an aluminium alloy

purple airway /'pjʊər(-)ə/ 'əcowə/ noun an area of temporarily controlled airspace, established to provide special protection to Royal flights in fixed-wing aircraft, in which additional rules for air traffic apply at all times and in all weathers

purpose /'pɜːpəs/ noun 1. function ○ The purpose of the engine is to convert heat energy to mechanical energy. 2. a use ○ For practical purposes, any straight line drawn on a Lambert's chart represents a great circle.
eral purpose for all-round or general use
push-back /ˈpʊʃ bæk/ noun the process of pushing a plane out from its parked position using a special vehicle
pushrod /ˈpʊʃrɒd/ noun a steel or aluminium rod which moves the rocker arm. *The camshaft operates the pushrod. (Note: The pushrod is part of the valve mechanism.)*
pylon /ˈpaʊlən/ noun 1. a structure on the wing of an aircraft to support an engine (Note: Most modern jet passenger transport aircraft have pylon-mounted engines.) 2. a tall metal structure built to support electricity or tele­phone cables. *Electricity pylons are difficult to see from the air so pilots of light aircraft should be particularly careful to note their positions.*
pyrotechnic /ˌpɛrəˈtektnIk/ adjective of or relating to fireworks. *pyrotechnic lights* lights created by rockets or flares
Q-code /ˈkjuː kɔd/ noun an international telegraph code which is now used in RTF operations
QDM noun in the Q-code system, the magnetic bearing to a direction-finding station
QFE noun in the Q-code system, the atmospheric pressure at aerodrome level
QFI abbreviation qualified flying instructor
QNE noun in the Q-code system, the altimeter setting for flight level reading, 1013.25 mb
QNH noun in the Q-code system, the atmospheric pressure at mean sea level
QNH datum /ˈkjuː enˈeɪtʃdˌdætəm/ noun the barometric level from which altitude is measured
QTE noun in the Q-code system, the true bearing from a direction-finding station
quadrant /ˈkwɔdɹənt/ noun 1. a device shaped like a quarter of a circle 2. a quadrant with a device preventing a lever from being moved to an incorrect setting 3. the quarter part of a circle centred on a navigational aid
COMMENT: NE quadrant = 000° – 089°; SE quadrant = 090° – 179°; SW quadrant = 180° – 269°; NW quadrant = 270° – 359°.
quadrantal /ˈkwɔdrənt(ə)l/ adjective referring to a quadrant or to a quarter of a circle
radio signal error caused by the metal structure of the receiving aircraft
quadrantal height flight levels in each of the compass quadrants designed to provide safe separation for aircraft heading towards each other
qualified /ˈkwɔlɪfaid/ adjective having gained a certificate after having completed a specialised course of study
qualified flying instructor /ˈkwɔlɪfɪdˈflɛɪŋ ɪnˈstrʌktər/ noun a pilot with an instructor’s rating. Abbreviation QFI
qualify /ˈkwɔlɪfaɪ/ verb 1. to add reservations or modify an earlier statement to make it less absolute 2. to study for and obtain a diploma which allows to do a particular type of work
quality /ˈkwɔlɪtɪ/ noun the amount of excellence of something
quantitative /ˈkwɔntɪtətɪv/ adjective
quantity /ˈkwɒntɪtɪ/ noun the size, extent, weight, amount or number of something
quarantine /ˈkwɔrtən/ noun one fourth of something
QUJ noun in the Q-code system, the true track to reach a destination
radar /ˈreɪdər/ noun a method of detecting distant objects and establishing their position, velocity, or other characteristics by analysis of very high frequency radio waves reflected from their surfaces.

radar advisory service /ˈreɪdər əˈvɜːrəsərv/ noun an air traffic radar service which gives pilots advice on actions necessary to ensure that they remain at a standard distance from other aircraft that are also receiving the service. Abbreviation RAS.

radar beam /ˈreɪdər bɪm/ noun a shaft of radar waves directed towards a distant point.

radar information service /ˈreɪdər ɪnˈfərəns/ noun an air traffic radar service which gives pilots details of the positions, distances and levels of other aircraft to enable them to decide on any avoiding action which may be appropriate. Abbreviation RIS. (Note: An RIS is often provided when it is not possible or practical to provide an RAS.)

radar screen /ˈreɪdər skrɪn/ noun a cathode ray tube screen on which radar information is displayed.

radar vectoring /ˈreɪdər ˈvektərɪŋ/ noun the provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

radial /ˈreɪdiəl/ adjective referring to lines of radius having a common centre.

radial engine engine in which the pistons are arranged like the spokes of a wheel. noun a line of radio bearing from a VOR beacon. To get to a facility you must track the reciprocal of the VOR radial.

radiate /ˈreɪdiət/ verb to send out rays or waves. The Earth radiates low intensity infrared waves. Short bursts of energy are radiated from an antenna. terrestrial radiation radiation from the Earth.

radiation fog /ˈreɪdiəʃən ˈfɔɡ/ noun fog caused by the cooling of the Earth to below the dew point, combined with saturation and condensation and a light mixing wind. Radiation fog cannot form over the sea.

radiator /ˈreɪdiətər/ noun a liquid-to-air heat exchanger that transfers engine heat to the outside air. Anti-icing additives are used in radiator coolants.

coolant radio /ˈreɪdiər/ noun wireless transmission through space of electromagnetic waves in the approximate frequency range from 10 kHz to 300,000 MHz. radio waves electromagnetic radiation waves. The atmosphere absorbs radio waves.

radio aid /ˈreɪdiəo ˈeɪd/ noun a navigation aid utilising radio waves.

radio altimeter /ˈreɪdiəo ˈæltɪmətər/ noun a device for measuring the height of the aircraft above the Earth using reflected radio waves.

radio horizon /ˈreɪdiəo ˈhɔrən/ noun a line along which direct rays from a radio frequency transmitter become tangential to the Earth’s surface. radio magnetic indicator /ˈreɪdiəo ˈmæɡ.nɪtɪk ˈɪndɪkətər/ noun.
radiotelephony 186

a cockpit navigation instrument which combines a bearing indicator and a heading indicator and can be used with ADF or VOR. Abbreviation RMI

radiotelephony /ˌrædɪəˈteləfəni/ noun the transmission of speech by radio. Correct use of R/T phraseology avoids ambiguity. Abbreviation R/T.

radius /ˈrædəs/ noun the radius of a circle: a line drawn from a point on the circumference of a circle to the centre point. (NOTE: The plural form is radii.)

radome /ˈredəʊm/ noun a dome that protects a radar antenna, made from materials that do not interfere with the transmission and reception of radio waves.

RAF abbreviation Royal Air Force

raft /ræft/ noun a flat-bottomed inflatable rubber craft for floating on water

railway line /ˈreɪlweɪ laɪn/ noun a railway track or train track. A railway line is a useful landmark.

rain /reɪn/ noun precipitation or water which falls from clouds in small drops. Rain is falling heavily.

raise /reɪz/ verb 1. to lift. Raise the landing gear retract the undercarriage. 2. to increase. Raise the temperature. 3. to cause problems. Fuel vaporisation can raise problems when starting the engine. (NOTE: Do not confuse with the verb to raise. Grammatically, the verb raise takes an object whereas the verb rise does not: temperature rises; The sun’s rays raise the temperature of the surface.)

rake /reɪk/ noun the angle between a wing or propeller blade of an aircraft and a perpendicular or line of symmetry.

ram /ræm/ noun an increase in air pressure caused by the forward speed of the aircraft. Due to ram effect from aircraft forward speed, extra air is taken into the engine.

ram air /ˈræm ər/ noun airflow created by the movement of the aircraft which is used to cool, ventilate or drive turbines.

ramjet /ˈræm dʒeɪt/ noun a type of jet engine in which fuel is burned in a duct with air compressed by the forward motion of the aircraft

ramp /ræmp/ noun 1. an inclined track for loading and unloading. 2. US same as apron

range /rɛndʒ/ noun 1. the amount or extent of variation. a. range of frequencies. b. range of temperatures. 2. a row or chain of mountains or hills. the Rocky Mountain range. 3. Valley winds require at least a reasonable pressure gradient, preferably along a range of hills which will produce a wind at right angles to the hills. 4. the maximum effective distance of operation. Precision approach radar (PAR) is subject to weather interference and has a limited range.

rampart /ˈræmpɑr/ noun a flat-bottomed inflatable rubber craft for floating on water

rapid /ˈræpɪd/ adjective fast, with great speed. Hoar frost is a light crystalline deposit which can form on the aircraft as a result of rapid descent from cold altitudes into warm moist air.

rapidly /ˈræpɪdli/ adverb with great speed. quickly. Rime ice is formed when individual droplets of water freeze rapidly on striking the aircraft surface.
rare /ˈreər/ adjective uncommon, not often occurring ○ Smog or smoke fog is now rare because of pollution controls.

RAS abbreviation 1. radar advisory service 2. rectified air speed

rate /reɪt/ noun a quantity measured in relation to another measured quantity ○ rate of climb speed of ascent measured in feet per minute ○ rate of descent speed of descent measured in feet per minute ○ flow rate the amount of movement of a fluid through a system in a given time, e.g. gallons per minute

rather /ˈræðər/ adverb 1. to some extent, somewhat ○ rather cold weather weather which is quite cold, but not very cold 2. ○ rather than instead of, preferably ○ Air tends to flow around hills rather than rise over them.

rating /ˈreɪtɪŋ/ noun 1. an authorisation on a licence, and forming part of the licence, giving special conditions or privileges 2. a classification according to a scale

ratio /ˈreɪʃiəʊ/ noun a relationship between two quantities expressed as the quotient of one divided by the other ○ The air/fuel ratio is 15:1. ○ Chart scale is the ratio of the chart distance to Earth distance. (NOTE: The ratio of 7 to 4 is written 7⁄4 or 7/4.)

ray /reɪ/ noun a thin or narrow beam of light or other radiant energy ○ cathode ray ○ The Earth is heated by the rays of the sun. ○ X-ray

RBI abbreviation relative bearing indicator

RCC abbreviation rescue co-ordination centre

RCL abbreviation runway centreline

re- /riː/ prefix again ○ reassemble ○ rewrite (NOTE: Not all verbs beginning with re- have the meaning ‘again’, e.g. remember.)

reach /riːtʃ/ verb 1. to arrive at a place ○ The aircraft reached its destination on time. 2. to get to a particular level ○ Upcurrents in thunderstorms can reach 30,000 feet per minute. ○ Temperatures can reach 49°C (Celsius) in summertime in the Gulf region. 3. to extend ○ The tops of thunderstorm clouds can reach through the tropopause.

react /rɪˈækt/ verb 1. to act in response to an action ○ Because the rotors and stators of a compressor are of aerofoil shape, the airflow reacts in a similar way to the airflow over a wing. 2. to do or to say something in response to words or to an event ○ The cabin crew reacted swiftly when the fire broke out.

3. ○ to react with something to change chemical composition because of another substance ○ The electrolyte in the cells of a lead-acid battery reacts chemically with the plates.

reactance /rɪˈæktsəns/ noun a component of impedance in an alternating current circuit ○ Reactance is a form of resistance which varies as the frequency changes.

reaction /rɪˈækʃən/ noun a response to an action or stimulus ○ For every action there is an equal and opposite reaction. ○ Passenger reaction may be slower than usual in an emergency situation. ○ Quick reactions are needed in an emergency.

reaction thrust principle /rɪˈækʃən ˈθrɛs,ˈprɪnsəp(ə)l/ the process by which exhaust gases coming off the back of an object cause a reaction force to act on the object and push it forwards

readback /ˈrɛdberk/ noun the action of repeating an ATC message to the controller to enable him or her to check that it was correctly received

readily /ˈredɪli/ adverb 1. promptly, immediately ○ Fire extinguishers must be readily available for use. ○ Ice melts very readily at 0°C (Celsius). 2. ○ it can readily be seen it can be easily understood ○ It can readily be seen from the preceding paragraph that density and pressure are linked.

reading /ˈrɛdɪŋ/ noun 1. information indicated by an instrument or gauge ○ altimeter reading the altitude indicated by the altimeter ○ barometer reading the barometric pressure indicated by the barometer 2. ○ map reading the act of interpreting information on a map
readout /ˈrɪdəʊt/ noun a display or presentation of data from calculations or storage. The rotating beam cloud base detector/indicator operates continuously, day and night and produces an automatic readout of cloud base height.

rear /rɛər/ noun the aft part, the part furthest from the front. The rear of the aircraft is called the aft section.

rearward /ˈrɛərwɔːd/ adjective towards the aft or the rear. The expanding gas travels in a rearward direction.

reason /rɪˈzin/ noun the basis or motive for an action. A rough surface is more susceptible to fatigue cracking than a smooth one and for this reason highly stressed members are often polished.

reasonable /rɪˈzənəb(ə)l/ adjective 1. acceptable or fair. A reasonable sum of money is a sum of money which is not too high or which is acceptable. 2. within the boundaries of common sense. It would be reasonable to expect that radio frequencies would travel through the air in straight lines as a direct wave, but they bend, or refract.

receive /rɪˈsiːv/ verb to get, to obtain. The sides of the hills and mountains which face the sun receive more intense radiation than flat surfaces because of the angle of exposure to the sun.

receiver /rɪˈsiːvər/ noun a device that receives incoming radio signals and converts them to sound or light. The transponder in the aircraft consists of a transmitter and a receiver.

recent /rɪˈsɛnt/ adjective referring to a time immediately before the present. Recent engine designs include variable angle stator blades. A more recent development is the barograph which utilises the electrical output of the digital display barometer.

recognition /rɪˈkɒnɪʃən/ noun the process of seeing or hearing something or somebody and knowing what it is or who he or she is. Hydraulic fluids are coloured for recognition purposes.

recommend /rɪˈkeɪmend/ verb to say that something is worthy, desirable or suitable. Dry chemical extinguishers are recommended for use on aircraft brake fires. Aircraft should be operated to the manufacturers recommended limits.

record /rɪˈkɔːrd/ 1. a written account of facts and information for future reference. 2. a set of electronically stored data. Measure track angles and distances and record them in a log.

recorder /rɪˈkɔːdər/ noun a device for capturing sound onto cassette or magnetic tape. The act of writing or of picking up and storing information. An anemograph is an instrument which maintains a continuous recording of wind direction and speed on a graph.

recuperate /rɪˈkʌpəreɪt/ verb 1. to return to an earlier, normal condition or attitude.

The antenna is highly directive in transmission and reception. The reciprocal heading of 090° is 270°. A rough surface is more susceptible to fatigue cracking than a smooth one and for this reason highly stressed members are often polished.

Hydraulic fluids are coloured for recognition purposes.
craft to straight and level flight. To rescue and remove from a particular area, often the sea. Emergency services recovered two bodies from the wreckage of the helicopter.

**recovery** /ˈreɪkəvəri/ noun 1. A return to an earlier, normal condition or attitude. 2. Recovery from unusual attitudes a flight exercise requiring the student pilot to return the aircraft to its previous, normal, that is, straight and level attitude, after it has been in an unusual attitude. 3. The recovery of survivors from the sea was carried out by helicopters.

**rectangle** /ˈrektəngɡəl/ noun A 4-sided plane figure with 4 right angles, and with opposite sides of equal length. The colour identification of refuelling equipment for AVGAS is: blue rectangular, red decal with AVGAS 100LL in white letters.

**rectangular** /ˈrektəngɡjəl/ adjective referring to something with the shape of a rectangle. A rectangular wing panel.

**rectification** /ˌrektɪfɪˈkeɪʃən/ noun The process of changing an alternating current into direct current. Part of the generator alternating current (AC) is passed through a rectification circuit.

**rectified airspeed** /ˌrektɪfɪd ˈɛəˌspɪd/ noun Indicated airspeed corrected for instrument error and pressure error. When rectified airspeed (RAS) is corrected for density error the resultant is known as the true airspeed.

**rectifier** /ˌrektɪfɪər/ noun An electronic circuit that converts an alternating current supply into a direct current supply. The ignition unit receives an alternating current which is passed through a transformer and rectifier.

**rectify** /ˌrektɪfɪ/ verb 1. To change alternating current into direct current. 2. Alternating current output is rectified and regulated externally and returned as direct current to the stator field winding. 3. To correct a mistake to put right a mistake.

**reduce** /rɪˈdjuːs/ verb to decrease, to make less. Opposite: **increase** to reduce altitude to descend. 2. To reduce temperature to make cooler.

**reduced separation** /ˌrɪˈduːsd ˌsɛpəˈreɪʃən/ noun A revised minimum separation which is smaller than the previous minimum separation.

**redesign** /ˌrɪˈdaɪzn/ noun 1. A decrease in temperature, pressure, speed. 2. Redesign gear in an engine which allow the propeller to turn at a slower speed than the engine.

**redundancy** /ˈrɪˈdʌndənsi/ noun The duplication of component parts of a system to enable the system to function even if one component fails. 2. With system redundancy, a single failure within a system will have little effect on the aircraft's performance during the approach and landing operation.

**redundant** /ˈrɪˈdʌndənt/ adjective referring to a system which provides extra component parts to enable the system to function even if one component fails. 2. Redundant structure design is composed of a large number of members, all of which share a load, so that if one of the members is lost, the load carried by the member is divided between all the others in such a way that the total load-carrying ability is reduced only slightly.

**redundant** /ˈrɪˈdʌndənt/ adjective referring to something with the shape of a rectangle. A rectangular wing panel.

**redundancy** /ˈrɪˈdʌndənsi/ noun A method of fixing components together using adhesives and glues.

**re-enter** /rɪˈɛntər/ verb to enter again. For engine checks the aircraft should be headed into wind to prevent hot exhaust gases re-entering the engine.

**refer** /rɪˈfɜːr/ verb 1. To describe or give a name to. 2. To direct someone to a source of help or information. 3. To refer to chapter 10 for more details.
reduce the air-to-ground visibility.

A cloud, fog or haze can seriously reduce visibility by reflection of sunlight from the top of the cloud and also by scattering sunlight (Mie Theory) into the atmosphere. Roughly 10% of sunlight is reflected back into space and 90% of sunlight is absorbed by the atmospheric gases. Water surfaces reflect up to 90% of the incoming light.

As radio waves or light waves or sound waves pass through the atmosphere, the medium through which they travel changes from one medium to another of different density.

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Glare caused by reflection of sunlight from the top of a layer of fog or haze can seriously reduce the air-to-ground visibility.

A sky wave starts life as a direct wave and, on reaching the ionosphere, the direct wave is refracted and returns to the Earth's surface.

Snow surfaces reflect up to 90% of the sunlight. A sky wave starts life as a direct wave and, on reaching the ionosphere, the direct wave is refracted and returns to the Earth's surface.

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the fuel is in the region of 2,000°C (Celsius).

register /ˈredʒistər/ noun an official list or record. The student’s name was not on the register.

register 1. to record or to indicate on an instrument. During ground running checks, if oil pressure does not register within a few seconds, the engine should be stopped and the cause investigated. 2. Electrically operated pressure gauges register main and emergency system pressure.

2. to enter details on an official list or to register an aircraft.

registration /ˈredʒɪstrəʃən/ noun the entry of civil aircraft into records of national certification authority with details of letter and number code displayed on aircraft. The certificate of registration is a document issued as proof of registration.

regular /ˈrɛɡjələr/ adjective. 1. occurring at fixed time intervals. 2. regular flights. 3. regular inspections inspections taking place at equal intervals of time. 4. ordinary or standard. 5. part of the regular menu.

regulate /ˈrɛɡjəleɪt/ verb to control, to adjust to a specific requirement. Controllable cowl flaps regulate the amount of air flowing across the cylinders.

regulation /ˈrɛɡjʊleɪʃən/ noun an act or instance of controlling or adjusting. 1. a regulation requirement. 2. Regulation of cabin temperature is controlled by the manual setting of a mechanically controlled switch.

regulations /ˌrɛɡjʊleɪˈʃənz/ plural noun rules or laws.

regulator /ˌrɛɡjʊleɪtər/ noun a device used to control the flow of fluids or electric current. 1. voltage regulator a device to control the level of voltage.

Reid vapour pressure test /ˈriːd ˈveɪpər–preshər ˈtest/ noun a test to determine the pressure required above a liquid to hold the vapours in the liquid at a given temperature.

reinforce /ˌrɪnˈfɔrs/ verb to make stronger or to strengthen. Typical skin materials used in aircraft are made from epoxy resins which are reinforced with glass, carbon or Kevlar fibres.

reinforced /ˌrɪnˈfɔrsd/ adjective made stronger or strengthened.

reinforced plastics /ˌrɪnˈfɔrsd ˈplæstɪks/ plural noun plastic materials used with glass fibres to repair some types of aircraft structure.

reinforcement /ˌrɪnˈfɔrsment/ noun the act of strengthening, or a material or structure used to strengthen something. There is reinforcement around each opening in the pressure cabin, such as the cabin door, escape hatch and windows.

relate /rɪˈleɪt/ verb 1. to make a connection or link, to associate. Orientating the chart relates the direction of land features to their representation on the chart and aids recognition. 2. to relate to, concerned or to be about. 3. to relate something. 4. to relate the relation between thrust and drag. This bears no relation to that.

relationship /rɪˈleɪʃənʃɪp/ noun a natural or logical association between things. 1. the relation between thrust and drag. 2. a relationship between altitude and pressure. 3. relative to, compared to. 4. Ground-speed is the speed of the aircraft relative to the ground.

relative airflow /rɪˈleɪtɪv ˈɛəflɔr/ noun airflow over an aerofoil, often related to the chord line of the aerofoil. Also called relative wind.

relative bearing /rɪˈleɪtɪv ˈbɛərɪŋ/ noun the bearing of a radio station or
relative density

object with reference to the aircraft’s heading

relative density /relətɪv 'dɛnstɪ/ noun the ratio of density of a liquid with reference to water, or of a gas with reference to air

relative humidity /relətɪv 'hjuːmɪdɪtɪ/ noun the ratio between the amount of water vapour in the air and the amount which would be present if the air was saturated, at the same temperature and the same pressure

relative wind /relətɪv 'wɪnd/ noun same as relative airflow

relay /ri'leɪt/ noun a device which responds to a small current or voltage change by activating switches or other devices in an electric circuit ○ Thermo-couple detectors operate a sensitive relay or electronic circuit when a predetermined temperature is exceeded. ○ verb to pass an ATC message to an aircraft via another aircraft that is on the same frequency and within radio range (NOTE: Messages may have to be relayed when atmospheric conditions make a direct transmission impossible)

release /rɪ'lɪs/ noun the act of freeing something from something that holds it ○ Air rising and cooling often reaches its dew point temperature, becomes saturated and any further cooling results in condensation and the consequent release of latent heat. ○ verb to free from something that holds it ○ Push the button to release the lever. ○ release the brakes let the brakes off ○ to release the pressure to allow pressure to reduce

relevant /'reləvənt/ adjective having a connection with the matter in hand ○ High charts show only information relevant to high altitude flights and many beacons and aids which are provided for low operations are omitted to keep the chart clear. ○ relevant information useful information which is related to the matter in question

reliability /rɪˈlɪəbɪləti/ noun dependability, trustworthiness ○ The gas turbine is a very simple engine with few moving parts, giving it high reliability with less maintenance.

‘…where a State introduces drug testing, high standards of medical reliability must be maintained’ [INTER PILOT]

reliable /rɪˈleɪbl/ adjective dependable, trustworthy ○ The gas turbine is a very simple and reliable engine.

relief /rɪˈliːf/ noun 1. variations in elevation of the surface of the earth ○ Relief is usually represented on aeronautical charts by contours, gradient tints or hill shading. 2. a lessening of pressure

relief valve /rɪˈliːf vɛlv/ noun a valve which opens at maximum safe pressure and closes again upon return to normal operating conditions

relieve /rɪˈliːv/ verb to cause a lessening in, or to remove, excess pressure or tension ○ Safety valves relieve excess cabin pressure. ○ A trim tab on the elevator relieves the forward and aft forces on the control stick or yoke.

relight /riˈlaɪt/ verb to ignite again ○ The ability of the engine to relight will vary according to the altitude and the forward speed of the aircraft.

rely /riˈlaɪ/ verb to be dependent on ○ Pressure carburetors do not rely on venturi suction to discharge fuel into the airstream.

remain /rɪˈmɛn/ verb to stay, to continue to be ○ During the evacuation, crew must remain at their assigned stations and redirect passengers. ○ The fuel/air ratio does not remain constant, but as the speed increases, the mixture gets richer. ○ The audible fire warnings may be cancelled but the red warning light will remain on.

remainder /rɪˈmɛndə/ noun 1. something left after excluding other parts, the rest ○ The auxiliary power unit is usually found in the tail section, separated from the remainder of the fuselage by a firewall. 2. the number left over when one number is divided by another

remote /rɪˈmɑːt/ adjective 1. far away, and not near anything else ○ a remote area ○ When the destination is a remote island, the calculation of the point of no return (PNR) becomes...
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but unlikely possibility

removal /rɪˈmɔːv/ noun the act of taking something away, or of moving something from the position it occupies

The repair to the aircraft required the removal of the engine.

remove /rɪˈmɔːv/ verb to take something away or move it from the position it occupies Filters are fitted in lines in a hydraulic system, in order to remove foreign particles from the fluid. The engine will have to be removed for repair.

render /ˈrɛndər/ verb 1. to cause to become The failure of any component in the fire detection system will render the system inoperative. Tropical air moving northwards is subjected to surface cooling and rendered increasingly stable in its lower layers. 2. to give to render assistance to provide help Only when all possible assistance has been rendered inside the cabin will crew themselves evacuate.

repair /rɪˈpɛər/ noun an action designed to return something to good condition after damage The repair to the nosewheel took three hours. To verb to mend or otherwise return to good condition after damage. After the wheels-up landing, the flaps had to be repaired.

Mr Pike elected to await repairs instead of taking up the offer of alternative flights, and found himself the only passenger aboard the Jumbo as it flew back to Heathrow four hours late. (Pilot)

repeat /rɪˈpiːt/ verb 1. to do again. The first officer repeated the transmission. The trainee had to repeat her navigation examination. 2. to occur again. Metal fatigue is induced by repeated stress cycling. 3. to say again. Could you repeat that please I didn’t hear. The message was repeated a few minutes later.

repel /rɪˈpel/ verb to push away by a force. Like poles (i.e., north and north, or south and south) of a magnet repel each other. (NOTE: repelling – repelled)

repellent /rɪˈpelənt/ noun a substance used to resist the effect of something. Rain repellent is sprayed onto the windscreens and spread by the wipers.

replace /rɪˈpleɪs/ verb to take the place or to fill the place of. As warm air rises, cold air moves in to replace it. The term Greenwich Mean Time (GMT) is being replaced by the term Coordinated Universal Time (UTC).

replacement /rɪˈpleɪsmənt/ noun 1. the act of replacing something with something else. The replacement of moist air by dry air is the only sure way of dispersing advection fog. 2. something or somebody that replaces something or somebody else. She was hired as a replacement for a manager who had recently retired.

reply /rɪˈplaɪ/ noun an answer or response. Secondary surveillance interrogation is made on 1030 MHz (megahertz) and the reply on 1090 MHz (megahertz). To verb to answer. He replied to the letter. (NOTE: replying – replied)

report /rɪˈpɔːrt/ noun an official account of an occurrence. Incident report. Weather report. To verb to write or tell information in an official manner. The observer measures this distance in a number of directions and reports the minimum value as the meteorological visibility. An accident must be reported.

reporting point /rɪˈpɔːrtɪŋ pɔɪnt/ noun a specified geographical location on an aircraft’s route at which the crew must report to air traffic control.

represent /rɪˈreprɛnt/ verb to indicate or to show, using signs or symbols. On a Mercator projection, meridians are represented as parallel straight lines.

representation /rɪˈreprɛntəʃ(ə)n/ noun a way of showing something, using signs or symbols. The synoptic chart provides a representation of the weather over a large area at a particular time.
representative

representative /ˌreprɪˈzentətɪv/ adjective a typical example of what all others are like. Surface air temperatures are taken in such a way as to be representative of the air temperature near the surface yet unaffected by the direct surface heating or cooling effects. noun a person who acts or speaks for another person or for an organisation such as a company.

request /rɪˈkwɛst/ noun 1. a polite demand, or what is asked for. 2. to impose an obligation, to compel by law. 3. a legal requirement an obligation by law. noun 3. something which is demanded or required. The pilot requested vectors to enable him to locate the airfield.

require /rɪˈkwɛr/ verb 1. to need. Dynamic seals require lubrication to remain effective. 2. to impose an obligation, to compel by law. noun 3. something which is demanded or required. The airframe must resist and overcome the forces of gravity and drag.

requirement /rɪˈkwɛrmentor/ noun 1. what is necessary. Planning for an in-flight emergency is a standard requirement of pre-departure preparation. 2. a legal requirement an obligation by law. 3. something which is demanded or required. The airframe had to be built to very specific requirements.

reservoir /ˈrezərvoʊər/ noun a container for holding a store of fluid. A reservoir provides both storage space for the system fluid, and sufficient air space to allow for any variations in the volume of the fluid in the system.

reset /rɪˈset/ verb to set again. Instruments which need resetting in flight must be accessible to the crew. (Note: resetting – reset)

resettable /rɪˈsetəbl/ adjective possible to reset. Circuit breakers are resettable protective devices.

residual /rɪˈzdʒuəl/ adjective referring to the residue of something.

residue /rɪˈziːdʒ/ noun the remainder of something after the removal of the main part. The leaking oil left a sticky residue on the ground.

resin /rɪˈzɪn/ noun materials which are used with fillers and other components to form plastics, e.g. polyesters, epoxies and silicones. To make a composite it is necessary to combine the reinforcing glass fibres with some form of special glue or resin.

resist /rɪˈzɪst/ verb to fight off the effects of something. A tube resists bending in any direction but beams are designed usually to resist bending in one or two directions only. In order for an aeroplane to fly, lift and thrust must resist and overcome the forces of gravity and drag.

resistance /rɪˈzɪstəns/ noun 1. a force that opposes. 2. the opposition of a body or substance to current passing through it. The shunt coil is made of fine wire which gives a high resistance and small current flow.

resistant /rɪˈzɪstənt/ adjective referring to something which is unaffected by a force, process or substance. Crash resistant and heat resistant materials. Some alloys are less resistant to corrosion than others.

resistive /rɪˈzɪstɪv/ adjective referring to resistance. Windscreen heating and electrical de-icing systems are resistive load circuits.
resistor /ˈrezɪstrə/ noun a device used to control current in an electric circuit by providing a resistance. Components such as resistors, rectifiers and internal switches are all embedded in micro-size sections of semi-conductor material.

respect /ˈrespekt/ noun a in some respect. The temperature and pressure of the fuel supply are electrically transmitted to their respective indicators, i.e. in some respect. The temperature to the temperature gauge and pressure to the pressure gauge.

responsive /ˈrespəsɪv/ adjective referring to two or more persons or things regarded individually. The temperature of the land rises, causing the layer of air in contact with it to warm up and expand with a resultant decrease in density.

resultant /ˈrɪzəltənt/ resultant for the well-being of passengers. Responsible to someone answerable for one's actions to somebody highly placed.

restore /ˈrɪstɔr/ verb to return something to its original or normal condition. A battery is restored when the control is returned to the cold air position.

restrict /ˈrɪstrokt/ verb 1. to make free movement limited or difficult. The narrow aisles of the aircraft restrict the rapid movement of people. 2. to limit. The temperature and pressure of the fuel supply are electrically transmitted to their respective indicators, i.e. temperature to the temperature gauge and pressure to the pressure gauge.

response /ˈrɪspəns/ verb 1. to reply or to answer. A transponder responds to the controls of the aircraft attitude changes as a result of the pilot’s movements of the flying controls.

responder /ˈrɪspəndər/ noun same as transponder.

responsibility /ˈrɪspənbɪləti/ noun the condition of being responsible. It is the responsibility of the captain to order an evacuation.

responsible /ˈrɪspənˈsaʊbl/ adjective 1. being a source or cause. Resistant systems are responsible for much of the weather and clouds which occur in temperate latitudes. 2. directing or being in charge, and open to blame if something goes wrong. Cabin crew are responsible for the well-being of passengers.

restricted area /ˈrɪstrɪktɪd əˈɛriə/ noun airspace of a particular length, width and depth, within which the flight of an aircraft must be carried out in accordance with particular conditions.

restriction /ˈrɪstrɪkʃən/ noun. There are restrictions on the taking of photographs in the vicinity of the airport.

restrictor valve /ˈrɪstrɪktər ˈvɛlv/ noun a valve designed to permit limited flow in one direction and full flow in the other direction. A transponder responds to the controls of the aircraft attitude changes as a result of the pilot’s movements of the flying controls.
retain /ri'teɪn/ verb to keep or to hold
○ Retentivity is the ability of a material has to retain magnetism. ○ When fuel dumping, sufficient fuel must be retained for landing.

retard /ri'tərd/ verb 1. to cause to occur later, or to delay ○ On most modern engines the spark is retarded to top dead centre, to ensure easier starting and prevent kick-back. 2. to move backwards ○ When reducing power always retard the throttles before reducing RPM (revolutions per minute) with the propeller levers.

retentivity /rɪˈtɛnˌtɪvɪtɪ/ noun the ability to remain magnetised after the magnetising force has gone ○ Steel has high retentivity, but soft iron has low retentivity.

retract /rɪˈtrækt/ verb to move back, or to raise ○ Mechanically operated sequence valves ensure that the landing gear does not extend until the doors are open and that the landing gear is retracted before the doors close.

retractable /rɪˈtræktəb(ə)l/ adjective possible to pull back or raise a retractable undercarriage an undercarriage which can be raised into the fuselage or wings after use ○ Early aircraft had non-retractable undercarriages.

retraction /rɪˈtrækʃən/ noun the act of pulling back or raising a retraction of the undercarriage the raising of the undercarriage into the fuselage after use

return /rɪˈtɜːn/ noun the act of coming back or going back to a place ○ We’re waiting for the return of the aircraft. ○ radar return radar echo ○ adjective a return flight a flight back to the point of departure ○ verb to cause to come back or to go back to an earlier position or place ○ Fly from A to B and return. ○ The auto-control will return the alterations to neutral as the aircraft returns to level flight.

return valve /rɪˈtɜːn vəl/ noun a valve which allows flow of fluid in both directions

reveal /riˈvɪl/ verb to allow to be seen ○ Radiographic inspection of the aircraft structure is able to reveal fatigue cracks without the need to dismantle the aircraft.

reversal /rɪˈvɜːsl(ə)/ noun a change to the opposite position, direction, or order ○ Stationary eddies can be hazardous, not only because of the down currents but also because an aircraft encountering the reversal of direction might have its airspeed momentarily reduced below stalling speed.

reverse /rɪˈvɜːs/ noun the opposite ○ One would expect a unit of humid air to be heavier than a similar unit of dry air but, in fact, the reverse is true. ○ adjective going backwards or in the opposite direction ○ to reverse flow the flow of a fluid in the opposite direction to normal ○ verb to go backwards or in the opposite direction ○ to reverse a vehicle to make a vehicle go backwards

reverse panic /rɪˈvɜːs pəˈnɪk/ noun a form of shock which makes passengers unable to comprehend the need for urgency

reverser /rɪˈvɜːsər/ noun ○ thrust reverser a device to change the direction of thrust so that it operates in the opposite direction to the normal direction ○ In many turbo-jet thrust reversers, clamshell doors direct the exhaust gases forward.

reverse thrust /rɪˈvɜːs ˈθrʌst/ noun thrust in the opposite direction to normal in order to decelerate the aircraft after landing

reversible /rɪˈvɜːsəbl(ə)/ adjective that can be made to go backwards or to change direction ○ a reversible electric motor

reversible pitch propeller /rɪˌvɜːsəbl ˈprɪʃ pəˈpələ/ noun a propeller which allows the aircraft to be propelled backwards when taxiing

reversion /rɪˈvɜːʃən/ noun a return to an earlier condition or state ○ In smaller aircraft, reversion to manual
control is possible if complete loss of hydraulic power occurs.

revert /ˈrɪvərt/ verb to return to an earlier condition or state. The elevator system has the ability to revert to manual control after a hydraulic failure.

revolution /ˌrevəˈluːʃən/ noun a rotation or turn about an axis. A revolution of the crankshaft is a 360° turn of the crankshaft.

revolutions per minute /ˌrevəˈluːʃən pəˈmɪnt/ noun the speed of an engine or the number of rotations of the crankshaft per minute. Rpm is the number of revolutions per minute that the engine crankshaft is making. The actuator control is sensitive to engine rpm. Abbreviation rpm, r.p.m.

revolve /ˈrɪvəl/ verb to turn about an axis. The Earth revolves around the sun.

revolving /ˌrɪvəˈlɪŋ/ adjective. Tropical revolving storms an intense depression of a kind that can develop over tropical oceans. Tropical revolving storms originate within 5°–15° of the equator. Tropical revolving storms generally occur from June to October.

rhumb /rʌm/ noun one of the points of a compass.

rhumb line /ˈrʌm lайн/ noun 1. a regularly curved line on the surface of the Earth which cuts all meridians at the same angle. 2. a steady course taken by aircraft along one compass bearing.

rhumb line direction /ˈrʌm лайн dəˈrekʃən/ noun the average of all the great circle directions between the two points. Because the great circle direction between two points on the surface of the Earth is not constant, it is often more convenient to consider the rhumb line direction.

rib /rɪb/ noun one of many cross pieces of the airframe that provide an aircraft wing with shape and strength. Additional strength is required for the rib sections which are placed in the area of the undercarriage mountings, flaps and power plant attachment point.

rich /rɪtʃ/ adjective referring to a mixture in which the ratio of fuel to air is greater than usual. Moving the mixture control lever forward to the rich position increases the amount of fuel mixing with the air.

rich mixture /ˈrɪtʃ ˈmɪkstʃə/ noun a fuel/air mixture in which the proportion of fuel is greater than normal.

ridge /rɪdʒ/ noun 1. a long narrow hill with a crest. The mountain ridge stretches for miles. 2. a long zone of relatively high atmospheric pressure. A ridge of high pressure. On average, the wind backs with the passage of a ridge.

ridge waves /ˈrɪdʒ wɜːvz/ plural noun oscillations about the stable state of the undisturbed air flow with the range of hills providing the disturbance.

rigging position /ˈrɪdʒɪŋ pəˈzɪʃən/ noun an attitude of the aircraft in which the lateral axis and usually the longitudinal axis are horizontal. The aircraft was put into the rigging position.

rigid /ˈrɪdɪd/ adjective unbending, inflexible. The areas between the ribs are utilised to house fuel tanks which can be either rigid or flexible. Opposite flexible = rigid pipes pipes that do not bend easily.

rigidity /ˈrɪdɪdɪtɪ/ noun inflexibility, stiffness. Extra strength and rigidity must be provided in the tail section for aircraft with a tail wheel unit. Opposite flexibility.

rim /rɪm/ noun the outer edge of something circular, e.g. a wheel. Creep marks are painted on the tyre and the wheel rim. The rim of the air intake is prone to icing.

rime ice /ˈrʌm ˈɛs/ noun ice formed when individual droplets of water freeze rapidly on striking the aircraft surface.

ring /rɪŋ/ noun a circle. Around the impeller is a ring of stationary vanes called a diffuser ring.

ripcord /ˈrɪpˌkaːrd/ noun a cord that is pulled to release a parachute from its pack and open it.

RIS abbreviation radar information service.
rise


rise /rɛɪz/ noun 1. an increase  o a rise in temperature 2. o to give rise to to cause  o Hills and mountains may give rise to particularly severe turbulence. o verb 1. to move upwards  o air rises 2. to increase  o The temperature is rising.  o raise

risk /rɪsk/ noun the possibility of suffering harm or injury, danger  o When starting an engine, it is bad practice to pump the throttle lever as there is a risk of fire in the carburettor air intake.  o verb to take a dangerous chance  o to risk the lives of passengers to put the aircraft in danger by taking a particular course of action

rivet /ˈrɪvt/ noun a type of metal bolt or pin with a head on one end, inserted through one of the aligned holes in the parts to be joined and then compressed on the plain end to form a second head  o Tensile or compressive loading makes the joined materials tend to slide and break the rivet or bolt.  o verb to join with rivets  o The skin is riveted to both stringers and frames.

RMI abbreviation radio magnetic indicator

RNAV abbreviation area navigation

robot pilot /ˈrəʊbət ˈpəɪlət/ noun same as autopilot

rocker arm /ˈrəʊkər ərm/ noun part of the valve mechanism in an internal combustion engine, which transmits the movement of the pushrod to the valve

rod /rəʊd/ noun a thin straight piece of metal  o Aluminium rods and bars can readily be employed in the high-speed manufacture of parts.

rogallo /ˈrɔɡələʊ/ noun a fabric-covered delta-shaped wing that can be folded compactly, used on ultralight aircraft

role /rəʊl/ noun 1. function  o Movement of air plays a major role in the development of weather patterns.  o the role of the aircraft the type of operation the aircraft is required to perform  o roll /rəʊl/ noun 1. a rotation about the longitudinal axis of the aircraft, created by movement of the ailerons  o Roll is produced by moving the stick to the left or right.  o bank 2. a flight manoeuvre with 360° rotation about the longitudinal axis of the aircraft  o Loops and rolls are aerobatic manoeuvres.  o verb to rotate the aircraft around its longitudinal axis  o Move the control column to the left to roll the aircraft to the left.  o to roll into a turn to roll or bank the aircraft so that it turns left or right  o By rotating the yoke the ailerons are moved and the aircraft rolls into a turn.

COMMENT: The difference between roll and bank is that roll is movement whereas bank suggests a fixed attitude of the aircraft. Consequently, a turn might be expressed in angles of bank: turn at a bank angle of 30°; and the movement to obtain the bank might be expressed as roll: roll the aircraft to the left.

roll cloud /ˈrəʊl klaʊd/ noun cloud created in the rotor zone on the downwind side of mountain ranges

roller /ˈrəʊlər/ noun a cylindrical metal device which rotates  o The most common bearings used in gas turbine engine are the ball or roller type.

RON abbreviation remain overnight

root /rʌt/ noun  o the root of the problem the cause of the problem

rose /rəʊz/ noun compass rose the compass card or its marking of 32 points on a map  o An arc of the compass scale, or rose, covering 30° on either side of the instantaneous track, is at the upper part of the display.

rotary /ˈrəʊtərɪ/ adjective rotating  o rotary motion rotating movement

rotary actuator /ˈrəʊtərɪ ˈæktjʊətər/ noun an actuator which rotates and operates a screw jack, e.g. to extend flaps

rotary inverter /ˈrəʊtərɪ ɪnˈvɜːtər/ noun a DC motor driving an AC generator, the output of which must be regulated to give constant voltage and frequency

rotary wing aircraft /ˈrəʊtərɪ wɪŋ ˈeɪkrɪf/ noun an aircraft with a rotor which provides lift, such as a helicopter

rotate /rəʊtət/ verb to turn around on an axis or centre  o In the event of flame extinction in flight, the engine will continue to rotate, due to the air-
flow through it caused by the forward speed of the aircraft. The aircraft should be rotated to the recommended nose-up attitude for touch down. Counter-rotating propellers rotate in opposite directions. Rotation

rotation /roʊˈteɪʃən/ noun 1. the act of moving the control yoke or stick aft to raise the nose of an aircraft during the take-off run to facilitate the aircraft becoming airborne. Rotation should begin at about 60 knots. 2. the act of turning around an axis or centre: the rotation of the earth. Crankshaft rotation. The speed of rotation determines the frequency of the generator output.

COMMENT: The aircraft rotates around three axes: pitch = rotation around the lateral axis; roll = rotation around the longitudinal axis; yaw = rotation around the vertical axis.

Rotational /roʊˈteɪʃənal/ adjective rotating. Rotational movement of the propeller blades creates lift at right angles to the blade.

Rudder /ˈrʌdər/ noun a control surface on the fin which rotates the aircraft about its vertical axis to produce yaw. The A320 retains a backup mechanical linkage for elevator trim and rudder to allow control in the unlikely event of complete electrical failure.

COMMENT: The rudder does not turn the aircraft. It is used, together with aileron deflection, to initiate turns, to balance forces in turns and to counteract yawing motions created by the propeller during flight. The rudder pedals are mounted on the floor of the cockpit.


Route /rųt/ noun a course of travel. The purpose of charts is to plan and fly a safe route to a destination. En route

route flight plan /rųt ‘flait, plen/ noun detailed information concerning an intended flight, provided to an air traffic control facility in written or oral form.

Routine /rųt’tim/ noun a standard procedure. Meteorological information for scheduled flights will be passed to the operations department as a matter of routine. Adjective standard and regular. Routine servicing servicing carried out in the normal way at regular, scheduled intervals.

Row /raʊ/ noun 1. a series of objects in a line. Each row of rotating rotor blades is followed by a row of stationary stator blades. 2. a series of seats in an aircraft. There are no empty seats in Row 8.

Rpm, r.p.m. abbreviation revolutions per minute. Rpm is the number of revolutions per minute that the engine crankshaft is making. The actuator control is sensitive to engine rpm.

R/T abbreviation radiotelephony (Note: R/T is frequently used in spoken language, whereas RTF is the ICAO abbreviation.)

RTF abbreviation (ICAO).

Rudder /ˈrʌdər/ noun a control surface on the fin which rotates the aircraft about its vertical axis to produce yaw.
rudder ball 200

rudder ball   /'rædə bol/ noun same as inclinometer
rudder pedal  /'rædə ped(ə)l/ noun a foot-operated lever which moves the rudder. Just before take-off, the pilot should make sure that his or her feet are correctly positioned on the rudder pedals.

rule   /ru:l/ noun 1. a standard and authoritative instruction or guide. According to the rules, your ticket must be paid for two weeks in advance. 2. as a rule usually. As a general rule, radio signals travel in straight lines.
rule of thumb   /ˌru:l əv 'θam/ noun easily remembered, useful guide to a more complex principle

run   /rʌn/ noun a route or distance 1. to extend. Magnetic lines of force run from the north magnetic pole to the south magnetic pole. 2. to operate an engine. An engine should be run at low r.p.m. (revolutions per minute) after flight to allow engine components to cool to a more uniform temperature.
run up   /ˈrʌŋ up/ noun engine run-up the testing of a piston engine at high power, in a light aircraft, just before take-off. Make certain that the parking brake is on before doing engine run-up checks.
runway   /ˈrʌnwei/ noun a strip of level, usually paved ground on which aircraft take off and land. Heathrow airport has four terminals and two main runways. To achieve a safe landing, an aircraft has to be controlled so that its wheels make contact with the runway smoothly. The aircraft lined up perfectly on the runway extended centre line. Abbreviation R/W

runway visual range   /ˈrʌnwei ˈvɪʒuəl ˈreɪndʒ/ noun the distance along a runway at which selected lights can be seen, adjusted to simulate approach visibility. Runway visual range is obtained by an observer standing at the side of the runway in the vicinity of the threshold counting the number of markers or lights visible along the side of the runway. Abbreviation RVR

rupture   /ˈrʌptʃər/ noun the process of breaking open or bursting. Pressure in the fuel tanks must be controlled to prevent rupture or collapse. verb to break open or burst. The impact ruptured the fuel tank.

RVR abbreviation runway visual range
R/W, RWY abbreviation runway
safe /sēf/ adjective free from danger • Approach to land must be made at a safe speed. • safe landing a landing which does not endanger people or damage the aircraft. • fail safe
safeguard /ˈseɪgfɔːrd/ noun something done as a precaution • A propeller is feathered after engine failure, or as a safeguard when low oil pressure or excessive temperature have indicated the development of a possible defect. • verb to take action to make sure that something is protected from harm • A pressure maintaining valve is generally used to safeguard operation of important services, such as flying controls and wheel brakes.
safe life /ˈseɪflaɪ/ noun the principle of putting the least load or force on each component, so that it will last well beyond a plane’s expected life
safety /ˈseɪfti/ noun freedom from danger, injury or risk • Turbulence can have serious effects on aircraft safety and performance and makes air travel uncomfortable. • safety conscious the state of being aware at all times of the importance of safety and the means by which it is achieved and maintained
safety pilot /ˈseɪfti ˈpaɪlət/ noun a pilot present in the cockpit to ensure the safety of the flight, e.g. when a student is practising instrument flying
safety regulations /ˈseɪfti ˈrekjʊleɪʃənz/ plural noun rules or laws which must be followed to make a place safe • Equipment and furnishings on modern jet transports must comply with safety regulations concerning fire resistance.
safety straps /ˈseɪfti stræps/ plural noun device to keep a person in position in a seat
sailplane /ˈseɪlpleɪn/ noun a light glider particularly well adapted to making use of rising air currents
St Elmo’s Fire /st əlməʊz ˈfaɪə/ noun a luminous electrical discharge sometimes seen on aircraft during storms
SALR abbreviation saturated adiabatic lapse rate
salvage /ˈsælviɪdʒ/ verb to save items of property which may be in danger of being lost • In the event of a crash landing in a remote area on land, an attempt should be made to salvage all items of survival equipment from the wreckage including beacons, rafts and raft equipment.
sample /ˈsæmpl/ noun a small amount which is representative of the whole • If a sample of fuel taken from a tank was found to be hazy or cloudy in appearance, this would indicate the presence of water in suspension. • If fuel contamination by water is suspected, a sample of fuel should be drained from the tank for inspection.
sandwich /ˈsændwɪdʒ/ noun a construction of three layers, the material of the one in the middle being different from the two on each side • standard connectors consist of a metal coupling with a rubber sandwich joint.
SAR abbreviation 1. special aerodrome report 2. search and rescue (ICAO)
SAS abbreviation stability augmentation system

satellite /ˈsætəlaɪt/ noun an object launched to orbit the earth, usually receiving and transmitting signals, pictures and data. Satellite communications improve the effective distribution of world area forecasts.

satellite navigation /ˌsæt(ə)lɪtˌnɛvɪˈɛtʃ(ə)n/ satellite navigation system noun a system of navigation which uses orbiting satellites to determine the position of an aircraft or point, in relation to the earth’s surface. Abbreviation SATNAV

satisfactory /ˌsætsɪˈfækt(ə)rɪ/ adjective adequate, good enough. For satisfactory operation, an engine requires an adequate supply of oil.

‘…during the engine run-up, check that the use of carburettor heat gives a satisfactory drop in rpm or manifold pressure’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet].

satisfy /ˌsætsɪˈfaɪ/ verb 1. to meet a particular prescribed standard. Shell Avgas 100LL satisfies British specification. 2. to meet the needs or requirements of something. To satisfy the requirements of aviation there are three types of meteorological offices for aviation, each with a specific role to fulfill.

SATNAV /ˈsætɪnv/ abbreviation satellite navigation

saturate /ˌsætərɪt/ verb to cause a substance to combine with the greatest possible amount of another substance. When a sample of air contains the maximum amount of water vapour for its particular temperature, it is said to be saturated.

saturate point /ˌsætərɪtpɔɪnt/ noun the level at which no more of a substance can be absorbed.

save /sɛv/ verb to prevent unnecessary use of. Electro-magnetic switches are generally used to control high-current devices by means of a small current thus saving heavy duty cable and therefore weight.

SB abbreviation service bulletin

scale /ˈskɛl/ noun 1. marks at fixed intervals used as a reference standard in measurement. This ruler has scales in inches and centimetres. 2. a graded system of classification. 3. a proportion used in determining distance on charts. Many aeronautical charts use a scale of 1:500,000.

scan /ˈskɛn/ verb 1. to look at quickly and systematically. The pilot is trained to scan the instrument panel. 2. to move a radar beam in a systematic pattern in search of a target. Some radars scan in azimuth and glideslope.

scatter /ˈskætər/ noun deflection of radiation. High frequencies are freer of ionospheric scatter and are relatively free of noise.

schedule /ˈʃedʒuəl/ noun 1. a list of times of departures and arrivals. An airline schedule. 2. a printed or written list of items in the form of a table. Inspection schedule. Maintenance schedule. 3. a planned or regular time or date. The meeting is scheduled for 3 o’clock. 4. to enter on a schedule. To calculate and schedule each item on the proper form.

scheduled /ˈʃedʒuəld/ adjective

scheduled landing an arrival at a timetable destination

scheduled flights /ˈʃedʒuəldflɛts/ plural noun flights that are listed in the airline timetable, as opposed to charter flights

schematic /ˈskɛmətɪk/ adjective showing the function of a device or system without trying to create a realistic image. Figure 3 shows a schematic diagram of the autopilot.

scramjet /ˈskrærmədʒet/ noun a ramjet aircraft in which fuel is burned in air that is moving at supersonic speeds.
seals, gaskets and packing effect a seal and packing are used in many locations.

an integral fuel tank may be completely coated on the inside with a layer of sealant.

sea level /ˈsiː lev(ə)l/ noun the average level of the surface of the sea, used for measuring barometric pressure

sealing compound /ˈseɪlɪŋ kʌmpən(d)/ noun same as sealant

seaplane /ˈsiːpleɪn/ noun a plane that can take off from and land on water

search /ˈsɜːtʃ/ noun an act of looking for something in order to find it The aircraft reduced altitude and carried out a visual search for survivors. ◼ verb to look for in order to find something The investigators searched the scene of the crash for the flight data recorder.

season /ˈsiːzn(ə)/ noun one of the four natural divisions of the year, spring, summer, autumn, or winter. The amount of solar radiation received by the Earth depends on the season.

seasonal /ˈsiːzn(ə)l/ adjective 1. referring to the four natural divisions of the year, or characteristic of a particular time of the year seasonal temperatures seasonal winds 2. only lasting for a season seasonal work

seasonal variation /ˈsiːzn(ə)l ˈveɪrənj/ noun a change occurring according to the season

seat /siːt/ noun a place for sitting pilot’s seat window seat a seat next to a window

seated /ˈsiːtɪd/ adjective sitting, on your seat passengers should remain seated. ◼ sit

seating capacity /ˈsiːtɪŋ kæpəsɪtɪ/ noun the maximum number of people an aircraft, bus, etc., can seat

secondary /ˈsɛkərətri/ adjective 1. of the second rank in importance, etc., not primary 2. an induced current that is generated by a primary source

secondary radar /ˈsɛkərətri ˈreɪdər/ noun a radar which uses ground equipment called interrogators and airborne equipment called transponders to
section /'sekʃən/ noun 1. a component or part of a structure. 2. part of a text. 3. a diagram of a solid object as it would appear if cut, so that the internal structure is displayed. noun 2. a segment of airspace with its own team of air traffic controllers.

sectional /'sekʃənəl/ adjective 1. referring to a section or composed of sections, showing a solid object as it would appear if cut.

sector /'sektr/ noun 1. part of the flight between an aircraft moving under its own power until it next stops after landing in its allocated parking position. 2. the portion of a circle inside two radii and the included arc. 3. a segment of airspace with its own team of air traffic controllers.

secure /sjuə/ adjective fastened or locked, safe. 1. Overhead baggage lockers must be secure. 2. If the onset of turbulence is sudden, crew must immediately secure themselves in the nearest available seats.

security /sjuərəti/ noun 1. safety. 2. people whose job is to protect buildings or other people against crime.

SELCAL noun a high-frequency radio system which alerts the crew of an aircraft to the fact that air traffic control is trying to contact them. Full form selective call.

seldom /'seldəm/ adverb not often, rarely. 1. Aircraft are seldom hit by lightning. 2. The wet sump system of lubrication is seldom used on modern aircraft.

select /selt/ verb to choose something as a particular instrument or system setting. 1. A reverse thrust lever in the crew compartment is used to select reverse thrust. 2. The cabin pressure controller is used to select cabin altitude.

selection /'seltʃən/ noun 1. a choice of something such as a particular instrument or system setting. 2. By manual selection of the heating switch, the formed ice can be dispersed. 3. A collection of carefully chosen things. 4. A selection of photographs.

selector /'seltkər/ noun a manually operated device like a switch, which offers a choice of settings. 1. Turn the selector control. 2. The purpose of this selector is to direct fluid to the appropriate side of an actuator.

self-contained /ˌself kɔntˈtɛnd/ adjective independent. 1. The auxiliary power unit is a self-contained unit.

self-positioning /ˌself pəˈzɪʃənɪŋ/ noun the positioning of the aircraft on the extended centreline of the runway using the on-board navigation system. Also called centre fix.

semiconductor /ˌsembɪˈkʌnˈdəktər/ noun a solid crystalline substance with electrical conductivity greater than insulators but less than good conductors.

semicircle /ˌsəmɪˈsɜrl/ noun half a circle. 1. Most mathematical protractors are made of plastic in the shape of a semicircle.

semicircular /ˌsəmɪˈsɜrɪl/ adjective in the shape of half a circle.

senior /ˈsiːnər/ adjective older or more important in rank. 1. seniors.

sense /sens/ noun 1. manner, way. 2. After turning the aircraft, the auto-control will operate in the opposite sense and return the ailerons to neutral as the aircraft returns to level flight. 3. wisdom or natural intelligence. 4. The meaning...
of a word □ The word ‘bearing’ is used in a lot of different senses. □ verb to detect automatically □ The fire warning system is designed to sense two levels of temperature – overheat and fire. □ sensor

**sensitive** /sensitiv/ adjective able to register very small differences or changes in conditions □ Oscillating outputs from the alternators could cause sensitive equipment to malfunction or trip off. □ The actuator is sensitive to engine rpm.

**sensitivity** /sens’tiviti/ noun the quality or state of being able to register very small differences or changes in conditions □ Monitors detect disturbances which are below the sensitivity level of the gyroscopes.

**sensor** /sensər/ noun a device which receives and responds to a signal or stimulus □ pressure sensor □ temperature sensor □ The inlet pressure is sensed by a single pitot-type sensor probe which is situated just in front of the compressor.

**separate** adjective /sep(ə)ret/ existing as an independent thing □ Propellers consist of a number of separate blades mounted in a hub. □ verb /sep(ə)ret/ to set or keep apart □ Dry chemical extinguishers separate the oxygen element from the fire thus retarding combustion.

**separation** /sepərāʃon/ noun 1. the condition of being spaced apart 2. the removal of something from a mixture or combination □ The oil and air mixture flows over the de-aerator tray in the oil tank, where partial separation takes place.

**separation standards** /sepərā’stændardz/ plural noun internationally agreed minimum separation limits for aircraft in flight

**separator** /sepərətər/ noun a device which removes something from a mixture or combination □ The water separator will extract a percentage of free moisture from the air.

**sequence** /sizkwəns/ noun a series of things or events which follow one another, an order □ The ignition system provides a rapid series of sparks timed to fire in each cylinder in the correct sequence.

**sequence valves** /sizkwəns vəlvz/ plural noun a fluid flow controller which performs a number of actions in a particular order □ Sequence valves are often fitted in a landing gear circuit to ensure correct operation of the landing gear doors and actuators.

**series** /ˈsɛriəz/ noun a number of things or events which come one after another in a particular order □ a series of photographs □ a series of switches

**series circuit** /ˈsɛriəz ˌsɛriəkst/ noun an electric circuit connected so that current passes through each component of the circuit in turn without branching

**serious** /ˈsɛriəs/ adjective important, or giving cause for great concern or worry □ serious damage □ very bad damage □ serious injury

**serve** /sərv/ verb 1. to act or to function as □ In some aircraft, pressure gauges also serve as a maintenance check on leakage. 2. to be used for a purpose □ Different colour-coded warning lights serve to alert the observer that something is wrong with the system.

‘…a recent incident in Argentina serves to highlight some of the many safety problems in Latin America’ [INTER PILOT]

**service** /sərvis/ noun 1. a facility □ A pressure reducing valve is often used to reduce main system pressure to a value suitable for operation of a service such as the wheel brakes. 2. work done for others as a profession □ Automatic Terminal Information Service (ATIS) □ Cabin crew provide a commercial service to passengers. 3. maintenance or repairs carried out □ verb to do maintenance or repairs on □ Jet engines are simpler to dismantle and service than piston engines.

**serviceability** /ˈsərvəsəbɪləti/ noun the ability to function as required □ When carrying out engine checks, it is usual to turn off the magnetos in turn to check their serviceability.
Accessibility of components and equipment during servicing enables work to be done more quickly.

Servo assisted braking or steering is partially operated by a servo mechanism.

Servo control unit is part of the system which relieves the effects of aerodynamic forces on the flight controls.

Servomechanism is a device to convert input forces into much larger output forces. Two phase motors are normally used for very small or miniature motors in servomechanisms.

Service bulletin is a notice issued by the manufacturer of an aircraft, engine or other equipment to alert people to problems with that equipment.

Service bay is a space in the structure of an aeroplane which can be located for maintenance or repairs. In modern aircraft, a number of the major components are grouped together in a hydraulic service bay which is easily accessible for routine servicing operations.

Servicing is the action of carrying out maintenance and repairs.

Accessibility of components and equipment during servicing enables work to be done more quickly.

Servo is an abbreviation for servomechanism.

Servo-assisted is partially operated by a servomechanism.

Servo control unit is part of the system which relieves the effects of aerodynamic forces on the flight controls.

Servomechanism is a device to convert input forces into much larger output forces. Two phase motors are normally used for very small or miniature motors in servomechanisms.

Set is a group of things which belong together. A set of figures is fixed or established. A set position is to adjust to a particular point or figure. Set the throttle fully closed. To harden, the resin sets.
of the Earth creates a shadow zone from the sun. ○ Line-of-sight transmission path means that obstacles and terrain can create shadow zones.

**shaft** /ʃaʊt/ noun a long, generally cylindrical bar, especially one that rotates and transmits power ○ engine drive shaft ○ propeller shaft

**shallow** /ʃeləʊ/ adjective not deep ○ shallow angle

**shallow depression** /ˈʃeɪələʊ dɪˈpresʃən/ noun an area of slightly low relative atmospheric pressure

**shape** /ʃeɪp/ noun form ○ The shape of an aircraft is determined by the requirement to provide an aerodynamic lift force great enough to support the weight of the aircraft and payload whilst in flight.

**sharp** /ʃɑrp/ adjective 1. thin and capable of cutting or piercing ○ If a piece of thermosetting plastic is hit hard enough, it breaks into pieces with straight sharp edges. 2. clear ○ The sharp setting means the bandwidth is reduced to 1 kHz (kilohertz) to minimise noise or interference. 3. clear and distinct ○ Cumulus clouds have sharp outlines. 4. sudden and acute ○ a sharp increase a sudden large increase

**shatter** /ˈʃeɪər/ verb to break into a number of pieces when hit ○ Clear ice is hard to shatter and break off.

**shear** /ʃər/ verb to break by lateral movement

**shearing load** /ʃərɪŋ ləʊd/ noun load caused by sliding apart the layers of a structure

**shear stress** /ʃər stres/ noun stress that occurs in riveted and bolted joints when a force causes one layer of material to slide over an adjacent layer

**shed** /ʃed/ verb to get rid of ○ Non-essential loads may need to be shed in order to reduce weight.

**sheet** /ʃeɪt/ noun 1. a large, thin, flat piece of material ○ aluminium sheet 2. a relatively large piece of paper ○ instruction sheet a piece of paper on which special instructions are written or printed

**shell** /ʃel/ noun the outer covering of something such as an aircraft fuselage

**shield** /ʃaɪld/ noun a protective covering ○ heat shield ■ verb to protect by covering ○ The beacon should be sited on the highest ground to prevent the transmitted signal from being shielded.

**shift** /ʃɪft/ noun 1. movement from one place to another ○ a shift in position 2. a change ○ When a radio transmission is made from a moving platform, there will be a shift in frequency between the transmitted and intercepted radio signals. ■ verb to change the position of something ○ to shift a load

**shock** /ʃɒk/ noun 1. a sudden violent impact ○ On all undercarriages some form of accepting the shock of landing must be included. 2. disturbance of mental functions caused by a terrible experience or injury ○ Crew should be aware of reverse panic, a form of shock which makes passengers unable to comprehend the need for urgency.

**shock absorber** /ʃɒk əbˈzɔrər/ noun device to minimise the shock to the main structure of the aircraft when it lands

**shock wave** /ʃɒk wəʊv/ noun compression wave caused by supersonic motion ○ As sonic speed is approached, the efficiency of the intake begins to fall, because of the formation of shock waves at the intake lip.

**shore** /ʃɔr/ noun a stretch of land at the edge of the sea or a lake, etc. ○ At a height of 3,000 feet it was possible to see the shore. ○ offshore, onshore

**shorten** /ʃɔrtən/ verb to make short or shorter in length or duration ○ Mis-handling of aero-engines during operation can cause considerable damage and wear which can shorten the life of the engine. ○ The length of the mercury
short-haul /ˈʃɔːt hɔːl/ adjective travelling over a short distance
short-haul flight /ˈʃɔːt hɔːl ˈflæt/ a flight over a short distance, up to 1,000km. On short-haul flights, passengers are usually offered only light meals.
short-term conflict alert /ˈʃɔːt ˈtɜːrm ˈkɒnfɪkt ælt/ noun a warning that an aircraft may soon be flying too close to another aircraft
shot /ʃɒt/ noun a discharge. Extinguishing of a fire in an auxiliary power unit (APU) compartment is normally done by a single-shot fire extinguisher.
sidestick controller /ˈsaɪdɪstɪk ˈkɒntroʊlər/ noun a small side-mounted control column used on aircraft such as the Airbus A340
sight /saɪt/ noun 1. view. 2. with the airfield in sight. a transmission to air traffic control to confirm that the pilot can see the landing airfield. 3. the ability to see using the eyes. verb to see something when it is a long way away. 4. Sea marker dyes can only be used once and should only be used when a search aircraft is sighted.
sight glass /ˈsaɪt ɡlɑːs/ noun a simple fluid-level gauge
SIGMET /ˈsɪgmet/ abbreviation significant meteorological information
sign /saɪn/ noun 1. a small quantity or amount of something which may suggest the existence of a much larger quantity. Any sign of smoke or fire outside a wing exit means it cannot be used. 2. a display with letters and/or numbers, sometimes lit up. The ‘fasten seat belt’ sign or ‘no-smoking’ sign. A symbol such as: -+, x or ∞, which represents an operation. Verb to put one’s signature on a document, a letter, etc. Remember to sign the letter.
signal /ˈsaɪɡnl/ noun 1. a device, action or sound which passes information. 2. a radio wave transmitted or received. As a general rule, radio signals travel in straight lines.
signals area /ˈsaɪgnəlz əˈreə/ noun an area on an aerodrome used for displaying ground signals
signals mast /ˈsaɪgnəlz ˈmɑːst/ noun a vertical pole on an airfield from which signal flags are flown
signals square /ˈsaɪgnəlz ˈskwɛə/ noun a small quantity or a small area on an aerodrome from which ground signals are displayed
signature /ˈsaɪgnətʃər/ noun the name of a person written in a special way to show that a document has been authorised or to show who is the author of a letter, etc. Look at the signature to see who wrote the letter.
significance /ˈsaɪgnɪfɪkəns/ noun importance. Except near a coastline where the sea breeze may augment the upslope motion, anabatic winds are of little significance.
significant /ˈsaɪgnɪfɪkənt/ adjective important and therefore noticeable. a significant change in temperature. The vertical currents and eddies formed by the flow of air over hills and mountains have a significant effect on aircraft encountering them.
ducting.

level of noise from the blower, silencers

bulence. Abbreviation

aircraft, such as severe or extreme tur-

conditions important to the safety of all

weather advisory concerning weather

shut-off valve and pipes.

something, making a noise

same

of having features that are nearly the

easy, to make less complex or compli-

cated design or concept

to turboprop engines.

NOTE:

approach of a stall.

chart with important weather informa-

silence the warning bell.

engine fire warning is received on the

windows

There are points of difference

Because of its

water enters the fuel tank, it will sink

smoothly at a very low rate of sink.

boarding a glider has to be controlled so that

it makes contact with the runway

further simplified by increasing use of
cold setting resins.

simulate /'sɪmjuːleɪt/ verb to imitate
the conditions or behaviour of some-

thing. The computer program simu-
lates the action of an aircraft.

simulated instrument flight

/sɪmjuːleɪtɪd_instrʊمنت 'flaɪt/ noun
an instrument flight carried out in a sim-

ulator on the ground or in a specially

preparation aircraft with screens on the

windows

simulation /'sɪmjuːleɪʃən/ noun
an imitation of a real situation, created

often for training purposes. A simula-
tion of an engine fire. The computer

animation showed a simulation of the

events which followed the explosion on

board the aircraft.

simulator /'sɪmjuːleɪtər/ noun
a machine that is constructed to look like

an aircraft cockpit with a full set of

instruments, in which people can be

trained to fly a particular type of aircraft

simultaneous /'sɪmʌltəniəs/ adjective
happening at the same time. Most aircraft

are now fitted with remote magnetic indicator displays which can be

selected to show two simultaneous

bearings from different radio navais.

sine /ˈsaɪn/ noun a trigonometric func-
tion defined as the length of the side

opposite to an angle in a right-angled

triangle divided by the length of the

hypotenuse. Abbreviation sin

discrete /ˈsɪŋɡrəl/ adjective one only

single-engined aircraft /'sɪŋɡlɪnˌɛnˈskrɪʃən/ single-engine air-

craft noun an aircraft with one engine only

sink /ˈsɪŋk/ noun a downdraught of air

rate of sink the rate of descent of a

glider. In order to achieve a safe land-

ing, a glider has to be controlled so that

it makes contact with the runway

smoothly at a very low rate of sink. A

verb to move downwards as in a fluid. If

water enters the fuel tank, it will sink

to the bottom of the tank where it can be
drained off.

sit /sɪt/ verb to be resting with your

behind on a seat such as a chair. The
skid.
ward, and roll, yaw and pitch to make: forward, upward and down-

motion that an aircraft must be able

object.

such as the size, shape and colour of the
given distance will depend on factors
an object can be seen by aircrew at a

sitting /ˈsɪtɪŋ/ adjective sitting position
the position of a person who is on
a seat ● The correct technique of using
the escape slides is to assume a sitting

position.

situate /ˈsɪtjuət/ verb to put in a particular
place, to locate ● The inlet press-
sure is sensed by a single pitot-type
probe which is situated just in front of

the compressor.

situation /ˈsɪtjuəʃən/ noun 1. a
location, the place where something is ● The situation of the flight controls is
important. 2. the conditions or circum-
stances in a particular place or at a par-
cular time ● The synoptic chart is a

graphical representation of the general
weather situation over a given area at a
given time.

six character group /ˈsɪksˌkærəktərˈɡrʊp/ noun a group of six
letters and/or numbers

six degrees of freedom /ˈsɪksˈdiːəz ɔv ˈfriːdəm/ plural noun the six types of
movement that an aircraft must be able
to make: forward, upward and down-
ward, and roll, yaw and pitch

size /ˈsaɪz/ noun the extent of a thing, how big something is ● Whether or not
an object can be seen by aircrew at a
given distance will depend on factors
such as the size, shape and colour of the

object.

skid /ˈskɪd/ noun 1. a slide on slippery
ground ○ Anti-skid braking systems
units are designed to prevent the brakes
locking the wheels during landing, thus
reducing the possibility of wheel skid. 2.
a condition of uncoordinated flight then
the aircraft moves away from the centre
of a turn ● Deflection of the ball in the
turn coordinator indicates a slip or a

skid. ○ anti-skid (NOTE: To correct a

skid, the pilot should increase the bank,
or increase rudder pressure on the
same side as the ball has moved to in
the turn coordinator.) ○ verb 1. to slide
on slippery ground ○ If you brake too
hard on a wet surface, you might skid.
(NOTE: skidding – skidded ○ to skid
to a halt to slide or skid until you stop
2. to move sideways towards the outside
of a turning manoeuvre

skill /ˈskɪl/ noun expertise, an excellent
ability in something ○ Skill in accurate
flying can only be achieved by constant
practice.

skin /ˈskɪn/ noun the outer layer of a
body, or the outer layer of an aircraft ○ The aircraft skin is riveted to stringers
and frames.

skip distance /ˈskɪp,dɪˈstæns/ noun
the shortest distance at which a sky
wave can be received ○ The higher the
layer in which a direct wave signal is
totally refracted and returns as a sky
wave, the greater the skip distance.

skiplane /ˈskɪplɪn/ noun an aircraft
equipped with skis for taking off from
and landing on snow

sky /ˈskai/ noun the atmosphere and
outer space as seen from the earth ○ The
higher the sun is in the sky, the more
intense is the radiation per unit area.

skyjack /ˈskiːdʒæk/ verb to use force
to take illegal control of an aircraft,
especially a commercial aircraft, when
it is in the air

sky wave /ˈskai wɜːv/ noun part of a
radiated wave which is returned to
Earth by refraction from the ionosphere

skyway /ˈskaiˌweɪ/ noun a route used
by aircraft

skywriting /ˈskiːraɪtɪŋ/ noun 1. the
use of an aircraft releasing coloured
smoke to form letters in the sky 2. let-
ters or a message formed in the sky by
coloured smoke released from an air-
craft

slack /ˈslæk/ adjective 1. not tight ○ a
slack cable a loose cable 2. not busy ○
Early afternoon is a slack period of the
day. 3. widely spaced ○ Throughout the
tropics and sub-tropics, where pressure
gradients are normally slack, the sea
breeze is a regular feature. ○ Land and
slant /slænt/ noun a slope or inclination. Distance Measuring Equipment (DME) is a radio aid which measures aircraft slant range to a ground beacon. 

slip /slɪp/ noun a condition of uncoordinated flight when the aircraft moves towards the inside of a turn. Slip is indicated by deflection of the ball in the turn and slip indicator. 

slipstream /slɪpˈstrɪm/ noun the flow of air sent backwards by an aircraft’s propeller.
smoking /ˈsməʊkɪŋ/ noun the act of breathing in smoke from a cigarette, cigar, etc. o the airline has a no-smoking policy the airline does not allow passengers to smoke during a flight.

smooth /smuːð/ adjective 1. even and without lumps or bumps o a smooth surface 2. not rough or turbulent o High ground will disturb the smooth, horizontal flow of air. Opposite: rough o a smooth running engine an engine which is operating well.

SNR abbreviation surface movement radar.

snap roll /ˈsnæp ˈrəʊl/ noun a manoeuvre in which an aircraft turns a complete circle longitudinally while maintaining altitude and direction of flight.

snow /snəʊ/ noun atmospheric water vapour frozen into ice crystals and falling to Earth as white flakes o Snow cover tends to persist on north-facing slopes of mountainous regions after it has melted on south-facing slopes.

snowflake /ˈsnəʊflɛk/ noun a small piece of snow formed from a number of ice crystals o The size of a snowflake depends on the temperature.

snow plough /ˈsnəʊ plʌʃ/ noun a vehicle built to push the snow from roads, tarmac, etc.

snowstorm /ˈsnəʊstɔːrm/ noun a heavy fall of snow accompanied by wind o The airport is closed because of the snowstorm.

soft /sɒft/ adjective not hard o Thermoplastic materials become soft when heated.

soften /ˈsɒfn(ə)n/ verb to make soft o Thermoplastic materials are softened by many aircraft fluids.

solar /ˈsɔlər/ adjective referring to the sun.

solar-powered /ˈsɔlər ˈpauəd/ adjective powered by energy derived from the sun's rays.

...a 210–240-foot wingspan solar-powered aircraft for flight at 100,000 feet, is being designed in California.’ [Pilot]

solar radiation /ˌsɔlər ˈreɪdɪən/ noun the total electromagnetic radiation given off by the sun.

solar system /ˈsɔlər ˌsɪstəm/ noun the sun and the planets governed by the sun.

sole /səʊl/ adjective only o the sole survivor of the air crash.

solenoid /ˌsəʊləˈnɔɪd/ noun a cylindrical coil of wire acting as a magnet when carrying electric current o Fuel is metered from the aircraft fuel system by a solenoid-operated control valve.

solid /ˈsɔld/ adjective 1. referring to something which is not liquid or gaseous o Visibility is reduced by the presence of solid particles such as dust or sand in the atmosphere. 2. o solid line unbroken line o a substance which is not a liquid or a gas o Ice is a solid, water is a liquid and vapour is a gas.

solid-state /ˈsɔld stɛt/ adjective referring to semiconductor devices.

solid-state device /ˌsɔlɪd stɛt ˈdɪvɪs/ noun an electronic device that operates by using the effects of electrical or magnetic signals in a solid semiconductor material.

solid-state technology /ˌsɔlɪd stɛt ˈtekənələdʒi/ noun technology using the electronic properties of solids to replace those of valves.

solo /ˈsəʊlə/ adverb done by one person alone o to go solo or to fly solo o He flew solo across the Atlantic.

solution /ˈsəluʃ(ə)n/ noun 1. an answer to or means of solving a problem or difficulty o The navigation computer or slide rule is suitable for the solution of many different types of mathematical problem. 2. a liquid made by dissolving a solid or gas in water or some other fluid o Spillage from a lead acid battery may be neutralised by washing with a dilute solution of sodium bicarbonate.

solve /sɑlv/ verb to find the answer to, or a way of removing, a difficulty or problem o The triangle of velocities is used to solve navigation problems.
somewhat /ˈsʌmwaɪt/ adjective to some extent, a bit ○ The usefulness of pure aluminium as a structural material is somewhat limited.
sonic /ˈsɒnɪk/ adjective 1. referring to sound 2. within the human hearing range ○ sonic speed the speed of sound
sonic boom /ˈsɒnɪk ˈbʊm/ noun a noise, due to shock waves, produced when an aircraft travels through the air faster than the speed of sound
sophisticated /ˌsɒfɪstɪkatɪd/ adjective highly developed and complex ○ The electronic flight instrument system, commonly known as EFIS, is a highly sophisticated type of flight director system. ○ The A340 is a sophisticated aeroplane.
sortie /ˈsɔrti/ noun an operational flight by one aircraft ○ The test programme has accumulated 1,146 sorties.
sound /sɔund/ adjective strong ○ A stressed skin structure is used on modern aircraft which gives a sound structure with relatively low weight. ○ noun something that can be heard and is caused by vibration of the surrounding air ○ FM (frequency modulation) gives a wide range of sounds or a very high data rate. ○ verb 1. to make a noise ○ If the trim position is incorrect, a warning horn will sound when number three throttle lever is advanced for take off; ○ sonic 2. to seem ○ It sounds as if the pilot is having trouble.
source /sɔrs/ noun a supply ○ Under emergency conditions, the battery may be the only source of electrical power. ○ Jet aircraft have a ready source of compressed air from the compressor sections of their engines.
south /sɔut/ noun a compass point on the mariner’s compass 180° clockwise from due north and directly opposite north ○ Fly towards the south. ○ south facing mountain side the face of a mountain which looks towards the south ○ adjective 1. referring to areas or regions lying in the south, referring to the compass point 180° from north ○ the south side of the river 2. the southern part of a region or country ○ South America ○ South Dakota ○ adverb towards the south ○ The aircraft is flying south.
southbound /ˈsɔʊθbaʊnd/ adjective travelling towards the south ○ a southbound flight
south-east /ˌsauθˈiːst/ noun the direction between south and east ○ a region in the south-east of Canada ○ adjective 1. situated in the south-east ○ the south-east coast of England 2. blowing from or coming from the south-east ○ adverb towards the south-east ○ We were heading south-east.
south-easterly /ˌsauθˈiːstli/ adjective 1. blowing from or coming from the south-east ○ a south-easterly wind 2. moving towards the south-east ○ We were following a south-easterly direction.
south-eastern /ˌsauθˈiːstriən/ adjective referring to or situated in the south-east ○ the south-eastern coast of Spain
southerly /ˌsauθəli/ adjective 1. situated towards the south ○ the most southerly point of a country 2. coming from the south ○ A southerly wind was blowing. 3. moving to or towards the south ○ We were flying in a southerly direction. ○ noun a wind which blows from the south ○ southern /ˈsauθən/ adjective situated in the south ○ the southern hemisphere ○ the southern Atlantic
southern hemisphere /ˌsauθən ˈhæmɪstrə/ noun the area of the Earth to the south of the equator.
South Pole /ˌsauθpəl/ noun the point which is furthest south on the earth ○ to fly over the South Pole
southward /ˌsauθwɔːd/ adjective going towards the south ○ to go in a southward direction ○ adverb US same as southwards
southwards /ˌsauθwɔːdz/ adverb towards the south ○ The aircraft was flying southwards.
south-west /ˌsauθˈwest/ noun the direction between south and west ○ a region in the south-west of France ○ adjective 1. situated in the south-west ○ the south-west tip of England 2. blowing from or coming from the south-west
**south-westerly**

<table>
<thead>
<tr>
<th>adverb</th>
<th>towards the south-west</th>
<th>We were heading south-west.</th>
</tr>
</thead>
<tbody>
<tr>
<td>south-westerly</td>
<td>/sauθˈwestəli/</td>
<td>adjective 1. blowing from or coming from the south-west o a south-westerly wind</td>
</tr>
<tr>
<td>south-western</td>
<td>/sauθˈwestən/</td>
<td>adjective referring to or situated in the south-west o The south-western corner of England includes Cornwall and Devon.</td>
</tr>
<tr>
<td>south wind</td>
<td>/sauθ wɪnd/</td>
<td>noun a wind blowing from or coming from the south (NOTE: A wind is named after the direction it comes from.)</td>
</tr>
<tr>
<td>space</td>
<td>/speɪs/</td>
<td>noun 1. an empty area o A major problem with fuel storage is finding space within the airframe. 2. the physical universe outside the Earth’s atmosphere o VHF (very high frequency) waves tend to pass through the layers of the ionosphere into space.</td>
</tr>
<tr>
<td>spar</td>
<td>/spɑr/</td>
<td>noun the main longitudinal beam of an aircraft wing o Designing a wing skin, a rib or a spar as a single big item rather than assembling it from many smaller components minimises the number of structural parts.</td>
</tr>
<tr>
<td>spark</td>
<td>/spɑk/</td>
<td>noun a light produced by a sudden electrical discharge o verb to suddenly start a process or action o Crew must quickly establish control to ensure panic does not spark a premature evacuation.</td>
</tr>
<tr>
<td>spark plug</td>
<td>/spɑk plɑɡ/</td>
<td>noun a device screwed into each cylinder head in spark ignition engines, which initiates fuel combustion by an electric spark. o air gap. Also called sparking plug</td>
</tr>
<tr>
<td>spat</td>
<td>/spæt/</td>
<td>noun a streamlined covering for a wheel fitted on a light aircraft to reduce drag. Also called wheel fairness</td>
</tr>
<tr>
<td>spatial disorientation</td>
<td>noun</td>
<td>a situation of bad visibility and/or unusual manoeuvres which result in the pilot not knowing what attitude the aircraft is in</td>
</tr>
<tr>
<td>speaker</td>
<td>/ˈspiːkə/</td>
<td>noun 1. loud-speaker</td>
</tr>
<tr>
<td>special</td>
<td>/ˈspeʃ(ə)l/</td>
<td>adjective particular, specific, or not ordinary o To make a composite, it is necessary to combine the reinforcing glass fibres with some form of special glue. o noun a special meteorological report</td>
</tr>
<tr>
<td>special aerodrome report</td>
<td>/ˈspeʃ(ə)l əˈɛədrəm riˈpɔrt/</td>
<td>noun a special meteorological report used if there are significant weather changes since the last meteorological aerodrome report. Abbreviation SAR</td>
</tr>
<tr>
<td>special VFR flight</td>
<td>noun</td>
<td>a controlled VFR flight permitted by air traffic control to fly within a control zone in meteorological conditions below visual meteorological conditions</td>
</tr>
<tr>
<td>specific gravity</td>
<td>/ˈspiʃ(ə)ˈɡrɑvɪtɪ/</td>
<td>noun the density of a substance compared with that of water, which is 1.00 (NOTE: This is the old name for relative density.).</td>
</tr>
<tr>
<td>specific</td>
<td>/ˈspeʃ(ə)ˈsɪfi/</td>
<td>adjective clearly defined and definite o Flight levels are specific pressure altitudes. o The airframe has to be built to very specific requirements.</td>
</tr>
<tr>
<td>specification</td>
<td>/ˈspeʃ(ə)ˈspeʃ(ə)ʃ(ə)n/</td>
<td>noun a detailed description that sets out what something consists of, what is needed, what is involved, etc. o Fluids are coloured for recognition purposes and fluids of different specifications must never be mixed.</td>
</tr>
<tr>
<td>speed</td>
<td>/spɪd/</td>
<td>noun the rate of motion over a distance in time</td>
</tr>
</tbody>
</table>
spherical /ˈsferɪk(ə)l/ adjective shaped like a sphere ○ The Earth is almost spherical in shape. ○ Drain cocks are generally simple, manually operated spherical valves.

spill /spɪl/ noun the running out of a liquid from a container, especially when it is unintentional ○ an oil spill ○ a fuel spill 1. verb to cause liquid to run out of a container, usually unintentionally ○ If fuel is spilled, it creates a fire hazard. (NOTE: spilling – spilled or spill)

spillage /ˈspɪlɪdʒ/ noun the spilling of a liquid ○ Any fuel spillage must be cleaned up immediately. (NOTE: The word spillage is used in a more general sense than the word spill.)

spin /spɪn/ noun 1. fast rotation ○ the spin axis of the earth 2. the continued spiral descent of an aircraft where the angle of attack of one wing is greater than the stalling angle 1. verb to rotate rapidly ○ The Earth is spinning on its axis. 2. to put an aircraft into a continued spiral descent with the angle of attack of the mainplane greater than the stalling angle ○ It is prohibited to spin general-purpose light aircraft which are not equipped with a suitable harness.

COMMENT: The Moroccan aerobatic team ‘La Marche Verte’ perform a formation maneouvre with three aircraft spinning through multiple rotations while inverted.

spindle /ˈspɪnd(ə)l/ noun a pin or bar which rotates or on which something rotates ○ A cup anemometer has three cups, mounted on a spindle, that are driven by the wind causing the spindle to rotate.

spine /spɜːn/ noun the longitudinal central part of an engine ○ Annular inner and outer air casings form a tunnel around the spine of the engine.

spool /spuːl/ noun one complete axial-compressor rotor ○ The single spool compressor consists of one rotor assembly and stator. 1. verb to spool down to allow the revolutions of a tur-
spot

bofan engine to decrease or to spool up to increase the revolutions per minute of a turbofan engine

spot /ˈspɒt/ noun 1. a special or small place • Charts should be kept in a convenient spot in the cockpit. 2. a small roundish mark or piece • a spot of oil on a shirt • spot height the height of a particular place, e.g. a mountain peak, marked on a chart

spotlight /ˈspɔtlaɪt/ noun a powerful, often moveable light which illuminates a small area • A spotlight is mounted on the roof.

spray /ˈspreɪ/ noun 1. a body of liquid in fine drops • The generator is cooled by oil spray delivered by the constant speed drive section. 2. a container that sends out liquid in fine drops • verb to apply or to send out liquid in the form of fine drops • Some engines have the coolant sprayed directly into the compressor inlet, but for axial flow compressor engines, it is more suitable to spray the coolant into the combustion chamber inlet.

spread /spred/ noun an extension of the area covered or affected by something • Measures are taken to prevent the spread of fire. • verb to extend the area of something • Strong jets of water should not be used on a liquid fire as this may cause the fire to spread. • The system sprays a quantity of fluid onto the windscreen, which is then spread by the wipers. (NOTE: spreading = spread)

spring /ˈsprɪŋ/ noun 1. a metal device which, when under tension, tries to resume its previous position • The pitch lock piston is held in the forward position by a spring. 2. the season between winter and summer

squall /ˈskwɔl/ noun a sudden increase in wind speed lasting for several minutes • Surface squalls are due to the spreading out of strong down draughts at the surface. • Even with a light mean wind speed, squalls of 50 kt (knots) or more can occur with sudden changes in direction.

square /ˈskweə/ noun a shape with 4 equal sides and 4 right angles • adjective shaped like a square • a square panel

square foot /ˈskwɛr fʊt/ noun a unit of measurement of area, which is one foot long by one foot wide

square metre /ˈskweə mɪtə/ noun an area of measurement of area, which is one metre long by one metre wide • The room is 5m x 9m so the area is 45 square metres (45m²).

square root /ˈskwɛr rʊt/ noun divider of a quantity that, when multiplied by itself, gives the quantity • 3 is the square root of 9.

squawk /ˈskwɔk/ noun an identification code • transponder • verb to activate specific modes, codes or functions on a transponder • Garbling occurs when two signals are received simultaneously and can be resolved either technically or by making one of the aircraft squawk.

squeeze /ˈskwiːz/ verb to press hard from opposite directions • Static seals, gaskets and packing are used in many locations, and these effect a seal by being squeezed between two surfaces.

SSR abbreviation sunrise

SSR abbreviation sunset

SSR abbreviation secondary surveillance radar

stabilise /ˈstɛbɪlaɪz/, stabilize verb to become steady and unchanging • After the engine has been started, engine speed is increased to 1,000 r.p.m. (revolutions per minute) until cylinder head and oil temperatures have stabilised at normal operating temperatures.

stabiliser /ˈstɛbɪlɪzaɪz/, stabilizer noun a device to improve the tendency of an aircraft to return to its original attitude after being deflected

Comment: Some aircraft have an all-moving tailplane called a ‘stabilator’ (a combination of the words stabiliser and elevator).

stabilitator /ˈstɛbɪlitətə/ noun

stabiliser /ˈstɛbɪlɪzaɪz/, stabilizer

stability /ˈstɛbɪlɪtɪ/ noun 1. being stable or steady • The stability of the Cesna 150 makes it an ideal training air-
217 stall warning system

flow compressor, many stages of moving and stationary blades are needed, each row of rotors and a row of stators forming a stage.

stagger /ˈstæɡə/ noun a design in which the leading edge of one wing of a biplane projects beyond that of the other wing • verb to make the leading edge of one wing of a biplane project beyond the leading edge of the other wing

stall /stæl/ noun 1. a loss of lift caused by the breakdown of airflow over the wing when the angle of attack passes a critical point • In some configurations it is possible for the buffet speed to be less than the required 7% margin ahead of the stall. 2. a situation in which an engine or machine stops suddenly because an opposing force overcomes its driving power • Compressor stall can be caused by ice formation in the air intake. • recovery • verb to lose lift by the breakdown of airflow over the wing when the angle of attack passes a critical point • Many light aircraft stall when the angle of attack exceeds 15°. • recover

COMMENT: A stall has nothing to do with the engine stopping. An aircraft can stall at any airspeed and in any attitude.

stalling angle /ˈstælɪŋ ˈæŋɡ(ə)l/ noun the angle relative to the horizontal at which the flow of air around an aerofoil changes abruptly, resulting in significant changes in the lift and drag of an aircraft

stalling speed /ˈstælɪŋ ˈspɪld/ noun the speed at which the angle of attack is such that lift over the wing surface breaks down

COMMENT: Traditionally, an aircraft can stall at any airspeed, providing the angle of attack is great enough. Stalling speed is often used to refer to the speed below which the aircraft cannot remain airborne.

stall warning system /ˈstæl ˈwərning ˈsɪstəm/ noun a system to warn the pilot that the aircraft is about to stall.
standard - noun, something, e.g. a quality or measure, that is officially recognised as an example that others must conform with. Water is the standard for determining relative density.

a high standard of skill - a high level of skill

officially or generally accepted standard procedure - normal procedure

standard atmosphere - a unit of pressure defined as the pressure that will support a 760 mm column of mercury at 0°C at sea level, equal to 1.01325 x 10^5 newtons per square metre

standard instrument departure - a published navigational chart showing the route an aircraft must take as it takes off and climbs away from an airport. Abbreviation SID

standard parallels - plural noun (in a conical projection) the parallels of latitude where the cone cuts the surface

standard pressure setting - millibars. Abbreviation SPS

standard rate turn - a turn made at a precise number of compass degrees per second

COMMENT: Rate 1 turn = 180 ° in 1 minute, Rate 2 turn = 360 ° in 1 minute, Rate 3 turn = 540 ° in 1 minute, Rate 4 turn = 720 ° in 1 minute. Standard rate turns are made using particular angles of bank for specific airspeeds and are used while flying under Instrument Flight Rules (IFR). The pilot can make accurate turns to given headings by banking at the standard rate and timing the turn.

standard time - noun, a universally adopted time for all countries based on zone time

standby - adjective secondary, able to be used as a back-up

Some aircraft use a ram air turbine that can be very useful as a standby power source in the event of failure of a complete main AC (alternating current) generating system.

standby ticket - a cheaper air ticket bought just before departure time.

There are no standby tickets to Montreal.

standing agreement - an agreement between controlling units in different flight information regions to allow the transfer of control from one sector to the next without individual coordination. Provided agreed parameters are met

standing wave - the motion of air downwind of a steep hill or mountain in which the high and low points of the wave do not move

STAR abbreviation standard arrival route

starboard side of aircraft heading

outboard - a right-hand side of an aircraft when you face forwards when inside the aircraft

starboard - noun, adjective

vp/low point of the wave do not move. The angle between heading and track of an aircraft is called drift and is expressed in degrees to the port or starboard side of aircraft heading. Opposite port

starter - noun, a device to start an engine

starter motor - in a piston engine, a small electrically operated device to turn the engine until ignition starts

start-up - a procedure to start an engine

After start-up, the engine accelerates up to idling speed

state - noun, the existing condition of something

a state of equilibrium - the existing condition of something

Ice in a liquid state is called water. Water in a gaseous state is known as vapour. A logic gate is a two-state device i.e. on/off. In a poor state in a bad condition

verb to say or to mention, or to give information clearly

It states in the information that you must not open the can near a flame.

Please state your name and address.

statement - something formally expressed in words

After the crash, the president and chief executive of the company made a brief statement to the waiting news reporters.

static - adjective not acting, not changing, passive or not moving

noun the background noise during radio transmission
static display /'stætɪk dɪspleɪ/ noun a display of parked aircraft on the ground

static electricity /'stætɪk ɪlek'trɪsɪti/ noun electricity not flowing as a current ○ When the aircraft travels through the air, friction causes a charge of static electricity to be built up on the airframe.

static ground running /'stætɪk ˈɡraʊnd ˈrʌnɪŋ/ noun the running of the engine while the aircraft is stationary on the ground

static line /'stætɪk ˈlaɪn/ noun a rope attached to an aircraft and a parachute that automatically opens the parachute when the parachutist jumps

static port /'stætɪk pɔrt/ noun a small hole in the side of the aircraft which senses static pressure and is used in the operation of the altimeter, vertical speed indicator and airspeed indicator ○ Ensure that the static port is clear.

static pressure /'stætɪk 'prɛʃər/ noun the pressure of a fluid acting on and moving with a body

station /'stɛʃən/ noun 1. a particular assigned location ○ The interphone system allows the flight deck to communicate with cabin crew stations. 2. the location of a radio transmitter ○ a VOR station

stationary /'stɛʃənəri/ adjective not moving ○ The aircraft was stationary on the ground with engine running.

stator /'stɛtər/ noun a fixed part of a rotary machine ○ The low-pressure compressor has large rotor blades and stator blades and is designed to handle a far larger airflow than the other two compressors. ○ A temperature probe is embedded into the stator of the generator and a meter is provided, so that generator stator temperature can be monitored.

status /'stætəs/ noun condition ○ The centre-zero ammeter tells the pilot the status of the aircraft battery.

statute mile /'stætju:t miːl/ noun a non-SI unit of length equalling 1.609 kilometres ○ It is 20 statute miles to the airport. Abbreviation sm

STC abbreviation supplemental type certificate

STCA abbreviation short-term conflict alert

steady /'stɛdɪ/ adjective constant and unchanging ○ The manual test will give a steady red light. ○ a steady wind a wind of constant speed and direction

steam fog /'stɪzm fɒg/ noun fog formed when cold air moves over relatively warm water ○ Visibility was impaired because of steam fog.

steel /stɛl/ noun a metal alloy of iron, carbon and other compounds ○ stainless steel steel containing chromium and nickel that is highly resistant to corrosion ○ Tubing in parts of the system containing fluid at high pressure are usually made from stainless steel.

steep /stɛp/ adjective 1. sloping sharply ○ a steep angle of approach the angle formed by the aircraft approach flight path and the horizontal is greater than usual 2. closely spaced 3. referring to marked changes in pressure or temperature in a relatively short horizontal distance ○ Cooling of the air in contact with the ground at night can cause a very steep inversion of temperature at the surface. ○ Pressure gradients in anti-cyclonic curvature tend not to be steep.

steer /stɛər/ verb to direct by using a wheel or control stick ○ The aircraft is steered on the ground by using the rudder pedals.

steering /'stɛərɪŋ/ noun 1. guiding or directing ○ Steering is controlled by rudder pedals. 2. a system for guiding or directing a car, aircraft, etc. ○ Most modern light aircraft have nose-wheel steering but older tail-draggers are steered on the ground by using differential braking.

step /step/ noun 1. a stage ○ The first step in map reading is to orientate the chart. 2. one stair ○ Mind the step!

steward /'stjuːərd/ noun a male member of airline staff who look after passengers during the flight. ○ cabin crew, flight attendant, stewardess (NOTE: Different airlines use different terminology for their staff.)
stewardess /ˈstjuːdɛs/ noun a female member of airline staff who look after passengers during the flight.  ♦ cabin crew, flight attendant, steward (note: Different airlines use different terminology for their staff.)

stick /stɪk/ noun the main hand control used by the pilot to control the aircraft roll and pitch. ♦ Using fly-by-wire technology, the stalling angle cannot be exceeded regardless of stick input. ♦ verb to become fixed, as if with glue. ♦ Ice crystals and snowflakes do not stick to airframes, and so icing is a problem only when super-cooled water droplets are present.

stiff /stɪf/ adjective 1. rigid or inflexible. ♦ Kevlar 49 is stiffer than glass, but only about half as stiff as carbon fibres. 2. not easily bent or turned. ♦ control surfaces may become stiff as a result of icing. Control surfaces may become difficult to move. 3. a stiff wind a fairly strong wind.

stiffen /ˈstɪf(ə)n/ verb 1. to make rigid or inflexible, to make stiff. ♦ Beams can be additionally stiffened in a downward direction by vertical and diagonal members. 2. to become stronger.

STOL /ˈstɔl/ noun 1. a flying system that allows an aircraft to take off and land on a very short runway. 2. an aircraft fitted with the STOL system. Full form: short takeoff and landing.

stop /stɒp/ noun 1. the end of a movement. ♦ to come to a stop to stop moving. 2. a component which limits the distance that a moving part can move. ♦ An adjustable stop on the throttle control ensures a positive idling speed.

storage /ˈstɔːrɪdʒ/ noun the act of storing something. ♦ A reservoir provides storage space for the system fluid.

store /stɔːr/ noun 1. a supply. ♦ The maintenance section keeps a store of spare components. 2. US a shop. ♦ verb to put away for future use. ♦ A capacitor is a device with the ability to temporarily store an electric charge.

stores /stɔːriz/ plural noun goods. ♦ Freight carrying aircraft have supporting members of greater strength to allow for the carriage of heavy stores.

storm /ˈstɔrnm/ noun a violent weather disturbance with high winds and rain or snow. ♦ Storms produced by daytime heating are most frequently encountered in the afternoon and early evening.

stow /stɔʊ/ verb to place something in its correct position in the aircraft. ♦ Make sure the fire-extinguisher is stowed. ♦ stowage /ˈstɔʊdʒ/ noun a space for stowing things. ♦ A multi-wheel combination has the advantage of smaller and lighter undercarriage structures, and wing stowing problems can be overcome by suitable mechanisms.

stowaway /ˈstɔʊweɪ/ noun a person who travels secretly by hiding in an aircraft, or a ship, not paying the fare. ♦ The crew must be alert at all times to the possibility of hijacking, bombs and stowaways.

strain /streɪn/ noun deformation caused by stress.

strap /stræp/ noun a long narrow strip of fabric with a buckle. ♦ verb to strap to fasten a seat or safety belt around somebody.

stratocumulus /ˌstrætəˈkjuːmləs/ noun a layer of small cumulus clouds lower than altocumulus, i.e. below 3,000 m. ♦ Light rain may fall occasionally from stratocumulus.

stratosphere /ˈstrætəsfɪə/ noun the layer of the atmosphere which extends from the tropopause to about 50 km above mean sea level. ♦ A cumulonimbus cloud may extend vertically, into the stratosphere.

stratus /ˈstrætəs/ noun a low-altitude layer cloud. ♦ Drizzle falls from shallow layer cloud such as stratus.

stream /strɛm/ noun a steady current of a fluid. ♦ Thermocouple probes are positioned in the gas stream, so as to obtain a good average temperature reading.

strength /streŋθ/ noun 1. the ability of a material to take pressure or support a load. ♦ Aircraft wheels require great strength and are constructed in two halves which are bolted together after the tyre is fitted. ♦ Magnesium does not
possess sufficient strength in its pure state for structural uses, but when mixed with zinc, aluminium, and manganese it produces an alloy having the highest strength-to-weight ratio of any of the commonly used metals. • high-strength materials materials which are very strong 2, the degree of clarity and volume of a signal 3, A radio wave loses strength as range increases. 3, the degree of dilution of a liquid 4, Incorrect mixture strength may cause detonation. 4, intensity of radiation 5, The strength of the sun’s radiation varies with latitude.

strengthen  /ˈstreŋθn/ verb to make strong or stronger 6, Some alloys are hardened and strengthened by heat treatment. 7, the wind is strengthening the wind is increasing in speed

strengthening  /ˈstreŋθ(ɪ)n/ noun 1, the act of making stronger 2, Aircraft which require large apertures in the fuselage for freight doors, etc., need increased strengthening around these areas. 2, the fact of becoming stronger 3, strengthening of the wind

stress  /stres/ noun 1, the load per unit area to which a body that resists distortion or change of shape is subjected by internal forces 2, Turbine blades in the average jet engine vibrate at frequencies of 1 million per minute, and in each cycle experience stress. 2, a worried, anxious and tired state brought on e.g. by overwork 3, He gave stress as the reason for wanting a week off work. 3, emphasis 4, verb to emphasise 5, It must be stressed that the description is a model and departures from it often occur.

stretch  /stretʃ/ noun a continuous unbroken length 6, A stretch of coast 7, verb to extend or enlarge beyond the proper limits 8, Tensile stress or tension is the resistance of a material to being stretched.

stretching  /ˈstreŋθɪŋ/ noun extending or enlarging beyond the proper limits 2, Tensile stress is the resistance to pulling apart, or stretching, produced when two forces in opposition act along the same straight line.

strict  /strɪkt/ adjective precise, exact 6, Fuels for aircraft must conform to strict requirements. 6, All generator volatages, frequencies and their phase sequence must be within very strict limits to ensure proper system operation.

strike  /strɪk/ noun an impact or collision 7, verb to hit (NOTE: striking – struck)

stringer  /ˈstrɪŋər/ noun a thin metal or wood strip which goes from one end of the fuselage to the other 8, Strings are made of a light alloy material.

strip  /strip/ noun a long narrow piece, usually of the same width from end to end 9, a strip of paper 10, verb to dismantle 11, After the collision, the engine was stripped down to its component parts.

stroke  /strʊk/ noun any of a series of movements of a piston from one end of the limit of its movement to another 12, The connecting rod links the piston to the crankshaft.

structural  /ˈstrɛktʃərəl/ adjective referring to the structure of something such as an aircraft 13, As laid down in the flight manual, the structural limitations must never be exceeded. 14, structural failure a breaking of part of the aircraft structure

structure  /ˈstrɛktʃər/ noun 1, something constructed 2, Aircraft structure serves the same purpose for an aircraft as the skeleton for a human body. 2, framework

strut  /strʌt/ noun a bar or rod used to strengthen a structure against forces from the side 15, A strut is designed to withstand compressive loads.

stub  /stʌb/ noun a short rectangular extension 16, The plan-form of a military air traffic zone is in the shape of a circle with a stub.

sub-  /səb/ prefix 1, of less importance in rank 2, below

sub-beam  /ˈsəb biːm/ noun a less important or minor beam 17, A lobe is one...
subject 222

of two, four or more sub-beams that form a directional radar beam.

subject /'səb'dʒekt/ noun a topic or matter for discussion or study o A knowledge and understanding of the subject of ice accretion is essential in order that the hazard can be minimised.

subjected /'səb'dʒektɪd/ adjective o subjected to affected by or made to experience something o To maintain the pressure difference between two internal engine sections, which are subjected to air pressures of different value, a multi-air seal is used. (NOTE: There is an important difference between subject to and subjected to.)

subject to /'səb'dʒektɪ tu/ adjective likely to be affected by, liable to o The airspeed indicator is subject to error. o Turbine engines are subject to icing during flight through super-cooled droplet cloud. 1 verb to subject to to make something or somebody experience something, often something unpleasant o The aircraft was subjected to rigorous tests.

subjective /'səb'dʒektɪv/ adjective (NOTE: There is a material of a particular sort o Specific heat is the amount of heat required to raise the temperature of a substance by 1°C (Celsius) compared to the amount of heat required to raise the temperature of water by 1°C.

substantial /'səb'stænʃəl/ adjective considerable, important o substantial damage a lot of damage o substantial increase a big increase

subtend /'səb'tend/ verb to be opposite to and delimit o The angle subtended by an arc equal to one 360th part of the circumference of a circle is called 1° (degree).

subtract /'səbtrakt/ verb to deduct or to take away o 6 subtracted from 10 equals 4 (10 – 6 = 4).

subtraction /'səbtrakʃən/ noun the operation of taking away or deducting o The major arithmetic operations are addition, subtraction, multiplication and division.

subtropical /'səb'trɒpɪk(ə)l/ adjective referring to the areas between the tropics and the temperate zone o In winter, the subtropical high retreats and gives way to cyclonic pressure patterns.

sub-zero /'səb ˈziərəʊ/ adjective below zero degrees o In sub-zero conditions sublimation will occur when air is cooled below the frost point, producing a deposit of ice crystals.

success /'sək'ses/ noun the achievement of something wanted o The key to
success in navigation is pre-flight planning.
successful /ˈsʌks(ə)ʃəl/ adjective satisfactory, as wanted. His second attempt at landing was successful.
succession /ˈsʌks(ə)ʃən/ noun the process of following in a particular order. A succession of minor incidents created a more serious situation.
succesive /ˈsʌks(ə)svɪsɪv/ adjective following one after the other without interruption. All aircraft remained grounded for three successive days because of fog.
such /sʌf/ adjective 1. of this kind. An example of such a chart is shown on page 3. 2. of a large enough extent or amount. The height of the cabin floor to the ground on large jet transports is such that serious injuries can occur by exiting through the doors when steps or ramps are not available.
suction /ˈsʌkʃən/ noun a force that causes a fluid or solid to be drawn into a space because of the difference between the external and internal pressures. In a fuel injection system, fuel is induced into the inlet port or combustion chamber by a pump rather than the suction caused by the venturi of a carburettor.
sudden /ˈsʌd(ə)n/ adjective immediate and without warning. A sudden change or sudden drop in temperature.
suffer /ˈsʌfər, ˈsʌfər from/ verb to be affected by, to experience. Piston engines suffer from icing in moist air when the ambient air temperature is well above 0°C (Celsius).
sufficient /ˈsʌfɪʃ(ə)n/ adjective enough. During pre-flight checks, the pilot must ensure that there is sufficient fuel for the flight.
suffix /ˈsʌfɪks/ noun an addition to the end of a word creating a new word. Apart from cirrus and stratus, which are complete names, all layer cloud names consist of a prefix according to height of base, and a suffix according to shape. (NOTE: In the word cloudless, -less is the suffix meaning without.)
suggest /ˈsəʊdʒest/ verb 1. to indicate a possibility. A strong cloud echo on radar suggests that hailstones are present. 2. to mean, to imply. Heap clouds, as the name suggests, often have great vertical extent.
suit /sju:t/ verb to meet the requirements of. On some engines, the ignition can be varied as the engine is running and is moved to suit the engine speed and load.
suitable /ˈsuːtəb(ə)l/ adjective appropriate or right for a particular purpose. Taking into account the limits imposed by aircraft performance, a suitable route must be chosen.
sulphur /ˈsʌlfər/ noun US same as sulphur.
sulphur /ˈsʌlfər/ noun a yellow non-metallic chemical element. Turbine fuels tend to corrode the components of the fuel and combustion systems mainly as a result of the sulphur and water content of the fuel. (NOTE: The atomic number of sulphur is 16.)
sun /sʌn/ noun the result of two or more numbers added together. When the component velocities act in the same direction, the resultant velocity is equal to the sum of their speeds in that direction.
summarise /ˈsʌməraɪz/, summarise verb to present something in a shortened, concise form. The effects of ice deposits on aircraft can be summarised as follows.
summary /ˈsʌmərɪ/ noun a brief account of something more detailed. At the end of each chapter there is a summary.
sump /sʌmp/ noun the oil reservoir of a piston engine situated at its base. The oil level in the sump or tank is normally checked after the engine has been stopped for a particular length of time.
sun /sʌn/ noun a very bright star around which the Earth travels and which gives light and heat. The sun was just rising when we landed. The sun and the planets governed by the sun form the solar system. solar
sunrise /ˈsʌnraɪz/ noun the time when the upper edge of the sun appears on the visible horizon. Abbreviation SR

supernormal /suːˈpɜːnɔrəl/ noun a certificate issued by an airworthiness authority to indicate that a modification to an aircraft or engine design has been approved. Abbreviation STC

sunset /ˈsʌnset/ noun the time when the upper edge of the sun just disappears over the horizon. Abbreviation SS

super- /ˈsjuːpər/ prefix more than normal

supercapacitor /ˈsjuːpərkeɪpəˈsɪdər/ noun a supercharger (ES) A supercharged engine delivers greater power than a non-supercarged engine of the same size.

supercharger /ˈsjuːpərkeɪpəˈsɪdər/ noun a blower or compressor, usually driven by the engine, for supplying air under high pressure to the cylinders of an internal combustion engine. The function of the supercharger is to increase the power output and maintain sea-level conditions at altitude.

super-cooled /ˈsjuːpərkoʊld/ noun supercooled fog is necessary to reduce the effect of kinetic heating.

superimposed /ˈsjuːpərɪmˈpɔʊzd/ verb to add to in order to make more complete

sunset /ˈsʌnset/ noun the time when the upper edge of the sun appears over the horizon. Abbreviation SS

support /ˈsərˈpɔːst/ noun 1. a device to hold something in position. 2. practical assistance — verb to bear the weight of. The wings support the aircraft in flight.

supplementary /ˌsəpləˈmentəri/ noun an angle that, when added to a given angle, makes 180°

supplemental /ˌsəpləˈmentəl/ adjective extra or additional

supplemental type certificate /ˌsəpləˈmentəl tuːtɨt ˈcertɪfɪkət/ noun a certificate issued by an airworthiness authority to indicate that a modification to an aircraft or engine design has been approved. Abbreviation STC

supervisory /ˌsəpəˈvaɪzəri/ noun a person in charge — verb to lay or to place something over

sunrise /ˈsʌnraɪz/ noun the time when the upper edge of the sun appears on the visible horizon. Abbreviation SR

supercapacitor /ˈsjuːpərkeɪpəˈsɪdər/ noun a certificate issued by an airworthiness authority to indicate that a modification to an aircraft or engine design has been approved. Abbreviation STC

support /ˈsərˈpɔːst/ noun 1. a device to hold something in position. 2. practical assistance — verb to bear the weight of. The wings support the aircraft in flight.

support facilities /ˈsərˈpɔːst ˈfɪlɪtɪz/ plural noun equipment and buildings used by ground staff when working on aircraft at an airport

support services /ˈsərˈpɔːst ˈsɜːrvɪsɪz/ plural noun services provided to an aircraft while it is at an airport

suppress /ˈsərˈpres/ verb 1. to prevent the development or spreading of something — the fire crew suppressed the fire the fire crew brought the fire under control 2. to prevent electrical interference from affecting a radio signal — R/T noise interference can be suppressed.

suppressed antenna /ˈsərˈprest əˈtenə/ noun an antenna which is mounted under the airframe skin. Static interference can be reduced by installing suppressed antennas.

suppression /ˈsərˈpreʃən/ noun 1. the prevention of the development or spreading of something — a fire suppress-...
suppressor /soʊˈpresər/ noun a device used in an electrical or electronic system to reduce unwanted currents, e.g. a resistor or grid. A suppressor improves the quality of the signal.

surface /ˈsaʊfɪs/ noun 1. an outer covering of something, or the top part of something — the surface of the wing 2. the Earth’s surface or ground

surface air temperature /ˈsaʊfɪs ˈɛəˌtɛmpərətʃə/ noun the temperature recorded in the shade at a height just above ground level

surface front /ˈsaʊfɪs frʌnt/ noun a weather front at the surface of the earth. The cirrus cloud can be 900 miles ahead of the surface front with a rain belt as wide as 200 miles.

surface heating /ˈsaʊfɪs ˈhaɪtɪŋ/ noun the heating of the ground by the sun

surface movement radar noun a type of radar used at airports to monitor aircraft traffic on the ground. Abbreviation SMR

surface synoptic chart /ˈsaʊfɪs ˈsaɪ.nəptɪk ˈʃɑːrt/ noun a chart of a geographical area with symbols, fronts and isobars giving a representation of the weather over the area at a particular time

surface tension /ˈsaʊfɪs ˈtenʃən/ noun the tension of the surface film of a liquid

surface wind /ˈsaʊfɪs wɪnd/ noun a wind which blows across the land surface

surge /ˈsɜːrdʒ/ noun a sudden increase in something such as electrical power — engine surge instability in the power output of an engine. The airflow will reverse in direction and surge forward through the compressor.

surplus /ˈsaʊpəls/ adjective excess, more than is needed. Fuel penalties can be incurred if fuel surplus to requirements is carried.

surround /ˈsaʊraʊnd/ noun something which encloses or borders. The design of windows, hatches or door surrounds is very critical. To encircle or to enclose. The Earth is surrounded by the atmosphere.

surveillance /ˈsaʊvləns/ noun the act of watching or monitoring

surveillance radar /ˈsaʊvləns ˈreɪdər/ noun primary radar scanning, often through 360°

survey noun /ˈsɜːvɪv/ a detailed examination. An aerodrome meteorological office maintains a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts. To determine the boundaries, area, or elevations of land by means of measuring angles and distances. Take care when using wooded areas to fix position because the cutting down of trees may have led to a change in shape since the map was made.

survival /ˈsaʊərˈveɪəl/ noun the fact of remaining alive after an accident. The survival of passengers in the sea depends on rapid location and rescue. …survival training is a vital element of all aircrew knowledge. Just because modern aircraft are more reliable than their predecessors, the need for such training does not diminish. [Civil Aviation Training]

survival beacon /ˈsaʊərˈveɪəl ˈbɪʃən/ noun a beacon which transmits a signal which enables search aircraft to locate survivors in the water. VHF and/or UHF survival beacons are carried on all jet transports.

survivor /ˈsaʊərˈvɪvər/ noun a person who continues to live after an accident. Whilst awaiting rescue on land or at sea, survivors should avoid exposure and conserve energy. The aircraft crashed into the sea and there were no survivors.

susceptible /ˈsəskeptəbəl/ adjective prone to, likely to be affected by. A rough surface is more susceptible to fatigue cracking than a smooth one, and for this reason highly stressed members are often polished.
suspect

**suspect** adjective /ˈsæspekt/ referring to something believed to be causing problems. ~ The magnetic flaw detection technique is to induce a magnetic field in the suspect part and then to brush over it an ink containing a magnetic powder. ~ verb /ˈsæspekt/ to believe to be the case ~ If fuel contamination by water is suspected, a sample of fuel should be drained from the tank for inspection.

**sustain** verb 1. to continue, to maintain ~ For sustained supersonic flight, some measure of tank insulation is necessary to reduce the effect of kinetic heating. 2. to receive, experience or suffer ~ The aircraft sustained major damage in the crash. ~ The pilot sustained minor injuries.

**sweep** verb to move across quickly and with force ~ Cold arctic air sweeps over North America in winter.

**sweepback** noun an aircraft wing that slopes backwards towards the tail, forming an acute angle with the body of the aircraft

**swell** noun a long wave on water that moves continuously without breaking ~ When ditching an aircraft the selection of a landing direction which will result in the minimum relative speed between the aircraft and sea swell will reduce impact forces and minimise structural damage.

**sweptback** adjective referring to a wing that slopes backwards towards the tail of the aircraft

**swing** verb 1. to move from side to side with some force. ~ There is often a tendency for a propeller driven aircraft to swing or yaw on take-off. 2. ~ to swing a compass to calibrate compass deviation by recording its value on a compass base while rotating the aircraft through 360°. 3. ~ to swing a propeller to turn a propeller by hand to start the engine

**swirl** noun a movement with a twisting motion ~ Swirls of smoke came out of the engine.

**swirl chamber** noun a small chamber in the cylinder head to promote swirl ~ The usual method of atomising the fuel is to pass it through a swirl chamber, so converting its pressure energy to kinetic energy.

**switch** verb 1. to start to provide power to a system by using a switch ~ Switch on the light. 2. ~ to switch off to disconnect the power supply to a device or system ~ Switch off the navigation lights.

**symbol** noun a printed or written sign used to represent something ~ The work done by an electrical circuit or the power consumed is measured in watts and is given the symbol P.

**symbolic** adjective referring to symbols ~ A symbolic code is used for synoptic charts.

**symmetric** adjective referring to something which has an exact likeness of form on opposite sides of a central dividing line ~ The area covered by the forecast is divided into a series of grid or reference points at approximately 300 km (kilometres) symmetrical spacing.

**symptom** noun a sign or indication of something, possibly a
Buffet caused by turbulent airflow acting on the tailplane is one of the first symptoms of the approaching stall.

**synchronisation** /sɪŋkrənɪˈzeɪʃən/, **synchronization** noun occurrence at the same time or rate. Prior to engagement, when the aircraft is being flown manually, the autopilot system will be following the aircraft flight attitude, thus ensuring that synchronisation is achieved.

**synchronise** /sɪŋkrənaɪz/, **synchonise** verb to cause to occur or operate at the same time or rate. The aircraft must be trimmed for the desired flight attitude before engaging the autopilot, which must be synchronised to maintain that attitude when it is engaged.

**synchronous** /sɪŋkrənəs/, **synchronous** adjective referring to something operating at the same time or rate. Synchronous motors will run at constant speed and are small and light in weight.

**synoptic** /sɪnˈɒptɪk/ adjective referring to something which gives a brief outline or general view of something more complex. With the addition of fronts and isobars, the synoptic chart provides a representation of the weather over a large area, at a particular time.

**synthetic** /sɪnˈθetɪk/ adjective not natural, artificial. Mineral-based fluids are normally coloured red, and must be used with synthetic rubber seals and hoses.

**system** /ˈsɪstəm/ noun a group of interdependent parts forming and operating as a whole. An electrical system.
tab /ˈteɪb/ noun the hinged rear part of flight control surface used for trimming.  
Trim tabs remove the pilot’s control loads by aerodynamically holding the control surface in the required position.

table /ˈteɪb(ə)l/ noun a set of facts or figures displayed in columns and rows.  
Charts are issued at UK meteorological offices and show, for selected locations, a table of winds and temperatures at selected flight levels.

 Indonesian /ˈteɪbjuələr/ adjective in tabular form.  
The most widely acceptable presentation of fuel data is in tabular form but graphical presentations may also be used.

Tacan /ˈtækən/ noun an aircraft navigation system that uses UHF signals from a transmitting station for distance and bearing.  
Full form Tactical area navigation aid.

tachometer /ˈtækmətər/ noun an instrument for the measurement of revolutions per minute of a rotating shaft.  
The pilot checks the tachometer and notes the resulting drop in r.p.m. for each magneto.

TAF abbreviation 1. terminal aerodrome forecast 2. aerodrome forecast (ICAO).

tail /ˈteɪl/ noun the rear part of the aircraft.  
The tail section is the aft part of the fuselage to which is fitted the tail unit, comprising the tailplane, elevators, fins and rudders.

tail assembly /ˈteɪl əˈsembli/ noun the aft part of the fuselage with the fin and rudder, tailplane and elevators attached.

tail-dragger /ˈteɪl ˌdræɡər/ noun same as tailwheel aircraft (informal).

tailplane /ˈteɪlpəln/ noun a horizontal stabiliser, a horizontal aerofoil at the rear of the aircraft.  
On most high performance aircraft the incidence of the horizontal stabiliser (or tailplane) can be varied in flight.

tail rotor /ˈteɪl ˌruːtər/ noun a small rotor on the tail of a helicopter that prevents the helicopter from spinning in the direction opposite to the rotation of the main rotor.

tailskid /ˈteɪlskɪd/ noun a support or runner on the underside of the tail of an aircraft.

tailspin /ˈteɪlspɪn/ noun a rapid and uncontrolled spiral descent of an aircraft.

tail unit /ˈteɪl ˌjuːnɪt/ noun the rear part of the aircraft, usually consisting of the fin and tailplane.

tailwheel /ˈteɪlwɪdl/ noun a small wheel under the tail of an aircraft.  
Compare nosewheel.

tailwheel aircraft /ˈteɪlwɪdl ˌeəkrɑːft/ noun aircraft with a small wheel at the tail instead of a nosewheel.  
Also called tail-dragger.

tailwheel conversion course /ˈteɪlwɪdl kənˈvɜːʃən/ noun a course which familiarises qualified pilots with the differences in handling characteristics between nosewheel and tailwheel aircraft.

tailwind /ˈteɪlwɪnd/ noun a wind which is blowing in the same direction as the direction of movement or flight.  
Because of the tailwind, the flight took only six hours.  
Compare headwind.
take off /ˈteɪk ˈɒf/ verb to leave the ground. When flying speed is reached the aeroplane takes off.

take-off /ˈteɪk əf/, takeoff /ˈteɪkəf/ noun the procedure when an aircraft leaves the ground. The aircraft has to accelerate before take-off. There is a tendency for propeller driven aircraft to swing or yaw on take-off. Abbreviation TO T/O

take-off run /ˈteɪk əf ,rʌn/ noun the distance from the start of take-off to the point where the wheels leave the ground. Acceleration forces can be felt as the aircraft begins its take-off run.

take-off weight /ˈteɪk əf ,weɪt/ noun the weight of an aircraft at take-off, made up of its empty weight, plus the weight of its passengers, freight and fuel.

talk down /ˈtɑːlk ˈdaʊn/ verb to give advice to a pilot by radio on how to land an aircraft.

tan abbreviation tangent

tangent /ˈtændʒənt/ noun a straight line, curve or surface which meets another curve or curved surface at a point, but which, if extended, does not cut through at that point. The glide path is at a tangent to the runway. Abbreviation tan.

tangential /ˈtæŋdʒənʃəl/ adjective positioned at a tangent to something else.

tank /ˈtæŋk/ noun a large container for storing fluid. An aluminium alloy fuel tank is housed in each wing.

taper /ˈteɪpər/ verb to reduce in thickness towards one end. Fuel flowing from the float chamber passes through a jet, in which is positioned a tapered needle valve.

tapered wing /ˈteɪpərd wɪŋ/ noun a wing which becomes narrower in width from root to tip.

target /ˈtærɪt/ noun the indication shown on a radar screen resulting from a primary radar return or a radar beacon reply. In a secondary radar system, the target is active.

tarmac /ˈtɑːmək/ noun the runway and taxiways of an airport. They were working fast to clear the snow from the tarmac.

TAS abbreviation true airspeed

task /tæsk/ noun a function or duty. Present day transport aircraft are required to fly accurately, in all weather, for long distances or long periods of time and, in order to carry out this task efficiently, an autopilot is used.

taxi /ˈteksɪ/ verb to move an aircraft along the ground under its own power before take-off or after landing. Light aircraft can be steered while taxiing via a direct link from rudder pedals to the nosewheel. (NOTE: taxies – taxiing – taxied; the US English is taxiing.)

taxiing /ˈteksɪnɪŋ/ noun the movement of an aircraft along the ground under its own power before take-off or after landing. The taxing of tail-wheel aircraft is more difficult than nosewheel aircraft. (NOTE: The US spelling is also taxiing.)

taxiway /ˈteksɪweɪ/ noun a tarmac surface connecting the ramp or apron with the runway or an airfield, i.e. an area given over to runways, taxiways and aprons.

TCA abbreviation terminal control area

TCAS abbreviation traffic alert and collision avoidance system

TCDS abbreviation type certificate data sheet

technical /ˈteknɪkl/ adjective 1. referring to mechanical subjects or applied sciences. A technical education 2. referring to the mechanical, electrical, hydraulic or pneumatic systems of an aircraft. A technical problem with the aircraft prevented it from taking off on time.

technique /ˈtekˈnɪk/ noun a special method for doing something. The preparation of charts is done by computer using numerical forecasting techniques.

technology /ˈteknələdʒi/ noun the study and use of the mechanical arts or applied sciences. New technology new electronic equipment. The use of fly-by-wire in airliners was delayed to allow thorough development and
encourage universal acceptance of the new technology.

**TEHP**  
abbreviation total equivalent horsepower

telemetry /ˈtelemətri/ noun the work of recording and transmitting data about an object situated at a distance from the observer

**TEMP** /ˈtemp/ abbreviation temperature

temperate /ˈtempərət/ adjective mild, not extreme ○ Cold air in temperate latitudes is usually unstable.

temperature /ˈtemprətʃər/ noun a measurement, in degrees, of the intensity of heat of a body ○ Ground temperature is the temperature recorded by a thermometer placed at ground level. ○ The altitude and temperature of the tropopause are of concern to aircrew.

temperature error /ˈtemprətʃər ərə/ noun the variation in pressure altitude caused by a deviation of temperature from ISA

tempo /ˈtempəʊ/ noun the speed of an activity ○ The flow of passengers to exits and tempo of evacuation will be influenced by the number of exits available.

**TEMO** /ˈtempəʊ/ abbreviation temporary (ICAO)

temporary /ˈtempərəri/ adjective lasting for a short time, not permanent ○ The indicator ‘tempo’, followed by a 4-figure time group indicates a period of temporary fluctuations to the forecast meteorological conditions which may occur at any time during the period given. Opposite **permanent**

tend /tend/ verb to be apt or inclined to do something more often than not ○ Dpressions tend to move around large anticyclones following the circulation of wind. ○ the weather tends to be wet in the UK in the winter the weather is often, but not always, wet

tendency /ˈtendənsi/ noun an inclination, situation or condition which occurs more often than not ○ There is a tendency for propeller-driven aircraft to swing or yaw on take-off. ○ he has a tendency to be late he is often late ○ he has a tendency to forget things he is forgetful

tensile /ˈtenzəl/ adjective referring to stretching or pulling out ○ Reinforced plastic may have to support a tensile load, a compressive load or a bending load.

tensile load /ˈtenzəl ləʊd/ noun the load caused by forces acting in opposite directions away from each other

tensile strength /ˈtenzəl strɛŋθ/ noun the strength of a structure to resist forces pulling it apart from opposite directions

tensile stress /ˈtenzəl stres/ noun the forces that try to pull a structure apart from opposite directions

tension /ˈtenʃən/ noun a strained condition resulting from forces acting in opposition to each other ○ A rod which is bent is shortened or in compression on the inside of the bend and is stretched or in tension on the outside of the bend.

term /ˈtɜːrm/ noun 1. a word or expression ○ The term ‘payload’ includes passengers, baggage and freight. 2. a limited period of time ○ a 5 year term a period of 5 years ○ in the long term when considering a long period of time ○ short term forecast a weather forecast for the next few hours only

terminal /ˈtɜːrnəl/ adjective referring to a limit or to a final point ○ noun 1. the departure and/or arrival building at an airport ○ The flight leaves from terminal three at Heathrow airport. 2. an electrical connection point ○ The negative terminal of the battery is marked -.

terminal aerodrome forecast /ˈtɜːrnəl əˈɛərdroʊm ˈfɔːkast/ noun the weather forecast for the area around an aerodrome ○ In terminal aerodrome forecasts, the height of the cloud base forecast is above airfield level unless otherwise stated. Abbreviation TAF

COMMENT: TAFs are scheduled four times daily for 24-hour periods beginning at 0000Z, 0600Z, 1200Z, and 1800Z.
terminal airfield /ˈtɜːmɪnl/ noun the airfield at which a flight finishes

terminal area forecast /ˈtɜːmɪnəl/ noun the weather forecast for the area around an airport. Abbreviation TAF

terminal control area /ˈtɜːrɪnəl/ noun an air traffic control area established at the meeting place of a number of routes near one or more major airports. In some areas where there is a local concentration of traffic, terminal control areas are set up. Abbreviation TCA, TMA

terminate /ˈtɜːmɪneɪt/ verb to end, or to bring to a close. The flight terminates in New York. The transmission terminated abruptly.

test /tɛst/ noun 1. a series of operations to find out if something is working well. The manual test for the engine fire warning system will give a steady red light on all the fire control handles. 2. an examination to assess the knowledge of a person. There is a navigation test for students at 0800 hours. noun a pilot who flies new aircraft in order to check their performance. Abbreviation TGT abbreviation turbine gas temperature

theory /ˈθɪəri/ noun a system of ideas or principles explaining something. The theory of navigation must be studied before any practical plotting exercises are done.

test pilot /ˈtɛst pələt/ noun a pilot

thermal activity /ˈθɜːrməl/ noun 1. caused by heating. There is a lot of vertical movement of air caused by heating. 2. Intense surface heating creates thermal currents to develop and create convection. noun a rising current of relatively warm air in the lower atmosphere. noun Glider pilots circle in thermals in order to gain height.

tertiary /ˈterəri/ adjective referring to something which is third in order of rank, behind primary and secondary. Tertiary radar systems are synonymous with long-range navigation aids. noun the ideas and principles which contribute to our understanding of how things fly. noun Air traffic is given in metres up to 5,000 metres and thereafter in km (kilometres).

therefore /ˈðeərəfɔ/ adverb by that means or in that way. The evacuation was carried out at a slower rate, thereby minimising the risk of injury to passengers.

thermals /ˈθɜːrməlz/ noun 1. caused by heating. Thermals in order to gain height. 2. Intense surface heating creates thermal currents to develop and create convection.

terrain /ˈteɪrɪn/ noun land, especially in relation to its physical geography. Special attention should be paid to wind flow when flights are made over hills or mountainous terrain.

tertiary radar /ˈteɪrəri ˈreɪdər/ noun long-range navigation aids

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thermal barrier

may develop because of thermal activity resulting from the warming of the surface.

thermal barrier /ˈθɜːrməl ˈbærɪər/ noun the heat caused by air friction on an aircraft flying at high speed

thermo- /θɜːməʊ/ prefix heat

thermocouple /ˈθɜːmsəʊkəp/ noun a device for measuring temperature. Variation in temperature of the cooling air will give some indication of engine trouble through a thermocouple system to a temperature gauge.

thermodynamic /ˈθɜːmədəʊm/ adjective referring to the conversion of one form of energy into another and how this affects temperature, pressure, volume, mechanical action and work

thermometer /θɜːməˈmɔːtər/ noun an instrument for measuring temperature. Ground temperature is the temperature recorded by a thermometer placed at ground level.

thermoplastic /ˈθɜːmpəˈplæstɪk/ noun a type of plastic which can be softened by heating then shaped, then softened again by heating

thermosetting /θɜːməˈsetɪŋ/ adjective a type of plastic which is heated while being shaped but which cannot be softened by reheating. If a piece of thermosetting plastic is hit hard enough, it breaks into pieces with straight sharp edges.

thick /θɪk/ adjective 1. of great or particular extent between two surfaces. a 1cm thick steel bar. This sheet of aluminium is not very thick. 2. with a large diameter. a thick wire. 3. dense. a thick fog. 4. thick cloud.

thickness /θɪkˈnæs/ noun 1. the extent between two surfaces. In monocoque construction, there is no internal stiffening because the thickness of the skin gives strength and stability. 2. the extent of the diameter of a wire. 3. the state or condition of being thick.

thin /θɪn/ adjective 1. of small extent between two surfaces. a thin layer of paint. 2. with a small diameter. a thin wire. not dense. thin mist. Altostratus cloud is thin enough for the sun to be dimly visible. 4. of a consistency which flows easily. thin oil. Opposite thick

thorough /ˈθɜːrəʊ/ adjective complete. All cabin crew must have a thorough knowledge of fire fighting equipment and procedures. a thorough inspection.

THP abbreviation thrust horsepower

three-letter group /ˌθriː/ˈleɪtər ˈgrʊp/ noun three letters of the alphabet found together

three-point landing /ˌθriː/ˈpɔɪnt ˈlændɪŋ/ noun an aircraft landing in which the two main wheels of the landing gear and the nosewheel or tailwheel touch the ground at the same time.

threshold /ˈθrɛʃəʊld/ noun the beginning of the part of the runway usable for landing. Runway visual range is obtained by an observer standing at the side of the runway in the vicinity of the threshold counting the number of markers or lights visible along the side of the runway.

COMMENT: The threshold is marked with a single white line on visual runways or by eight parallel white lines arranged longitudinally in two groups of four each side of the runway centreline for runways with instrument approach/landing facilities.

throttle /ˈθrəʊt(ə)/ noun 1. a throttle lever. 2. a throttle valve. a verb. to throttle back. to reduce engine power. Throttle back to increase the rate of descent.

COMMENT: The verbs 'open' or 'advance' (= to increase engine power) and 'close' or 'throttle back' (= to decrease engine power) are frequently used by instructors to explain the required movement of the throttle lever in the cockpit.

throttle lever /ˈθrəʊt(ə) ˈlɪvər/ noun a device operating the throttle valve.
When starting an engine, it is inadvisable to pump the throttle lever because of the risk of fire.

throttle 

quadrant /θrəʊt(ə)rənd/ noun an arc-shaped device in which the throttle levers move

throttle 

setting /θrəʊt(ə)l ˈsetɪŋ/ noun the particular position of the throttle which gives a required revolutions per minute or power

throttle 

valve /θrəʊt(ə)l ˈvælv/ noun a device controlling the flow of fuel in an engine

throughout /θrəʊt/ adverb from the beginning to the end of a time or place ◁ Emergency lighting is provided throughout the cabin. ◁ Heavy snow fell throughout the night. ◁ throughout the life of the aircraft during the entire life of the aircraft ◁ throughout the world all over the world ◁ throughout the year from January 1st to December 31st

thrust /θrʌst/ noun a force produced by a propeller, jet or rocket ◁ A propeller is a means of converting engine power into a propulsive force known as thrust. ◁ In order for the aircraft to increase speed, thrust must overcome drag. ◁ reversal, reverser ◁ verb to push suddenly with force ◁ A nozzle is an opening at the rear of a jet engine through which exhaust gases are thrust. (Note: thrusting – thrust)

thrust 

horsepower /θraʊstˈhɔrspaʊə/ noun the amount of horsepower of an engine that is transformed into thrust. Abbreviation THP

thrust 

reversal /θraʊst ˈrɪvərsoʊl/ noun setting of throttle levers to provide thrust in the opposite direction to decelerate the aircraft after landing

thunder /ˈθʌndər/ noun the noise created by the violent expansion and contraction of air momentarily heated by a lightning discharge ◁ Thunder immediately following the flash of lightning usually indicates that the storm is overhead.

thunderstorm /ˈθʌndəstɔːm/ noun a violent weather condition in which wind speeds increase, rain or hail falls and there is lightning activity ◁ Thunderstorms occur in well-developed cumulonimbus clouds. ◁ The process of formation, development and decay of a thunderstorm.

thunderstorm 

activity /ˈθʌndəstɔːm əkˈtɪvəti/ noun the occurrence of weather conditions associated with thunderstorms, such as rain, thunder, wind or lightning.

timetable /ˈtɪmətɪb(ə)l/ noun a printed list which shows the times of departure from and arrival to various destinations ◁ All the scheduled flights are listed in the airline timetable.

timetabled /ˈtɪmətəb(ə)ld/ adjective listed in a timetable ◁ A scheduled landing is an arrival at a timetabled destination.

time zone /ˈtaɪm zɔʊn/ noun one of the 24 parts of the Earth in which the same standard time is used

tip /ˈtɪp/ noun the end of a small or tapering thing

tire /ˈtaɪər/ noun US same as tyre
titanium /ˌtaɪˈtəniəm/ noun a light metal used to make strong alloys. The fatigue resistance of titanium is greater than that of aluminium or steel.

TKOF abbreviation take off (ICAO)

TMA abbreviation terminal control area

T/O, TO abbreviation take off

toggle /ˈtɒgl/ noun a short piece of wood or other material, attached with a string to e.g. a life jacket. Pull the toggle downwards to inflate the life jacket.

toilet /ˈtɒli/ noun 1. a bowl with a seat on which you sit to get rid of waste from your body. 2. a room or cubicle with a toilet bowl in it. There are two toilets at the rear of the plane and one at the front.

tolerance /ˈtolərəns/ noun an allowable variation in something which can be measured. a tolerance of 2° or tolerance of 1mm (millimetre)

tone /ˈtəʊn/ noun a sound of one pitch. The ground transmits a code in two short bursts each of which is modulated with two tones.

tool kit /ˈtʊlkɪt/ noun a set of tools consisting of spanners, screwdrivers, pliers, etc.

top /tɒp/ noun the highest point or part of something. It cannot be avoided then flight. The top is less hazardous than through the centre or bottom of the cloud.

top-dead-centre /ˈtɒp ˈdeɪd ˈsentə/ noun the position of the piston at the extreme top of its stroke in a piston engine. Ignition should occur just before top-dead-centre.

topic /ˈtɒpɪk/ noun the subject of something heard, said, written or read. The first section in the book deals with the topic of airmanship.

topographical /ˌtɒpəˈɡræfɪk/ adjective referring to topography. An advantage of using airfield QNH is that altimeter readings can be compared directly with heights represented on topographical maps.

topography /ˌtɒpəˈɡræfi/ noun 1. a representation of detailed natural and man-made features of the Earth’s surface as represented on a map. The chart shows the topography of the area. 2. relative elevations of the Earth’s surface, or features of a geographical area. The general circulation is complicated because the Earth tilts and its surface is neither level, because of topography, nor uniform due to areas of land and sea.

tornado /ˈtaːnədaʊ/ noun a violent storm of small extent, with rotating winds. The winds of a tornado are of hurricane force.

torque /tɔrk/ noun a moment of forces causing rotation. Torque forces try to bend the propeller against the direction of rotation. High currents flowing through both the field and armature windings producing the high torque required for engine starting.

torquemeter /ˈtɔrkmiːtər/ noun a device for measuring forces (torque) causing rotation. Engine torque is used to indicate the power that is developed by a turboprop engine, and the indicator is known as a torquemeter.

torsion /ˈtɔrʃən/ noun twisting, especially of one end of a body while the other is fixed. Rivets are subjected to torsion and may break.

torsion load /ˈtɔrʃən ləʊd/ noun the load caused by twisting of a structure.

total /ˈtəʊtl/ adjective complete, whole. Of the total amount of radiation emitted by the sun, the Earth receives only a very small part. Total system failure complete system failure. Total seating capacity the maximum number of passengers who can be accommodated on seats.

touch down /ˈtʌʃ daʊn/ verb to make controlled contact with the landing surface after a flight. If the atmospheric pressure at an airfield is 1,000 millibars (mb) and that pressure is set on the sub-scale of an aircraft altimeter, when the aircraft touches down at the airfield, the altimeter will read zero.

touchdown /ˈtʌʃdaʊn/ noun the moment, after a flight, when the aircraft makes controlled contact with the land-
ing surface ○ One of the aircraft's tyres burst on touchdown.

touchdown point /ˈtaʊdn poʊnt/ noun the place on the runway where the aircraft undercarriage first touches the ground on landing

tow /təʊ/ verb to pull an aircraft or vehicle using a bar, rope, etc. attached to another aircraft or vehicle ○ The glider was towed into the air by a Rolfaxon Condor.
tower /ˈtaʊər/ noun a tall airport or airfield air traffic control building ○ Wait for permission from the tower before crossing an active runway.

'T' piece adapter /ˈtiː pɪt/ noun a device for connecting two inputs to one output or vice versa

track /træk/ noun a projection on the Earth’s surface of the path of an aircraft, which can be expressed in degrees from north ○ Where an aircraft track and wind direction are the same, there will be a headwind component acting on the aircraft. ○ The actual track does not necessarily follow the planned track and is given the name track made good. ○ verb to follow a line of the flight path of an aircraft, as projected on the Earth surface ○ On final approach, track the imaginary extended centre line of the runway.

tractor /ˈtræktər/ noun 1. an aircraft that has its propeller in front of its engine 2. a propeller in front of an aircraft engine, which has the effect of pulling the aircraft through the air trade winds /ˈtreɪd wɪndz/ plural noun steady winds which blow on the side of the sub-tropical highs nearest to the equator ○ Trade winds maintain their direction over the oceanic areas, especially the Pacific, more than over land areas.

traffic /ˈtræfɪk/ noun the number of aircraft in operation ○ Standard instrument routes are structured to provide the safest and most efficient flow of traffic from entry and exit points to the airfield.

traffic pattern /ˈtræfɪk pæt(ə)rn/ noun 1. the shape marked out on the ground of an aircraft track in the aerodrome circuit 2. the pattern of routes that an aircraft must keep to when approaching or circling an airport

transform /trænzˈfɔːm/ verb to change completely ○ The purpose of an actuator is to transform fluid flow into motion, i.e. it converts pressure energy into mechanical energy. ○ Friction results in some of the power available from a pump being transformed into heat.
**transformer** /trənsˈfɔːmər/ noun a device for changing the voltage or current amplitude of an alternating current signal. Current transformers differ from voltage transformers in that the primary circuit consists of a supply feeder cable rather than a coil connected across a supply.

**transient** /trənzɪnt/ adjective passing or temporary, lasting only a short time.  Transient loads can be absorbed by the bushing with a minimum of voltage fluctuations.

**transit** /trənzɪt/ noun an act of moving in transit moving. A green light indicates the undercarriage is locked down, and a red light is displayed when the undercarriage is in transit.  A transit route a route taken by one aircraft through controlled airspace.

**transition** /trənˈzɪʃən/ noun an act of passing from one place, state or condition to another.

**transition altitude** /trənˈzɪʃən ˈæltɪtjuːd/ noun altitude in the vicinity of an airport, at or below which the vertical position of the aircraft is controlled by reference to altitudes above mean sea level. When a flight takes place above the transition altitude, the standard pressure setting of 1013.25 mb (millibars) is used.

**transition layer** /trənˈzɪʃən ˈleɪər/ noun the airspace between the transition altitude and the transition level. (Note: The depth of this layer will normally be insignificant and will never exceed 500 ft.)

**transition level** /trənˈzɪʃən ˈlevəl/ noun the lowest flight level above the transition altitude.

**transit lounge** /trənˈzɪt ˈləʊndʒ/ noun a room where transit passengers wait for connecting flights.

**transit passenger** /trənˈzɪt ˈpæsɪndʒər/ noun a traveller who is changing from one aircraft to another.

**translation** /trənˈzɪʃən ˈleɪʃən/ noun 1. the movement of an object in a straight line in which every part of the object follows a parallel course and no rotation takes place 2. the act of expressing the meaning of words in one language in words from another language.

**transmission** /trənˈzɪʃn/ noun 1. the sending of a radio signal.  The combination of loop and sense antennae can determine the direction from which a transmission is made.  2. a radio signal that is transmitted.

**transmit** /trənˈzɪt/ verb 1. to pass, to convey. As the camshaft rotates, the cam will transmit a lifting force through rods and pivots to open the valve.  2. to send out a radio signal.  Survival beacons transmit a signal which enables search aircraft to rapidly locate survivors in the water. (Note: transmitting – transmitted)

**transmitter** /trənˈzɪtər/ noun a device for sending out radio signals.  Although continuous wave radars operate continuously, separate transmitter and receiver antennae must be used.  Signal strength is inversely proportional to the distance from the transmitter.

**transparency** /trənˈzrənəs/ noun the condition of being transparent.

**transparent** /trənˈzrənt/ adjective allowing light to pass through so that things can be seen.  Aircraft windows and canopies are usually made from transparent acrylic plastic.

**transponder** /trənˈspɒndər/ noun a device in an aircraft for receiving a radio signal and automatically transmitting a different signal so that an air traffic control station can identify the aircraft.  The transponder in the aircraft comprises a transmitter and a receiver.

‘...flight trials began recently of a low-cost hand-held IFF transponder’ [Pilot] COMMENT: The pilot sets an identification code, or ‘squawk’, assigned by ATC, on the transponder in the aircraft.

**transport** /trənˈspɔːrt/ noun a system for moving people, freight and baggage from one place to another.  On a large
transport aircraft, the safety of hundreds of passengers is involved.

**transport aircraft** /transport /noun/ an aircraft designed to carry ten or more passengers or the equivalent cargo and having a maximum take-off weight greater than 5,670 kg.

**trap** /træp/ **verb** to catch and prevent from escaping. If there is a failure of the pressurised air supply, the check valve will close and trap pressurised air in the cabin. Smog is smoke or pollution trapped on the surface by an inversion of temperature with little or no wind.

**tread** /trɛd/ **noun** a series of patterns moulded into the surface of a tyre to provide grip. The risk of aquaplaning increases as the depth of tyre tread is reduced.

**treat** /trɪt/ **verb** 1. to behave or act towards something or somebody in a particular way. Pilots should treat the engine carefully, if they want to prolong its life. 2. to apply a process to something in order to get a particular result. Heat treatment is a condition in which an aircraft is in static balance in pitch. Oscillating outputs from alternators could cause sensitive equipment to malfunction or trip.

**treatment** /trɪtɪmənt/ **noun** subject to the action of a chemical or physical process. Anti-corrosion treatment is ensuring that the loads imposed on the flying controls during flight.

**trembler** /tremblə/ **noun** an automatic vibrator for making and breaking an electrical circuit.

**trend** /trend/ **noun** 1. a general direction or tendency. Continuous VOLMET, which is normally broadcast on a designated VHF (very high frequency) channel, contains current aerodrome reports and trends where available. 2. an up-to-date or modern way of doing things. Warning systems can take the form of lights, captions, and aural signals, and the modern trend is to incorporate them into a central warning system.

**triangle** /ˈtræŋɡəl/ **noun** a plane figure with three sides and three angles. The triangle of velocities is a vector solution of what happens to an aircraft when wind causes drift.

**trigger** /trɪgə/ **verb** to cause to operate, to set off. Normally, both the captain’s and first officer’s airspeed indicators trigger an aural warning if the airspeed limits are exceeded.

**trijet** /ˈtrɪdʒɛt/ **noun** an aircraft powered by three jet engines.

**trim** /trɪm/ **noun** a condition in which an aircraft is in static balance in pitch. **trim** indicators have a green band, to show when the trim is correct for takeoff. (Note: Some aircraft have rudder and aileron trim.) **verb** to adjust trimmers in order to get the required hands-off pitch attitude. Trim the aircraft for level flight.

**trim wheel** /ˈtrɪm wiːl/ **trimmer** /ˈtrɪmə/ **noun** a wheel-shaped device, sometimes situated between the front seats of light aircraft, to trim the aircraft by hand. An aircraft powered by three jet engines is called a trijet.

**triplane** /ˈtrɪplən/ **noun** an aircraft with three main wings fixed one above the other.

**triple** /ˈtrɪpl/ **adjective** consisting of three parts. Probes may be of single, double or triple element construction.

**tropical** /ˈtrɒpɪkəl/ **adjective** referring to the area between the parallels of latitude 23° 26’ north and south of the equator. Tropical storm is a violent wind system which forms over tropical oceans. Tropical storms often dissipate when they pass from sea to land.

**tropics** /ˈtrɒpɪks/ **noun** the tropics are the area between the parallels of latitude 23° 26’ north and south of the equator.
tropopause 238

sub-tropics, the sea breeze is a regular feature.

tropopause /ˈtropəpəs/ noun the level at which the troposphere and the stratosphere meet. The altitude and temperature of the tropopause are of concern to aircrew because they affect aircraft performance.

tropospher /ˈtrəpsəfər/ noun the lowest region of the atmosphere. The troposphere is at its deepest near the equator and shallowest near the poles.

trough /tʌf/ noun a long area of low barometric pressure. Severe icing and turbulence can be experienced when flying through a trough and the precipitation may be of hail, rain, snow or sleet.

tube /tjuːb/ noun a long, hollow cylindrical device for holding or carrying fluids. A liquid-type fire detector consists of a tube and expansion chamber filled with liquid.

tubing /ˈtjuːbɪŋ/ noun tubes in general or hydraulic tubing

tubular /ˈtjuːbjuər/ adjective referring to something which is shaped like a tube. Diagonal members can be of angle section, box spar or tubular in shape.

tune /tjuːn/ verb 1. to set a system at its optimum point by careful adjustment. The engine has not been properly tuned. 2. to adjust to the particular frequency of the required signal. The RBI shows the bearing of the tuned radio beacon with reference to the aircraft’s heading.

tuner /ˈtjʊnər/ noun a part which allows the operator to select the particular frequency of the required signal. The tuner reduces interference.

turbine /ˈtɜːbən/ noun a rotary motor or engine formed of a wheel driven by a flow of air or gas.

turbo- /ˈtɜːboʊ-/ prefix turbine

turbocharger /ˈtɜːbəkɑːrə/ noun a supercharger driven by a turbine powered by exhaust gases. The turbocarger significantly increases engine power.

turbofan /ˈtɜːbəfæn/ noun a jet engine in which most of the thrust is produced by air, accelerated by a large fan, which does not pass through the combustion chamber of the engine. The Airbus A340 is powered by four CFM56 turbofans. (Note: The US term is fanjet.)

COMMENT: Turbopan engines are much quieter than older turbojets and make a characteristic sound when in operation. The fan can be clearly seen in the front part of the engine. Modern airliners use turbfan engines produced by major manufacturers such as Rolls Royce, CFM or Pratt and Whitney.

turbojet /ˈtɜːbədʒet/ noun a jet engine which includes a turbine-driven compressor for the air taken into the engine. The de Havilland Comet was the world’s first turbojet commercial transport aircraft.

COMMENT: In recent years turbfan engines have taken over from turboset engines. Frank Whittle (1907–96) was an English engineer and RAF officer who invented the turbojet aircraft engine. Whittle developed a jet aircraft by 1941 and the first military jet aircraft, the Gloster Meteor, became operational in 1944.

turboprop /ˈtɜːbəprɒp/ noun a turbopropeller engine in which the turbine also drives a propeller.
engine is often used in transport aircraft. 

COMMENT: Turboprop aircraft are efficient at lower speeds than turbojet aircraft and are often used for short-haul operations.

turboshaft /ˈtɜːbəʊʃaft/ noun an engine similar to a turboprop engine, except that it is used primarily in helicopters

turbulence /ˈtɜːbləns/ noun an irregular motion of the atmosphere

turbulent /ˈtɜːblənt/ adjective referring to the irregular motion of the atmosphere. When flying in turbulent air conditions, an aircraft is subjected to upward and downward gust loads.

turn /tɜːn/ noun 1. an angular change in track. 2. The autopilot may be engaged during a climb or descent but not usually in a turn.

2. a section of a wire which is wound 360° around a centre. The voltage in each winding is directly proportional to the number of turns in each winding. 

1. to make an angular change in track. 2. to rotate. 3. The crankshaft turns through 720° for every cycle of four strokes.

4. to stop the flow of something 

turn right. Turn to the west. Turn on the fuel.

turn coordinator /ˈtɜːn kərəˌneɪdər/ noun US same as turnround

turn coordination /ˈtɜːn kəˌneɪdər/ noun US same as turnround

turn on /tɜːn ˈɒn/ verb. 1. to switch an electrical device or system. 2. Can you turn the light on or turn on the light? 3. to start the flow of something by using a valve. 4. Turn on the fuel.

turnaround /ˈtɜːnroʊnd/ noun unloading, loading and preparing an aircraft for another flight and the time taken to do this (Note: The word turnaround is preferred in US English.)

twin engine aircraft /ˈtwin ˌendʒɪn ˈeəkrɛft/ twin-engined aircraft /ˈtwinˌendʒɪnˌeəkrɛft/ noun an aircraft with two identical engines

twist /twɪst/ verb to turn against resistance. 1. Centrifugal, bending and twisting forces act on a propeller during flight. 2. Turn off the magnetos in turn to check their serviceability.

turbofan 2. a type of undercarriage fitted to an aircraft with two identical engines

turbine engine 3. a sort or kind of

tur body /tɜːbədi/ noun a document issued by an aviation authority which indicates that the design of a certain aircraft, engine etc has been approved

type certificate data sheet noun a document associated with a type certificate, giving information about the design which has been approved. Abbreviation TCDS

type rating /ˈtɪpɪŋ/ noun authorisation, usually entered on a licence, which allows the pilot to fly a particular aircraft type

typical /ˈtɪpɪkl/ adjective 1. normal, standard. 2. a typical fuel system a standard type of fuel system. 2. representative of a particular class of things. 3. The Piper Archer is a typical single-engine light aircraft.
tyre creep

**tyre creep** /ˈtaɪ kriːp/ noun the gradual rotation of the tyre in relation to the wheel, caused by landing. To convert magnetic bearing into true bearing it is necessary to apply magnetic variation at the point at which the bearing was taken.

**COMMENT:** Tyre creep can lead to damage to the tyre valve and subsequent unwanted and possibly dangerous deflation of the tyre.

**tyre pressure** /ˈtaɪ .prefə/ noun the air pressure in a tyre. *Maximum allowable tyre pressure*
UAR abbreviation upper air route
UAS abbreviation upper air space
UHF abbreviation ultra high frequency
UIR abbreviation upper air region
UK abbreviation United Kingdom

ultimate /'ɔltmət/ adjective final, from which no further advance can be made. To determine the ultimate load which a structure must be capable of withstanding, a multiplier, called the ultimate factor of safety is used. The ultimate responsibility for safety rests with the crew.

ultra- /'ʌltra/ prefix beyond

ultra high frequency /'ʌltra hæt 'frɪkwaNsɪ/, ultra high frequency band /'ʌltra hæt 'frɪkwaNsɪ,bænd/ noun a radio frequency range between 300 MHz and 3000 MHz. Abbreviation UHF

ultralight /'ʌltrəlæjt/ noun a small single-seat or two-seat aircraft constructed of light materials and powered by a small motor, flown mainly for recreation

ultrasonic /'ʌltrə'snænik/ adjective referring to frequencies in the range of 20,000 Hz which cannot be heard by the human ear

ultrasonic inspection /'ʌltrə'snænik ɪn'spektʃ(ə)n/ noun a non-destructive inspection of materials using extremely high frequency vibrations. Also called ultrasonic detection

ultraviolet /'ʌltrə'veɪrəlɪt/ adjective referring to or occurring in the invisible part of the light spectrum beyond violet. Abbreviation UV = ultraviolet radiation

tion the invisible part of the light spectrum beyond violet

unaccompanied /ənə'kæmpənɪd/ adjective = unaccompanied baggage

unaccompanied baggage that travels on a different flight from the passenger who owns it.

unaccompanied

uncontrolled airspace /ˌʌŋkəntrə'ɔrples/ noun airspace in which air traffic control does not provide a service and in which an ATC clearance is not required to fly. While first learning to handle an aircraft, student pilots fly in uncontrolled airspace. (NOTE: Pilots must still follow certain rules when flying through uncontrolled airspace.)

uncoordinated flight noun flight, especially during turns, in which the horizontal and vertical forces acting on the aircraft are out of balance. This can result in the aircraft going into a slip or a skid.

uncoordinated flight

undercarriage /ˌʌndə'kærɪdʒ/ noun the landing gear of an aircraft. To reduce the effect of drag by fixed undercarriages a retractable type of undercarriage was introduced. (NOTE: The undercarriage is often called the landing gear or simply gear.)

COMMENT: The main landing gear are nearest the aircraft's centre of gravity. Main landing gear are designed to withstand a greater landing shock than the nose wheel or tail wheel and consequently should make contact with the surface first when landing.

undercarriage assembly /ˌʌndə'kærɪdʒ ə'sembli/ noun wheels, struts and linkages which make up the complete unit
undergo /

undercarriage down and locked /

undertake /

underside /

undulating /

uniform /

unique /

unit /

unserviceable /

unstick /

update /

updraft /

updraft /

uplift /
triggered off by convection and/or orographic split.

upper /ˈʌpər/ adjective 1. at high altitude ○ upper air ○ upper winds ○ In modern meteorological practice, upper air analysis and the construction of contour charts is carried out by computer. 2. top. Opposite lower ○ the upper surface of the wing the surface of the wing facing upwards, as opposed to the underside.

upper air chart /ˈʌpər air ˈkɑrt/ noun a chart showing airflow pattern and distribution of temperatures at specific altitudes above about 10,000 feet.

upper air route /ˈʌpər ˈær]; ˈrʊt/ noun a route above FL245, approximately 24,500 ft. Abbreviation UAR.

upper airspace /ˈʌpər ˈɛəræps, ˈʌpər ˈɛəræspər/ noun the airspace above FL245, approximately 24,500 ft. Abbreviation UAS.

upper information region noun airspace which covers the same geographical area as a flight information region but above 24,500 ft. Abbreviation UIR.

upward /ˈʌpwar(d)/ adjective moving or directed up ○ As the aircraft accelerates down the runway, the forces on the wing tips and wing surfaces start reversing direction and instead of being only downward forces of weight, they become upward forces of lift. (NOTE: In US English, upward is used as an adjective and as an adverb.)

upwards /ˈʌpwarz/ adverb towards the top ○ Heat is transferred from the Earth’s surface upwards by convection. Opposite downwards.

upwind /ˈʌp wɪnd/ adverb against the wind ○ The glider was released from the aero-tow 3 miles upwind of the airfield. Opposite downwind.

urgency /ˈɜrdʒn(ə)si/ noun importance or need for prompt or fast action ○ Warnings, cautions and advisory messages are displayed only when necessary and are colour coded to communicate the urgency of the fault to the flight crew.

USA, US abbreviation United States of America.

usable /ˈjuːzəbl(ə)/ adjective capable of being used ○ On receiving the evacuate order, cabin crew must assess if their exits are usable.

usage /ˈjuːzɪdʒ/ noun the act of using something, consumption ○ Fuel flight planning combines navigation data with fuel usage.

use noun /juːs/ the act of using something, or the state of being used ○ It must be ensured that smoke masks are available for use by employees within the aircraft. ○ runway in use runway currently being used for take-offs and landings ○ verb /juːz/ to put something to work for a purpose ○ Gas turbine engines use low viscosity synthetic oil.

UTC abbreviation Coordinated Universal Time.

utilisation /ˌjʊtɪləˈzɪʃən, ˌjʊtɪlɪˈzeɪʃən/ utilisation noun the act of making use of ○ Integral tanks are now favoured for aircraft owing to the high utilisation of space and reduction in weight.

utilise /ˈjuːtɪlaɪz, ˈjuːtɪlaɪz/ utilise verb to make use of ○ The most common type of barograph is one which utilises an aneroid capsule mechanically connected to a pen.

UV abbreviation ultraviolet.
vacuum /ˈvækjuəm/ noun a space completely empty of everything including air. If the fuel tank vent pipe is blocked, a vacuum will form in the tank and fuel flow to the engine will be restricted.

valid /ˈvæld/ adjective 1. having official force or effect. All passengers should have valid passports. 2. worth taking seriously, acceptable because it is true or well-based. A valid assumption is a well-based supposition.

validity /ˈvælɪdətɪ/ noun the state of being valid. The period of validity of a visa. Aerodrome forecasts included in VOLMET should have a validity period of 9 hours.

valley /ˈvælɪ/ noun an area of low-lying land between mountains or hills. An example of a valley wind is the Mistral.

value /ˈvælju/ noun 1. a quantity shown as a number. Deviation is not a constant value but varies from one aircraft to another. 2. the quality of being useful or desirable. The value of doing something is the usefulness or worth of doing something.

valve /ˈvælv/ noun a mechanical device for controlling the flow of a fluid.

valve overlap /ˈvælv əˈvæləp/ noun the period when both the exhaust and inlet valves are open together, with the exhaust valve closing and the inlet valve opening.

valve seat /ˈvælv sɛt/ noun an angled ring in the cylinder head on which the poppet valve sits when closed.

vapor /ˈveəpər/ noun US same as vapour.

daporise /ˈveəpəraɪz, vəˈpəraɪz/ vaporize verb to turn into vapour. Water vaporises when heated.

vapour /ˈveəpər/ noun the gaseous form of a liquid. Over desert areas, the lack of water vapour in the atmosphere produces cold nights. (Note: It is also written vapor in US English.)

vapour lock /ˈveəpə lɒk/ noun a blockage of fuel flow from a tank caused by a bubble of vapour at a high point in the pipeline.

vapour trail /ˈveəpə træl/ noun a visible trail of condensed vapour left behind by an aircraft flying at high altitude.

variable /ˈvəriəb(ə)l/ adjective changing or changeable. Winds are more variable in the northern hemisphere than in the southern hemisphere.

variable geometry /ˈvəriəb(ə)l dʒəˈriəb(ə)li/ noun technology which allows the angle between wing and fuselage to be altered to give a more or less swept wing for better high-speed and low-speed flight characteristics.

variable-geometry /ˈvəriəb(ə)l dʒəˈriəb(ə)li ˈgeɪəˌtrɪəl/ adjective referring to an aircraft with hinged wings that can move backwards or forwards during flight.
flight (NOTE: The wings are swept back to give low drag in supersonic flight and are moved forwards for takeoff and landing.)

**variable pitch propeller** /vərˈeɪərɪəb(ə)l pɪtʃ prəˈpɛlə/ noun a propeller with a mechanism to change the blade angle, to suit flight conditions.

**variable-sweep** /vərˈeɪərɪəl svɪp/ adjective same as **variable-geometry**

**variation** /vərˈeɪəʃ(ə)n/ noun 1. a change or the amount of a change 2. the angular difference between magnetic north and true north, which is measured in degrees and is named east or west according to whether the north-seeking end of a freely suspended magnet lies to the east or to the west of the true meridian at that point. 3. variation east, magnetic west a mnemonic to help somebody remember whether to add or subtract variation.

**variety** /vəˈræstri/ noun a lot of different things.

**variometer** /vərɪˈɒməntər/ noun an instrument used for measuring the rate of climb of an aircraft such as a glider.

**vary** /vərˈeɪə/ verb to change, to be different.

**VCR** abbreviation visual control room

**VDF** abbreviation very high frequency direction-finding

**vector** /vɛktər/ noun 1. a quantity with magnitude and direction indicated by a line of a given length, representing magnitude and specific direction. 2. a heading given to a pilot to provide navigational guidance by radar.

**velocity** /vəˈlɪstɪ/ noun the rate of change of position in a given direction which is composed of both speed and direction.

**vent** /vɛnt/ noun a hole serving as an inlet or outlet for a fluid, usually a gas such as air. 1. During the pre-flight inspection, check that the fuel tank vent pipe is not blocked. 2. The vent/pressurisation system must allow for the passage of air whenever a fuel tank is refuelled or defuelled or the aircraft climbs or descends.

**ventilate** /vɛntɪleɪt/ verb to cause air to pass in and out freely.

**ventilation** /vɛntɪˈleɪʃ(ə)n/ noun free circulation of air in and out. A constant supply of air for ventilation purposes is always available from the air conditioning system.

**venturi** /veŋˈtuərɪ, veŋˈtjuərɪ, veŋˈtuːri/ noun a tube which narrows at the centre, a choke tube. 1. When the temperature of the air passing through the carburettor is reduced below 0°C (Celsius), any moisture in the air forms...
vertical

1. An imaginary line running through the fuselage at the centre of gravity from top to bottom, around which the aircraft rotates when it yaws.

2. The rudder is a control surface on the fin which rotates the aircraft about its vertical axis to produce yaw.

The diagram illustrates typical strength properties by plotting applied stress versus resulting strain.

vertical axis /ˈvɜːrɪkl ˈæksɪs/ noun 1. An imaginary line running through the fuselage at the centre of gravity from top to bottom, around which the aircraft rotates when it yaws. 2. The rudder is a control surface on the fin which rotates the aircraft about its vertical axis to produce yaw.

vertical stabiliser /ˈvɜːrɪkl ˈstɪblɪzər/ noun Same as fin.
regulations By not wearing a cap, the cadet is violating the dress code.

violent /ˈvɪələnt/ adjective with great force Flying through atmospheric dust causes the airframe to build up a static electrical charge and the associated discharges can be violent.

VIP abbreviation very important person

virtually /ˈvɜːtləli/ adverb almost Resistance to alternating current remains virtually constant and is independent of frequency.

viscosity /vɪˈskəʊsɪtɪ/ noun a liquid’s internal resistance to flowing Excessive oil temperatures are dangerous, as the oil viscosity is reduced and inadequate bearing lubrication results.

visibility /ˈvaɪzɪbɪlɪtɪ/ noun the ability to see unlighted objects by day and lighted objects by night, subject to atmospheric conditions Measurement of visibility by day is made by direct observation of objects at known distances and is therefore an estimated value. poor visibility a situation in which things cannot be seen clearly, e.g. because of fog, mist or smoke

visibility-by-day values /ˈvaɪzɪbɪlɪtɪ ˈvaɪd/ noun values which indicate how easily seen an object is in a horizontal line from an observer in daylight conditions

visible /ˈvaɪzɪb(ə)l/ adjective that can be seen When the undercarriage is selected down it may be visible from the crew compartment, but it is not usually possible to tell if it is securely locked. If the sun is seen through cumulus cloud it will be clearly visible.

vision /ˈvaɪz(ə)n/ noun 1. the power of seeing, the ability to see Lightning at night may cause temporary loss of vision. 2. what you are able to see In low wing aircraft, downward vision may be limited by the airframe.

visual /ˈvaɪzjuəl/ adjective referring to seeing The instrument landing system is to provide guidance in the horizontal and vertical planes to an aircraft on final approach into a position from which a safe visual landing can be made.

visual approach slope indicator /ˈvaɪzjuəl əˌprɑːʃ ˈsləʊp ˌɪndɪkər/ noun an arrangement of red and white lights on each side of the runway touchdown point to give the pilot information about the plane’s height on final approach. Abbreviation VASI

visual control room /ˈvaɪzjuəl kənˈtrɔːrl ruːm/ the control room in the tower at an airport. Abbreviation VCR.

visual examination /ˈvaɪzjuəl ɪˈɡzəmɪneɪʃən/ noun a close observation or inspection with the eyes. Also called visual inspection

visual flight rules /ˈvaɪzjuəl ˈflaɪt ˈruːlz/ plural noun rules set down by an authority for flight in visual conditions, regarding such things as flight visibility and distance from cloud. Abbreviation VFR: special VFR flight

COMMENT: Particular requirements for VFR depend on the type of airspace, time of day, and height above terrain.

visual indication /ˈvaɪzjuəl ɪnˈdɪkəʃən/ noun something which is seen and which suggests a more serious cause, e.g. a warning lamp Distorted wing panels are often a visual indication of structural damage to the airframe.

visual meteorological conditions /ˈvaɪzjuəl ˌmɪtərəˈlɒdʒɪk(ə)l kənˈdɪʃənz/, visual meteorological conditions criteria /ˌapəˈsɪər ˈkaʊərɪəs/ plural noun all the factors which define the limits of flying in visual meteorological conditions. Abbreviation VMC

visual warning /ˈvaɪzjuəl ˈwɜːnɪŋ/ noun a warning that can be seen as opposed to a audible warning that can be heard

vital /ˈvɪt(ə)l/ adjective extremely important Verbal commands from the crew are vital at all times but particularly so if smoke restricts cabin visibility. Accurate measurements of atmospheric pressure and the rate of change of pressure are of vital interest to the meteorological forecaster.

viz /vɪz/ adverb namely, in other words, that is to say There are two types of inverter, viz rotary and static.
**VMC** abbreviation visual meteorological conditions

**Vne** abbreviation never-exceed speed

volatile /ˈvɒlətɪl/ adjective describes a liquid which easily changes into a gas or vapour. To aid starting in cold weather, more volatile fuels can be used.

volatility /ˈvɒlətɪlɪtɪ/ noun the ease with which a liquid changes into a gas or vapour. With kerosene-type fuels, the volatility is controlled by distillation and flash point, but with the wide-cut fuels it is controlled by distillation and the Reid Vapour Pressure test.

**VOLMET** /ˈvɒlmeɪt/ noun a routine ground-to-air broadcast of meteorological information. The meteorological Operational Telecommunications Network Europe (MOTNE) is provided for the exchange of meteorological information needed by meteorological offices, VOLMET broadcasting stations, air traffic service units, operators and other aeronautical users.

volplane /ˈvɒlpleɪn/ noun a glide towards the ground in an aircraft with the engine turned off. Verb to glide towards the ground in an aeroplane with the engine turned off.

volt /ˈvɒlt/ noun the SI unit of electrical potential. The system requires a power supply of either 115 volts AC (alternating current), 28 volts DC (direct current), or both. Abbreviation V

voltage /ˈvɒltdʒ/ noun electrical force measured in volts. As an installed battery becomes fully charged by the aircraft generator, the battery voltage nears its nominal level and the charging current decreases.

volume /ˈvɒlju/ noun 1. the amount of space occupied by a solid. As the pressure of a given mass of gas is maintained constant, the volume of gas increases as its temperature is increased. 2. the loudness of a transmission. Turn down the volume to make the sound less loud by adjusting the volume control.

**VOR** noun a navigational aid based on the ground, to help the pilot establish the bearings of the aircraft. Full form very high frequency omni-directional radio range.

COMMENT: The VOR projects 360 radials which can be followed to fly a particular path over the ground. VORs operate on VHF frequencies between 108.0 to 177.95 MHz.

**VOR bearing** /ˈvɔr bɪərɪŋ/ noun the direction of the VOR transmitter relative to the aircraft measured in degrees.

**VORTAC** /ˈvɔrtæk/ noun a system that combines VOR and Tacan.

**VSI** abbreviation vertical speed indicator.

**V/STOL** /ˈvɛstɔl/ noun 1. a system used by some aircraft that allows them to take off and land vertically or on a short runway. 2. an aircraft that is able to take off and land vertically or on a short runway. Full form vertical and short takeoff and landing.

**VTOL** /ˈvɛstɔl/ noun 1. a system used by some aircraft that allows them to take off and land vertically or on a short runway. 2. an aircraft that is able to take off and land vertically. Full form vertical takeoff and landing.

vulnerable /ˈvʌlnərəbl/ adjective unprotected and liable to attack or damage. Some engines still retain the centrifugal type of compressor because it is simple, comparatively cheap to manufacture, robust in construction and less vulnerable to damage.
W

W abbreviation west
WAAS noun a US navigation system which processes and improves data from GPS satellites to provide location information. Full form Wide Area Augmentation System (NOTE: The European equivalent is EGNOS.)

wake turbulence /weik/ noun the disturbance of the air remaining after the passage of an aircraft

wall /wɔ/ noun the side ○ There is a film of oil between the piston and cylinder wall.

warm front /ˈwɔrm ˈfrʌnt/ noun an advancing mass of warm air moving over a mass of cooler air

warn /wɔːrn/ verb to give notice of possible danger ○ A light illuminates to warn the crew.

ultrasonic technology which automatically warns pilots of ice build-up on aircraft may soon be approved for general use by carriers [Flight International 16–22 July 1997]

warning /ˈwɔrɪŋ/ noun notice of possible danger ○ adjective giving notice of possible danger ○ The main power plant fire detection system should contain an audible warning device to supplement the visual indication.

warning indicator /ˈwɔrɪŋ ,ɪndɪkətər/ noun an indicator which gives notice of a possible problem which may require some action. ○ VASI

warning light /ˈwɔrɪŋ lətʃ/ noun a small light, often red, which informs of a possible danger by lighting up ○ At 5 knots above stalling speed, a warning light on the instrument panel will flash.

washroom /ˈwɔʃruːm/ noun same as toilet 2

waste /weɪst/ noun something which can no longer be used ○ A smouldering fire in a toilet waste container or waste disposal bin could become very active due to pressure changes during descent.

water-tight /ˈwɔtə tæt/ adjective that does not leak water or other fluid

watt /wɔt/ noun the SI unit of measurement of electrical power ○ The work done by an electrical circuit or the power consumed is measured in watts.

wave /weɪv/ noun 1. the motion by which heat, light, sound or electric current is spread ○ The speed of propagation of radio waves is faster over sea than over land. 2. a mass of water moving across the surface of a lake or the sea, rising higher than the surrounding water as it moves ○ Wind speeds increase with height, the speed of the wind at the crest of a wave being the greatest.

waveform /ˈweɪvform/ noun the shape of a repetitive wave ○ A cycle is one complete sequence of the waveform, from any point, to the same value 360° later.

wavelength /ˈwɛəvlɛŋθ/ noun the distance from the highest point of one wave to the highest point of the next ○ Short wavelength permits sharper beams for direction finding and more efficient reflections.

waveoff /ˈweɪvəf/ noun a signal or instruction to an aircraft that it should not land
waypoint /ˈweɪpɔɪnt/ noun a prede-
determined position on a route, used for
monitoring flight progress or for navig-
ing around controlled airspace. Abbreviation WP

weak /wɪk/ adjective 1. not strong o a
weak radio signal 2. overdiluted with
water or air o weak mixture a fuel/air
mixture in which there is more air than
usual o Excessive cylinder head tem-
peratures could be caused by prolonged
use of a weak mixture, especially at
high altitude. o weak solution a mix-
ture of water and some other substance
in which the amount of water is more
than usual

weaken /ˈwɪkən/ verb to make weak
o Inflation of the de-icer boot weakens
the bond between the ice and de-icer
boot surfaces.

wear /weər noun damage or loss of
quality by use o Mishandling of aero-
engines during operation can cause
considerable damage and wear which
can shorten the life of the engine. o verb
1. to become damaged or to lose quality
because of use o The more the brakes
are used, the more they wear. 2. to have
on the body o The nature of modern jet
transport does not require the pilot to
wear an oxygen mask.

weather /ˈweðər noun the conditions of
atmospheric temperature, pressure,
wind, moisture, cloudiness, precipita-
tion and visibility o Generally speak-
ing, weather conditions can be
described as light, moderate or severe
depending on the intensity of the con-
ditions. o forecast weather predicted
weather, not actual weather

weathercock /ˈweðərkɒk/ verb to
tend to turn in the direction of the wind

weather report /ˈweðər rɪˈpɔrt/ noun an official account of weather
conditions

web /web/ noun the main vertical
member of a beam o The web connect-
ing the upper and lower flanges of the
beams must be rigid enough to with-
stand direct compressive loads without
buckling.

weigh /weɪ/ verb to measure how
heavy something is o A given quantity
of lead weighs more than the same
quantity of aluminium.

weight /ˈwɛt/ noun the force with
which a body is drawn towards the cen-
tre of the Earth o Carry-on baggage is
limited by regulations as to size and
weight and items in excess of this
should be stowed in the hold.

west /west/ noun 1. a compass point
on the mariner’s compass 270° clock-
wise from due north and directly oppo-
site east. o In Europe, snow occurs more
frequently in the east than in the west.
2. the direction of the setting sun o adjec-
tive 1. referring to areas or regions lying
in the west 2. the western part of a coun-
try o West Africa o adverb towards the
west o The aircraft was flying west.

westbound /ˈwestbɔʊnd/ adjective
classical travelling towards the west o a west-
bound flight

westerly /ˈwestəli/ adjective 1. situ-
ated towards the west 2. blowing or
coming from the west o A westerly wind
is blowing. 3. moving to the west or
towards the west o He should fly in a
westerly direction. o winds a wind which
blows or comes from the west o Tem-
perate westerlies occur on the side of
the sub-tropical anti-cyclonic belts
which is remote from the equator.

western /ˈwestərn noun situated in the
west o Western Europe

westward /ˈwestərd/ adjective
going towards the west o verb US
same as westwards

westwards /ˈwestərds/ adverb
towards the west o Flying eastwards or
westwards for long periods of time
affects sleep patterns.

west wind /ˈwest wɪnd/ noun a
wind blowing from or coming from the
west (NOTE: A wind is named after the
direction it comes from.)

wheel /wɪl/ noun a circular, rotating,
load-carrying part between the tyre and
axle, or the whole wheel and tyre
assembly on which a vehicle rolls

wheel bay /ˈwɪl beɪ/ noun a space in
the fuselage or wing structure in which
the wheel is housed after retraction o To
avoid damage to the wheel bay, the nose
wheel must be aligned in a fore and aft direction during retraction.

wheel bearing /ˈwiːl bərɪŋ/ noun a device which allows the wheel to rotate freely around the axle.

wheel fairing /ˈwiːl ˈfeərɪŋ/ noun same as spat.

wheels up /ˈwiːlz ʌp/ adjective airborne after having taken off from a runway.

whereas /ˈweərəz/ conjunction but in contrast, on the other hand. In the piston engine, the cycle is intermittent, whereas in the gas turbine, each process is continuous. Kerosene has a low vapour pressure and boils only at very high altitudes or high temperatures, whereas a wide-cut fuel will boil at a much lower altitude.

whereby /ˈweərɪ ˈbeɪ/ adverb according to which. Compression heating relies on the principle whereby the air temperature is increased by compression. In ram air supply systems, the cooling method is of the simplest type, whereby the cold air can be directly admitted to the cabin via adjustable louvres.

whereupon /ˈweərə prɔn/ adverb at that point, or after which. Pitch changes are achieved using the throttle lever, which is usually taken up and back through a gate in the quadrant whereupon fuel is added to increase power.

wherever /ˈweərə ˈeɪvər/ adverb wherever possible in places where it is possible. Wherever possible, thunderstorms should be avoided by a wide margin. Thunderstorms should be avoided by a wide margin in situations or places where it is possible to avoid them.

while /wij/ conjunction 1. during the time that. The pilot is trained to scan an instrument panel, while at the same time listening to the aircraft radio and flying the aircraft. 2. in spite of the fact that. While metal fatigue is not a modern phenomenon, it is only in recent years that much emphasis has been placed upon determining its causes. Notes: Whilst is sometimes used in place of while.

whipp stall /ˈwɪpstəl/ noun a manoeuvre in a small aircraft in which it goes into a vertical climb, pauses briefly, and then drops towards the earth, front first.

whole /hoʊl/ adjective complete. The whole aircraft should be inspected to ensure that it is free from deposits of ice, snow and frost. Whole number an undivided number, a number which is not a fraction.

wide /wɜːd/ adjective 1. referring to the distance of something measured from side to side. The localiser antenna array is normally about 80 feet wide and 12 feet high. 2. a wide range of temperatures a large difference between the lowest and the highest temperatures. A wide variety of information a lot of different information.

width

Wide Area Augmentation System noun full form of WAAS.

wide-bodied /ˈwɜːd ˈbɒdɪd/ adjective US same as wide-body.

widebody /ˈwɜːdbɒdɪ/ noun a jet aircraft with a body wide enough to accommodate three rows of seats across the width of the plane, with spaces on each side of the middle set.

wide-body /ˈwɜːd ˈbɒdɪ/ adjective referring to a jet aircraft with a body wide enough to have three sets of passenger seats in a row across the width of the plane, with spaces on each side of the middle set.

wide-cut fuel /ˈwɜːd kʌt ˈfjuːzd/ noun a general term for aviation turbine fuels made up of a wider variety of petroleum products than kerosene-type fuels. Kerosene has a low vapour pressure and boils only at very high altitudes or high temperatures, whereas a wide-cut fuel will boil at a much lower altitude.

widespread /ˈwɜːdspred/ adjective found or distributed across a large area. The storm caused widespread damage.

widespread precipitation rainfall or snowfall covering a large area.

width /wɜːdθ/ noun the distance of something measured from side to side, compared to length. The polar front jet
wind

stream may have a width of up to 200 nm (nautical miles). \( \text{wind} \)

\( \text{wind}^1 \) \( /\text{wnd} \) noun horizontal movement of air in relation to the Earth’s surface.

\( \text{wind}^2 \) \( /\text{wnd} \) verb to move in a curving or twisting manner. If a wire is wound as a coil, the field will be like that of a bar magnet. (NOTE: \( \text{winding} = \text{wound} \))

\( \text{windblast} \) \( /\text{wndblæst} \) noun the harmful effect of air flow on a pilot who has ejected from an aircraft travelling at high speed.

\( \text{wind cone} \) \( /\text{wnd kəun} \) noun same as \( \text{windscock} \)

\( \text{wind currents} \) \( /\text{wnd kərənts} \) plural noun the movement of air in a particular direction through a mass of air which is not moving so much.

\( \text{wind direction} \) \( /\text{wnd də,rekʃən} \) noun a description of where the wind is blowing from, given as north, south, east, west, etc., or a number of degrees, e.g. a wind coming from the west would be a wind direction of 270°. \( \text{Wind direction} \) and speed only affect the movement of the aircraft over the ground.

\( \text{wind gradient} \) \( /\text{wnd ,grɛdɪənt} \) noun the rate of increase of wind strength with unit increase in height above ground level. After take-off, as the aircraft gains altitude, the ground speed may be affected by the \( \text{wind gradient} \).

\( \text{winding} \) \( /\text{wændiŋ} \) noun a series of 360° turns of wire. The voltage in each winding is directly proportional to the number of turns in each winding.

\( \text{windmill} \) \( /\text{wndmɪл} \) verb to turn round by wind force only without engine power.

\( \text{windscreen} \) \( /\text{wndskrɪn} \) noun the front window of an aircraft through which the pilot has forward vision. The \( \text{windscreen} \) is a glass laminated construction with an electrical element, made of gold film, sandwiched between the layers. \( \text{wiper} \)

\( \text{windshear} \) \( /\text{wndʃræ} \) noun a change in wind direction and speed between slightly different altitudes. \( \text{Windshear,} \) if strong enough, can produce clear air turbulence. \( \text{Fly-by-wire technology can be very useful in windshear situations.} \)

\( \text{windshield} \) \( /\text{wndʃɪld} \) noun US same as \( \text{windscreen} \)

\( \text{windsok} \) \( /\text{wndsɒk} \) noun a pole at the top of which is a fabric tube through which the wind blows, showing the \( \text{wind direction} \)

\( \text{windspeed} \) \( /\text{wndspɪd} \) noun the speed of the wind which, if combined with a direction, is called velocity. It is usually measured in knots. \( \text{Wind direction is given in degrees true} \) rounded to the nearest 10°, followed by the mean \( \text{windspeed} \).

\( \text{wind tunnel} \) \( /\text{wnd ,tən(ə)l} \) noun a tunnel-shaped chamber through which air can be passed at a known speed in order to test the aerodynamic properties of an object such as an aircraft placed inside it.

\( \text{wind velocity} \) \( /\text{wnd vəˌləstɪ} \) noun \( \text{wind speed and direction} \)

\( \text{windward} \) \( /\text{wɪndˌwɜrd} \) adjective, \( \text{adv} \) facing the direction from which the wind blows. Opposite \( \text{lee} = \text{windward} \) of a range of hills upwind of the range of hills. \( \text{If} \) precipitation occurs, water will have been removed from the atmosphere thus causing the air on the \( \text{lee} \) side to be drier than that on the \( \text{windward} \) side.

\( \text{wing} \) \( /\text{wɪŋ} \) noun the main horizontal aerofoil or mainplane. \( \text{The wing supports the weight of the aircraft in flight.} \)

\( \text{winglet} \) \( /\text{wɪŋlɛt} \) noun an upturned wing tip or small additional vertical aerofoil on a wing tip. \( \text{The attachment of winglets improved the handling characteristics of the aeroplane.} \)

\( \text{wing loading} \) \( /\text{wɪŋ ,ləʊdɪŋ} \) noun the weight of an aircraft per unit wing area.

\( \text{wingman} \) \( /\text{wɪŋmən} \) noun a pilot who flies in a position behind and to the side of the leader of a group of flying aircraft.

\( \text{wingover} \) \( /\text{wɪŋˈɔʊvər} \) noun a manoeuvre to turn a flying aircraft in which the pilot puts the aircraft into a
steep turning climb until it almost stalls and then allows the nose to fall.

**wing panel** /ˈwaɪŋ pən/ noun a rectangular aluminium section of the aircraft skin of a wing. Wing panels of light aircraft are normally riveted together.

**wing root** /ˈwaɪŋ rʊt/ noun the part of the wing where it meets with the fuselage.

**wingspan** /ˈwɪŋspæn/ noun a measurement from the tip of one wing to the tip of the other wing. The wingspan of the aircraft is 7 metres.

**wing tip** /ˈwaɪŋ tɪp/ noun the outermost part of the wing. As an aircraft takes off, the forces on the wing tip and wing surfaces start reversing direction and instead of being only downward forces of weight, they become upward forces of lift.

**wiper** /ˈwaɪpər/ noun a device with a rubber blade which clears rain, snow, etc., from a windscreen. In some circumstances, such as heavy rainstorms, the windscreen wipers may not be able to cope and pilot’s visibility is impaired.

**wire** /ˈwaɪər/ noun metal drawn out into the form of a thread or string. While the shunt coil is made of fine wire which gives a high resistance and small current flow, the series coil is made of thick wire, which gives a low resistance and large current flow.

**wire mesh** /ˈwaɪər mɛʃ/ noun metal sheeting made of criss-crossed wiring.

**withdraw** /ˈwaɪdˌdrɔː/ verb to pull back, to draw back. Instructions are given to the cabin crew to arm the escape devices immediately the boarding steps or airbridges are withdrawn.

**within** /ˈwɪðən/ preposition in or inside. Great care must be taken to ensure that the aircraft operates within regulated or permissible weight limits.

**withdrawal** /ˈwɪðərəl/ noun the share of work done by a person, system or device.

**WP** abbreviation waypoint.
X-ray /'eks rɛɪ/ noun 1. a ray with a very short wavelength, which is invisible, but can go through soft tissue or material and register as a photograph on a film 2. a photograph taken using X-rays • verb to take an X-ray photograph of luggage

yard /ˈjɑːd/ noun a unit of length in the US and British Imperial Systems equal to 3 ft or 0.9144 m. Abbreviation yd

yaw /ˈjɔː/ noun rotation of the aircraft around its vertical axis • Three-axis control of roll, pitch and yaw is effected by ailerons, elevators and rudder • verb to rotate around the vertical axis • Single-engine, propeller-driven aircraft tend to yaw on take-off

yoke /ˈjəʊk/ noun 1. a type of aircraft control column by which the pilot controls ailerons by rotating a device on top of the column to the left or right • Rotate the yoke to the left to roll the aircraft to the left. 2. a supporting structure like the forked metal mounting for the nosewheel • The yoke was damaged in the incident.

Z abbreviation Zulu time

zero /ˈzɪərəʊ/ noun nought or the figure 0 • If the atmospheric pressure at an airfield is 1,000 millibars (mb) and this pressure is set on the sub-scale of an aircraft altimeter, then when that aircraft touches down at the airfield, the altimeter will read zero.

zero-zero /ˈzɪərəʊ ˈzɪərəʊ/ adjective referring to flying conditions of thick, low cloud when a pilot can see nothing ahead and nothing above or below the aircraft

zonal /ˈzoʊn(ə)/ adjective referring to one of the five parts into which the Earth’s surface is divided by imaginary lines parallel to the equator • The circulation of air around the Earth is zonal in character.

zone /ˈzoʊn/ noun 1. an area with particular features or purpose 2. an administrative area of airspace • control zone • aerodrome traffic zone (ATZ) 3. one of five divisions into which the Earth’s surface is divided by imaginary lines parallel to the equator • temperate zone • climatic zone

zoom /ˈzuːm/ verb to make an aircraft climb rapidly at a very steep angle, or move upwards in this way

Zulu time /ˈzuːluː tɛim/ noun • Greenwich Mean Time
SUPPLEMENTS

The Phonetic Alphabet
Standard words and phrases used in pilot communications
Aircraft registration codes
Airline codes
Airport codes
Local times around the world
International dialling codes
Standard symbols and abbreviations
Weights and measures
Conversion factors
**The Phonetic Alphabet**

Certain letters of the alphabet sound very similar, especially when a person is talking on the telephone or radio. The phonetic alphabet is designed to prevent confusion, by using a distinctive word to represent each letter.

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<th>Word</th>
<th>Pronunciation</th>
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</thead>
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<td>Alpha*</td>
<td>'ælfə</td>
</tr>
<tr>
<td>Bb</td>
<td>Bravo</td>
<td>'brɔ:vəu</td>
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<tr>
<td>Cc</td>
<td>Charlie</td>
<td>'tʃu:li</td>
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<tr>
<td>Dd</td>
<td>Delta</td>
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<td>Golf</td>
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<td>ɹdʒu'liː'et</td>
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<td>Tango</td>
<td>tæŋgəʊ</td>
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<td>Uniform</td>
<td>'juːnɪfɔrm</td>
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<td>Vv</td>
<td>Victor</td>
<td>'vɪktə</td>
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<td>Ww</td>
<td>Whisky**</td>
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<td>Xx</td>
<td>X-Ray</td>
<td>ˈeksreɪ</td>
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<tr>
<td>Yy</td>
<td>Yankee</td>
<td>'jeɪŋki</td>
</tr>
<tr>
<td>Zz</td>
<td>Zulu</td>
<td>'zuːluː</td>
</tr>
</tbody>
</table>

* Alfa in US English
** Whiskey in US English
## Standard words and phrases

<table>
<thead>
<tr>
<th>Word/Phrase</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge</td>
<td>Let me know that you have received and understood this message.</td>
</tr>
<tr>
<td>Affirm</td>
<td>Yes</td>
</tr>
<tr>
<td>Approved</td>
<td>I give you permission for what you asked.</td>
</tr>
<tr>
<td>Cancel</td>
<td>Cancel the last clearance I gave to you.</td>
</tr>
<tr>
<td>Check</td>
<td>Examine a system or procedure.</td>
</tr>
<tr>
<td>Cleared</td>
<td>I give permission for you to continue, bearing in mind the conditions already given.</td>
</tr>
<tr>
<td>Confirm</td>
<td>Have I correctly received the following ... ? or Did you correctly receive this message?</td>
</tr>
<tr>
<td>Contact</td>
<td>Contact by radio ...</td>
</tr>
<tr>
<td>Correct</td>
<td>That is correct.</td>
</tr>
<tr>
<td>Correction</td>
<td>An error was made in the last transmission. What follows is correct.</td>
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<td>Disregard</td>
<td>Assume that the last transmission was not sent.</td>
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<tr>
<td>How do you read?</td>
<td>Tell me how good this transmission is on a 1 to 5 scale where 1 = unreadable (cannot understand) to 5 = excellent reception (no difficulty in understanding).</td>
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<tr>
<td>I say again</td>
<td>I am repeating in order to make my meaning very clear.</td>
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<tr>
<td>Over</td>
<td>My transmission is finished and I want a response from you.</td>
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<tr>
<td>Out</td>
<td>This exchange of transmissions is finished. I do not want a response from you.</td>
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<tr>
<td>Pass your message</td>
<td>Proceed with your message.</td>
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<tr>
<td>Read back</td>
<td>Repeat all, or the specified part of this message back to me exactly as received.</td>
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<tr>
<td>Request</td>
<td>I want to know or I want to have.</td>
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<td>Roger</td>
<td>I have received all of your last transmission.</td>
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<td>Say again</td>
<td>Repeat all, or the following part of your last transmission.</td>
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<td>Speak slower</td>
<td>Speak more slowly.</td>
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<td>Standby</td>
<td>Wait and I will call you.</td>
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<td>Verify</td>
<td>Check and confirm with me.</td>
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<tr>
<td>Wilco</td>
<td>I understand your message and will comply with it.</td>
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<tr>
<td>Words Twice</td>
<td>(as a request) Communication is difficult. Please send every word or group of words twice.</td>
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<tr>
<td></td>
<td>(as information) Because communication is difficult, every word or group of words in this message will be sent twice.</td>
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## Aircraft registration codes

These codes are painted on all aircraft, showing their country of registration.

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MH Malaysia Airlines
MK Air Mauritius
MN Commercial Airways
MR Air Mauritanie
MS Egyptair
NF Air Vanuatu
NG Lauda Air
NH All Nippon Airways
NO Aus-Air
NQ Air Japan
NV Nok Air
NW Northwest Airlines
NZ Air New Zealand
OA Olympic Airlines
OB Astrakhan Airlines
OK Czech Airlines
OM MIAT - Mongolian Airlines
ON Air Nauru
OO SkyWest Airlines
OS Austrian Airlines
OU Croatia Airlines
OV Estonian Air
PB Provincial Airlines
PC Air Fiji
PH Polynesian Airlines
PK Pakistan International Airlines
PR Philippine Airlines
PS Ukraine International Airlines
PU Pluna Lineas Aereas Uruguayas
PX Air Niugini
PY Surinam Airways
PZ TAM - Transportes Aereos do Mercosur
QF Qantas Airways
QM Air Malawi
QR Qatar Airways
QU East African Airlines
QV Lao Airlines
QX Horizon Air
QA Royal Afghan Airlines
RB Syrian Arab Airlines
RG Varig
RJ Royal Jordanian
RK Royal Khymer Airlines
RO TAROM
SA South African Airways
SD Sudan Airways
SK SAS
SN SN Brussels Airlines
SQ Singapore Airlines
SU Aeroflot Russian Airlines
SV Saudi Arabian Airlines
SW Air Namibia
TC Air Tanzania
TE Lithuanian Airlines
TG Thai Airways International
TK Turkish Airlines
TM LAM - Lineas Aereas de Moçambique
TN Air Tahiti Nui
TP TAP - Air Portugal
TU Tunisair
U2 Easyjet
UA United Airlines
UB Myanmar Airways
UI Eurocypria Airlines
UL SriLankan Airlines
UM Air Zimbabwe
US US Airways
UY Cameroon Airlines
VE AVENSA
VH Aeropostal
VJ Jatayu Airlines
VN Vietnam Airlines
VO Tyrolean Airlines
VR TACV - Transportes Aereos de Cabo Verde
VS Virgin Atlantic
VA Air Ivoire
VX V Bird
VG Wizz Air
VW Wasaya Airlines
WJ Labrador Airways
W6 Wizz Air
WP Wasaya Airlines
WR Royal Tongan Airlines
WX Oman Aviation
YK Kibris Turk Hava Yollari
YN Air Creebec
YU Dominair
ZB Monarch Airlines
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Weights and Measures: Metric Measures

**Length**
- 1 millimetre (mm) = 0.0394 in
- 1 centimetre (cm) = 10 mm = 0.3937 in
- 1 decimetre (dm) = 10 cm = 3.937 in
- 1 metre (m) = 100 cm = 1.0936 yds
- 1 kilometre (km) = 1000 m = 0.6214 mile

**Area**
- 1 square millimetre (mm^2) = 0.0016 sq. in.
- 1 square centimetre (cm^2) = 100 mm^2 = 0.155 sq. in
- 1 square metre (m^2) = 10,000 cm^2 = 1.196 sq. yds
- 1 are (a) = 100 m^2 = 119.6 sq. yds
- 1 hectare (ha) = 100 ares = 2.4711 acres
- 1 square kilometre (km^2) = 100 hectares = 0.3861 sq. mile

**Weight**
- 1 milligram (mg) = 0.0154 grain
- 1 gram (g) = 1000 mg = 0.0353 oz
- 1 kilogram (kg) = 1000 g = 2.2046 lb
- 1 tonne (t) = 1000 kg = 0.9842 ton

**Volume**
- 1 cubic centimetre (cm^3) = 0.061 cu. in
- 1 cubic decimetre (dm^3) = 1000 cm^3 = 0.0351 cu. ft
- 1 cubic metre (m^3) = 1000 dm^3 = 1.308 cu. yds

**Liquid Volume**
- 1 litre (l) = 1 dm^3 = 1.76 pt
- 1 hectolitre (hl) = 100 l = 22 gal
# Weights and Measures: Imperial Measures

## Length
- 1 inch (in) = 2.54 cm
- 1 foot (ft) = 12 in = 0.3048 m
- 1 yard (yd) = 3 ft = 0.9144 m
- 1 rod (rd) = 5.5 yds = 4.0292 m
- 1 chain = 4 rds = 20.117 m
- 1 furlong = 10 chains = 201.17 m
- 1 mile = 8 furlongs = 1.6093 km
- 1 nautical mile = 2025.4 yds = 1.852 km

## Area
- 1 square inch = 6.4516 cm²
- 1 square foot = 144 sq. ins = 0.0929 m²
- 1 square yard = 9 sq. ft = 0.8361 m²
- 1 acre = 4840 sq. yds = 4046.9 m²
- 1 square mile = 640 acres = 259 hectares

## Weight
- 1 ounce (oz) = 437.6 grains = 28.350 g
- 1 pound (lb) = 16 oz = 0.4536 kg
- 1 stone = 14 lb = 6.3503 kg
- 1 hundredweight (cwt) = 112 lb = 50.802 kg
- 1 long ton = 20 cwt = 1.0161 t

## Volume
- 1 cubic inch = 16.387 cm³
- 1 cubic foot = 1728 cu. ins = 0.0283 m³
- 1 cubic yard = 27 cu. ft = 0.7646 m³

## Liquid Volume
- 1 fluid ounce (fl. oz) = 8 fl. drachms = 28.413 cm³
- 1 pint (pt) = 20 fl. oz = 568.26 cm³
- 1 gill = 4 gills = 0.5683 l
- 1 quart (qt) = 2 pt = 1.1365 l
- 1 gallon (gal) = 8 pt = 4.5461 l
- 1 bushel (bu) = 8 gal = 36.369 l

## Liquid Volume (US)
- 1 fluid ounce (US) = 29.574 ml
- 1 pint (US) = 16 fl. oz (US) = 0.4723 l
- 1 gallon (US) = 8 pt (US) = 3.7854 l
## Conversion factors: Imperial to Metric

<table>
<thead>
<tr>
<th>Length</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>millimetres</td>
</tr>
<tr>
<td>inches</td>
<td>centimetres</td>
</tr>
<tr>
<td>feet</td>
<td>metres</td>
</tr>
<tr>
<td>yards</td>
<td>metres</td>
</tr>
<tr>
<td>statute miles</td>
<td>kilometres</td>
</tr>
<tr>
<td>nautical miles</td>
<td>kilometres</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
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</thead>
<tbody>
<tr>
<td>square inches</td>
<td>square centimetres</td>
</tr>
<tr>
<td>square feet</td>
<td>square metres</td>
</tr>
<tr>
<td>square yards</td>
<td>square metres</td>
</tr>
<tr>
<td>acres</td>
<td>hectares</td>
</tr>
<tr>
<td>square miles</td>
<td>square kilometres</td>
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</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>Multiply by</th>
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</thead>
<tbody>
<tr>
<td>cubic inches</td>
<td>cubic centimetres</td>
</tr>
<tr>
<td>cubic feet</td>
<td>cubic metres</td>
</tr>
<tr>
<td>cubic yards</td>
<td>cubic metres</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquid Volume</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluid ounces (UK)</td>
<td>litres</td>
</tr>
<tr>
<td>fluid ounces (US)</td>
<td>litres</td>
</tr>
<tr>
<td>pints (UK)</td>
<td>litres</td>
</tr>
<tr>
<td>pints (US)</td>
<td>litres</td>
</tr>
<tr>
<td>gallons (UK)</td>
<td>litres</td>
</tr>
<tr>
<td>gallons (US)</td>
<td>litres</td>
</tr>
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<table>
<thead>
<tr>
<th>Weight</th>
<th>Multiply by</th>
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</thead>
<tbody>
<tr>
<td>ounces (avoirdupois)</td>
<td>grams</td>
</tr>
<tr>
<td>ounces (troy)</td>
<td>grams</td>
</tr>
<tr>
<td>pounds</td>
<td>kilograms</td>
</tr>
<tr>
<td>tons (long)</td>
<td>tonnes</td>
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</tbody>
</table>
**Conversion factors: Metric to Imperial**

### Length

<table>
<thead>
<tr>
<th>Metric</th>
<th>Imperial</th>
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</thead>
<tbody>
<tr>
<td>millimetres</td>
<td>inches</td>
<td>0.0394</td>
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<tr>
<td>centimetres</td>
<td>inches</td>
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<tr>
<td>metres</td>
<td>feet</td>
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<tr>
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<td>yards</td>
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<td>kilometres</td>
<td>statute miles</td>
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### Area

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
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<tbody>
<tr>
<td>square centimetres</td>
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<td>0.155</td>
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<tr>
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<td>square feet</td>
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<td>hectares</td>
<td>acres</td>
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<tr>
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<td>square miles</td>
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### Volume

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
<th>Multiply by</th>
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</thead>
<tbody>
<tr>
<td>cubic centimetres</td>
<td>cubic inches</td>
<td>0.061</td>
</tr>
<tr>
<td>cubic metres</td>
<td>cubic feet</td>
<td>35.315</td>
</tr>
<tr>
<td>cubic metres</td>
<td>cubic yards</td>
<td>1.308</td>
</tr>
</tbody>
</table>

### Liquid Volume

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>litres</td>
<td>fluid ounces (UK)</td>
<td>35.1961</td>
</tr>
<tr>
<td>litres</td>
<td>fluid ounces (US)</td>
<td>33.8150</td>
</tr>
<tr>
<td>litres</td>
<td>pints (UK)</td>
<td>1.7598</td>
</tr>
<tr>
<td>litres</td>
<td>pints (US)</td>
<td>2.1134</td>
</tr>
<tr>
<td>litres</td>
<td>gallons (UK)</td>
<td>0.2199</td>
</tr>
<tr>
<td>litres</td>
<td>gallons (US)</td>
<td>0.2642</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
<th>Multiply by</th>
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</thead>
<tbody>
<tr>
<td>grams</td>
<td>ounces (avoirdupois)</td>
<td>0.0353</td>
</tr>
<tr>
<td>grams</td>
<td>ounces (troy)</td>
<td>0.0322</td>
</tr>
<tr>
<td>kilograms</td>
<td>pounds</td>
<td>2.2046</td>
</tr>
<tr>
<td>tonnes</td>
<td>tons (long)</td>
<td>0.9842</td>
</tr>
</tbody>
</table>

### Temperature

<table>
<thead>
<tr>
<th>Metric</th>
<th>Operation (in sequence)</th>
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</thead>
<tbody>
<tr>
<td>Celsius</td>
<td>Fahrenheit = x 9, ÷ 5, + 32</td>
</tr>
<tr>
<td>Fahrenheit</td>
<td>Celsius = - 32, x 5, ÷ 9</td>
</tr>
</tbody>
</table>