

Word/phrase	Definition
Biology	
Nutrition	The taking in of nutrients which are organic substances or mineral ions, containing raw materials, or energy for growth and tissue repair, absorbing and assimilating them.
Excretion	The removal from organisms of toxic waste, the waste products of metabolism and substances in excess to requirements.
Sensitivity	The ability to detect or sense changes in the environment and to make responses.
Growth	The permanent increase in size or dry mass by an increase in cell size, or number, or both.
Reproduction	The process that makes more of the same kind of organism.
Movement	An action by an organism or part of an organism causing a change in position or place.
Digestion	The break down of food molecules into small water soluble molecules using mechanical and chemical processes.
Enzyme	A protein that functions as a biological catalyst.
Partially permeable Membrane	A membrane that is permeable to some substances and impermeable to others (all cell membranes are partially permeable).
Egestion	The passing out of undigested food as faeces, through the anus.
Ingestion	Taking in substances into the body through the mouth.
Photosynthesis	The fundamental process by which plants manufacture carbohydrates from raw materials using energy from light.
Absorbtion	The movement of digested food molecules though the wall of the small intestine into the blood.
Transpiration	The evaporation of water from the surfaces of mesophyll cells followed by a loss of water vapour from plant leaves through stomata.
Translocation	The movement of sucrose and amino acids in phloem, from regions of production to regions of storage or utilisation in respiration and growth.
Respiration	The chemical reactions that break down nutrient molecules in living cells to release energy.
Aerobic respiration	The release of a relatively large amount of energy in cells by the break down of food substances in the presence of oxygen.
Anaerobic respiration	The release of relatively small amounts of energy by the breakdown of food substance in the absence of oxygen.
Hormone	A chemical substance made in a gland, carried by the blood, which alters the activity of one or more specific target organs and is then destroyed by the liver.
Geotropism	The response made by part of a plant in which it grows towards or away from gravity.
Phototropism	The response made by part of a plant, by which it grow towards or away from the direction of light.
Homeostasis	The maintenance of a constant internal environment.

Sexual reproduction	The process that involves the fusion of haploid nuclei to form a diploid zygote and the production of genetically dissimilar offspring.
Asexual reproduction	The process resulting in genetically identical offspring from one parent.
Pollination	The transfer of pollen from the male part of the plant (anther of stamen) to the female part (the stigma).
Inheritance	The transmission of genetic information from generation to generation.
Chromosome	A thread of DNA made up of a string of genes.
Gene	A length of DNA that is a unit of heredity and codes for a specific protein. a gene may be copied and passed onto the next generation.
Allele	Any two or more alternative forms for a gene.
Haploid nucleus	A nucleus containing only a single set of unpaired chromosomes.
Diploid nucleus	A nucleus containing two sets of chromosomes, one from each parent.
Mitosis	A nuclear division giving rise to identical cells in which the chromosome number is maintained by the exact duplication of chromosomes.
Meiosis	A reduction division in which the chromosome number is halved from diploid to haploid.
Genotype	The genetic make up of organism in terms of the alleles present.
Phenotype	The physical or other features of an organism due to both its genotype and its environment.
Homozygous	Having two identical alleles of a particular gene. Two identical homozygous individuals that breed together will be pure breeding.
Heterozygous	Having two different alleles of a particular gene and will not be pure breeding.
Dominant	An allele that is expressed when present.
Recessive	An allele that is only expressed if there is no dominant allele of that gene present.
Mutation	A change in a gene or chromosome.
Natural selection	The greater chance of passing on of genes by the best adapted organisms.
Food chain	A chart showing the flow of energy from one organism to the next, beginning with a producer.
Food web	A network of interconnected food chains showing the energy flow through part of an ecosystem.
Ecosystem	A unit containing all of the organisms and their environment interacting together, in a given area.
Trophic level	The position in a food chain occupied by an organism.
Decomposer	An organism that gets its energy from dead or waste organic matter.

Producer	An organism that makes its own organic nutrients, usually using energy from sunlight through photosynthesis.
Consumer	An organism that gets its energy from feeding on other organisms.
Herbivore	An animal that gets its energy by eating only plants.
Carnivore	An animal that gets its energy by eating only other animals.
Omnivore	An animal that gets its energy by eating both plants and other animals.
Habitat	The place where an organism lives to obtain its food and reproduces.
Osmosis	The diffusion of water molecules from their region of higher concentration to a region of their lower concentration through a partially permeable membrane.
Diffusion	The net movement of molecules from their region of higher concentration to a region of their lower concentration, down a concentration gradient as a result of their random movement.

Chemistry

Atom	The smallest unit of an element.
Element	Atoms with the same number of protons in their nuclei. An element is a substance that cannot be broken down further by <i>chemical means</i> .
Compound	Two or more elements chemically joined/bonded.
Mixture	Two or more substances physically mixed (easily separated).
Molecule	Two or more atoms joined together by a covalent bond. molecules can be elements (e.g. H ₂ , O ₂ etc.) or compounds (e.g. CH ₄ , H ₂ SO ₄).
Diatomic molecule	Two atoms of the same element joined by a covalent bond (e.g. H ₂ , N ₂ , O ₂ , F ₂ , Cl ₂ , Br ₂ , I ₂ , At ₂).
Proton number	This is the number of protons in the nucleus of an element (same as atomic number).
Nucleon number	This is the number of protons and neutrons in the nucleus of an element (slightly different from relative atomic mass).
Isotope	A form of an element with a different number of neutrons.
Relative Atomic Mass (RAM)	The mass of an atom relative to one atom of carbon-12.
Relative Molecular Mass (RMM)	The sum of all the relative atomic masses of the atoms in a molecule (e.g. RMM of H ₂ O is 1+1+16=18).
Relative Formula Mass (RFM)	The same as above but for an ionic compound (e.g. NaCl or CaCO ₃).
Mole	The number of atoms in exactly 12 grams of carbon-12. The number is called Avogadro's number.
Exothermic	A reaction that releases heat energy (temperature of surroundings increases).
Endothermic	A reaction that takes in heat energy (temperature of surroundings decreases).
Oxidation	When a substances gains oxygen/when a substance loses

	electrons.
Reduction	When a substance loses oxygen/when a substance gains electrons.
Redox	Oxidation and reduction always occur at the same time and they are collectively known as redox reactions.
Valency	Relating to outer shell electrons.
Hydrocarbon	A molecule that contains <i>only</i> hydrogen and carbon.
Unsaturated hydrocarbon	A hydrocarbon with double bonds present.
Saturated hydrocarbon	A hydrocarbon with no double bonds present (all bond spaces are saturated with hydrogen atoms).
Monomer	A simple compound whose molecules can join together to form polymers.
Polymer	A large molecule made up of chains of linked monomer units.
Electrolysis	The splitting of an ionic compound using electricity.
Electrode	A solid electrical conductor through which an electric current enters and leaves an electrolytic cell.
Anode	The positive electrode.
Cathode	The negative electrode.
Electrolyte	A compound that conducts electricity when molten or when in solution. An ionic substance.
Ion	A charged particle / An atom that has either gained or lost electrons.
Anion	A negatively charged ion.
Cation	A positively charged ion.
Balanced equation	The same number of atoms of each element on both sides of the equation.
Group	The columns in the periodic table. The group number equals the number of electrons in the outer shell.
Period	The rows in the periodic table. The row number equals the number of electron shells in the atom.
Catalyst	A substance that speeds up a reaction but does not take part in the reaction (same mass of catalyst at the end of the reaction as there was at the beginning).

Physics

Speed	The rate of change of distance of an object, or how quickly it moves through a given distance (usually measured in m/s).
Velocity	The speed of an object <i>in a stated direction</i> .
Scalar quantity	A quantity that does not have a directional component (e.g. speed).
Vector quantity	A quantity that has a directional component (e.g. velocity).
Mass	The amount of matter in a substance (measured in kilograms, kg).
Weight	The force of gravity acting on an object (measured in newtons, N).

Density	A measure of how much mass is contained in a given unit volume (density = mass/volume, usually measured in g/cm ³ , or kg/m ³).
Force	A push or a pull. It is measured in newtons (N). A force can change the speed, direction and shape of an object. Examples include gravity, friction, upthrust, air resistance, magnetism, electrostatic force.
Renewable	A resource that can be created again in a human time scale (e.g. wood biomass), or one that will never run out (e.g. solar energy).
Non-renewable	A resource that will one day run out (e.g. coal, uranium).
Fusion	The joining of atomic nuclei to form a larger nucleus. Fusion is how energy is released from stars like our sun.
Fission	The splitting of an unstable nucleus to produce smaller nuclei. The release of energy from these reactions is harnessed in nuclear power stations.
Evaporation	A change of state from liquid to gas below the boiling point of that liquid. Evaporation occurs at the surface of the liquid.
Boiling	A change of state from a liquid to a gas. This occurs only at the boiling point of that liquid. Boiling occurs throughout the volume of the liquid.
Freezing	A change of state from a liquid to a solid.
Condensing	A change of state from a gas to a liquid.
Melting	A change of state from a solid to a liquid.
Thermal capacity	The amount of heat required to change a substance's temperature by a given amount.
Specific heat capacity (SHC)	The specific heat capacity of a substance is the heat energy required to raise 1kg of the substance by 1 degree Celsius (measured in J/kg°C).
Latent heat	The heat released or absorbed by a body as it changes state without a change in temperature.
Latent heat of vaporisation	The heat released by a body as it changes from a gas to a liquid, or absorbed by a body as it changes from a liquid to a gas.
Latent heat of fusion	The heat released by a body as it changes from a liquid to a solid, or absorbed by a body as it changes from a solid to a liquid.
Conduction	The transfer of heat energy through matter from high temperature to low temperature. This is achieved by the transfer of kinetic energy from one particle to the next. It can occur in solids, liquids and gases although the latter two are very poor conductors.
Convection	The transfer of heat energy through a fluid (gas or liquid) as a result of movement of the fluid itself.
Radiation	The transfer of heat energy by electromagnetic radiation (infra-red radiation in particular). This requires no particles so can occur through the vacuum of space.
Frequency	The number of wavelengths per second (1 hertz = 1 wavelength per second).
Wavelength	The distance from one point on a wave to the same point on the

next wave.

Amplitude	The maximum displacement of a wave from its equilibrium position.
Longitudinal	The oscillations of the wave are parallel to the motion of the wave (e.g. sound waves).
Transverse	The oscillations of the wave are perpendicular to the motion of the wave (e.g. light waves).
Refraction	The speeding up or slowing down of a wave as it passes from one medium to another. This is often accompanied by a change in direction as well.
Critical angle	The angle of incidence at which maximum refraction occurs. Any angle larger than this will result in total internal reflection.
Total internal reflection (TIR)	For waves travelling from a more dense medium to a less dense one, any angle larger than the critical angle will result in all of waves being reflected back into the medium.
Principal focus	Also called the focal point, it is the point on the axis of a lens or mirror to which parallel rays of light converge, or from which they appear to diverge after refraction or reflection.
Focal length	The distance from the centre of a lens, or the reflecting surface of a mirror, to the principal focus.
Audible range	The range of frequencies that an animal can detect, from the lowest pitch to the highest pitch. For humans this is 20Hz to 20,000Hz.
Permanent magnet	A material that is hard to magnetise but retains its magnetic properties once magnetised. Made from hard magnetic materials like steel.
Temporary magnet	A material that gains and loses its magnetic properties easily. These form the basis of electromagnets as they quickly demagnetise once the current is switched off. Made from soft magnetic materials like iron.
Current	A flow of electricity through a conductor, measured in amps, A.
Potential difference (p.d.)	The difference, measured in volts, in electric potential between two points.
Electromotive force (emf)	Refers to the voltage generated by a battery, measured in volts.
Transformer	A device that transfers an alternating current from one circuit to another circuit, usually with an increase (step-up transformer) or decrease (step-down transformer) of voltage.
Generator	A device for converting mechanical energy into electrical energy by electromagnetic induction.
Motor	A device that converts electrical energy into mechanical energy.
Alternating current (ac)	An electric current that reverses direction in a circuit at regular intervals.
Direct current (dc)	An electric current that flows in one direction only.
Electro-magnetic induction	When a wire is moved in relation to a magnetic field a current is induced in the wire.

Radioactive decay	Occurs when an unstable nucleus emits ionising radiation and decays into another nuclide.
Half life	The time taken for half of a radioactive material to decay into another substance.
Ionising radiation	Radiation that has enough energy to strip electrons off atoms (thus creating ions).
Electricity	A flow of charge/electrons.

Physics Formulae

$$\text{K.E.} = \frac{1}{2} mv^2$$

$$\text{P.E.} = mgh$$

Work done (energy) = force x distance travelled

Force = mass x acceleration

Speed = distance / time

Acceleration = speed / time

Power = work done (energy) / time

$$I = Q/t$$

$$V=IR$$

$$P = IV$$

$$E = IVt$$

$$R_T = R_1 + R_2 + R_3 \dots$$

$$1/R_T = 1/R_1 + 1/R_2 + 1/R_3 \dots$$

Efficiency = useful energy/total energy x 100%

Moles = mass/molar mass

Moles = volume of gas (in dm³)/24

Moles = volume of solution (in cm³)/1000

Density = mass/volume

Hooke's Law – force = constant x extension (F=kx)

$$V = f \lambda$$