Glossary

The words in this list occur in **dark type** throughout the book. The number after each entry gives the page where you will find more information. For some words the pronunciation is given. The syllable in capitals should be stressed; for example, bicycle (BY-sick-el).

apparatus: science equipment put together for an experiment. 4

arthropod: an invertebrate animal that has a jointed exoskeleton covering its body, eg crab, beetle. 105

asteroids: tiny chunks of metallic rock found orbiting the sun in a wide belt between Mars and Jupiter. 120

atmosphere: the thin layer of gases surrounding the Earth (or any other planet). 120

atoms: particles too small to see, that make up all matter. 215

biologists: scientists who study living things. 93

carnivore (CARN-e-vore): a consumer that eats other animals. 143

cell division: the process in which a cell divides to make two new cells. 193

cell membrane: the thin covering surrounding a cell which controls the movement of substances into and out of the cell. 186

cell wall: the tough outside layer of a plant cell. 186

cells: the building blocks of all living things. Cells are usually microscopic. 94

change of state: a change from one state of matter to another, eg from solid to liquid. 214

chemical bonds: attractive forces between atoms. 215

chemical energy: the form of energy stored in chemicals, eg foods and fuels. 259

chemical equation: a chemical sentence that tells you the reactants and products in a chemical reaction. 48

chemical reaction: a change in which one or more new substances are produced; it cannot easily be reversed. 44

chlorophyll (KLOR-oh-fill): the green substance in plants that is able to absorb the energy of sunlight. 99

chloroplasts: small structures containing chlorophyll, found in the cytoplasm of plants and algae. 186

chromatography (CROW-ma-TOG-ra-fee): atechnique used to separate small amounts of soluble substances in a mixture; for example, the coloured substances in ink can be separated using filter paper. 176

circuit diagram: a standard way of drawing an electric circuit, using symbols. 244

classification: a process of placing living things in groups based on their structural and functional characteristics. 91

colloid (COL-oid): a mixture which has properties in between a solution and a suspension; the particles in the colloid may be tiny bits of solid, liquid droplets or gas bubbles. 165

comets: small bodies that orbit the sun in elongated elliptical orbits; they usually have long glowing tails. 128

community: different groups of organisms that live together in a particular place. 154

concentrated (CON-cen-TRAY-ted): describes a solution containing a large amount of solute, compared with other solutions. 164

concentration: the amount of solute dissolved in a certain volume of solution. 166

condense: to change from a vapour into a liquid; condensation is the opposite of evaporation. 171

conductor: a substance that allows heat or electricity to move through it easily. 238

conifer: a type of plant that produces seeds in cones. 110

conservation of energy: this law says that energy cannot be made or destroyed—it can only be changed from one form to another. 267

consumer: an organism that eats other organisms. 142

crystal: a solid with naturally straight edges, flat sides and regular angles. 277

cytoplasm (SIGH-toe-plaz-um): jelly-like substance that fills most of a cell. 186

data: information gathered by observation, experiment or library research; it may be qualitative or quantitative. 5

decanting: gently pouring off a liquid, leaving the solid in the container. 168

decomposers: organisms (such as some bacteria and fungi) that break down the bodies of dead organisms to simpler substances. 144

density: how much matter is packed into a measured volume; it is measured in grams per cubic centimetre. 208

diffusion: the gradual mixing of substances caused by the random movement of particles. 223

dilute (dye-LOOT): describes a solution containing a small amount of solute, compared with other solutions. 164

dissolves: when two or more substances mix completely, so that they appear as one; eg sugar dissolves in water. 162

distillation: a separation technique that involves evaporating a liquid, then condensing the vapour in a separate container. 171

ecosystem: a system of feeding relationships among organisms and the way they interact with the non-living things in their habitat. 149

elastic potential energy: the energy stored in compressed or stretched springs or other elastic devices. 258

electrical resistance: resistance to the flow of electric current through a conductor; good conductors have low resisance. 241

electric charge: results when an object gainselectrons (negative charge) or loses electrons (positive charge). 230

electric circuit: a continuous path around which an electric current can flow. 238

electric current: the flow of electricity around an electric circuit. 237

electrons: tiny particles carrying a negative charge; they surround the nucleus of an atom. 233

emulsion (ee-MULL-shun): a colloid with tiny droplets of one liquid spread through a second liquid; milk is an emulsion. 165

energy: the ability to do work; there are many different forms of energy. 254

energy chain: a series of steps in which energy changes form, eg chemical energy → heat energy → kinetic energy. 266

erosion: the process by which weathered material is carried away by water, wind or glaciers. 285

evaporate (e-VAP-or-ATE): to change state from liquid to gas; evaporation can be used to separate a solute from a solvent. 171

exoskeleton: the protective, jointed covering on the out-side of arthropods, eg insects, spiders and crabs. 105

experiment: a well thought out scientific test, usually designed to test a hypothesis or prediction. 39

fern: a type of plant that has a stem and reproduces by spores. 109

fertilisation (FUR-til-eyes-AY-shun): the process in which the nuclei of a sperm and ovum join to make a new living thing. 193

filtering (filtration): a way of separating a solid from a liquid (or gas) using a filter. 168

flowering plant: a type of plant that produces flowers and whose seeds are contained in a fruit. 110

food chain: a diagram that shows a chain of organisms in which each organism is eaten by the next in the chain. 139

food web: a number of food chains together showing what all organisms in a particular area eat. 143

force: any push or pull, measured in newtons (N); it may act by contact or at a distance. 69

fossil fuels: fuels obtained from material that was once living; for example, oil, coal and natural gas. 268

friction: a force that exists when two things rub against each other; it slows down or prevents movement. 77

fungi: plant-like organisms that do not contain chlorophyll; they obtain their food from dead or living organisms, eg mushrooms, moulds. 100

galaxy: an enormous number of stars grouped together and having one of three basic shapes—spiral, elliptical or irregular. 131

generalisation: a statement or conclusion, based on many observations, that holds true for most cases; for example, most plants are green. 13

gravitational potential energy: the energy stored in a raised object. 257

gravity: the force of attraction between any two objects; eg between a person and the Earth. 83

habitat: the living place of an organism. 148

herbivore (HER-be-vore): a first-order consumer that eats only plants. 143

igneous (IG-nee-us) rock: a type of rock formed by the cooling and hardening of magma or lava. 277

inference: an explanation of an observation; it may or may not be correct. 24

insulator: a substance that does not allow heat or electricity to move through it easily. 238

invertebrate (in-VER-te-brate): an animal that does not have a bony skeleton, eg a worm, jellyfish, insect. 94

joule (J): the unit for measuring work and energy. 254

kilojoule (kJ): a unit in which energy is measured; 1 kilojoule = 1000 joules. 254

kinetic (kin-ET-ic) energy: the energy that a moving object has. 257

kingdoms: the major groups used in classifying living things; the five kingdoms contain all the living things on Earth. 98

laboratory (la-BOR-a-tory): a special room used for science experiments. 1

lava: hot molten material that flows from beneath the Earth's crust onto the surface, usually from volcanoes; it cools to form volcanic rock. 217

light-year: an astronomical unit that is used to measure the huge distances between stars; it is the distance light travels in one year. 131

lubricant (LOO-bri-cant): a substance that reduces friction and allows surfaces to slip easily over each other. 79

magma: molten rock within the Earth. 276

mass: the amount of matter in an object; it is measured in kilograms. 83

matter: a term used to include anything that has mass and occupies space (has volume). 206

meniscus (men-IS-cus): the curved upper surface of a liquid in a measuring cylinder or tube. 30

menopause: the period in the life of a woman when the reproductive cycle stops operating. 195

metamorphic (met-a-MOR-fik) rock: a type of rock formed from other rocks by the action of heat and pressure. 290

meteorites: pieces of rock or metal from space that crash into planets or moons. 128

minerals: substances that occur naturally in the Earth; they are the building blocks of rocks. 278

mixture: two or more pure substances mixed together but not chemically combined. 161

model: a way of representing something that cannot be observed directly because it is too small, too large or too complicated; for example, a model of a molecule. 215

mollusc: an invertebrate animal that has a soft body and lives in water or in moist surroundings; most molluscs have a shell, eg snail, periwinkle. 105

moneran (MON-er-an): an organism that belongs to the Monera kingdom; these organisms include bacteria and blue–green algae. 102

moss: a type of small plant that has simple leaves and very simple roots but no stem. 109

nebula (NEB-you-la): a huge expanding cloud made up of dust and gases formed after a massive star explodes (supernova). 133

newton: the unit used to measure force. 74

non-renewable energy: energy resources that are not replaced as they are used; for example, coal and oil. 270

nuclear energy: the energy stored inside the nuclei of atoms. 259

nucleus (atom): the positively charged core of an atom; it contains protons and neutrons. 233

nucleus (cell): the small rounded object that controls the activities of a living cell. 186

observation: information about objects and events, collected by using one or more of your senses. 12

orbit: the path followed by an object as it revolves around another object, eg the orbit of the Earth as it revolves around the Sun. 117

ores: minerals or rocks from which metals can be extracted. 278

organ: a collection of tissues that has a particular function in the body, eg heart, kidney. 190

organelles (OR-gan-els): small structures found in the cytoplasm of cells, eg chloroplasts. 186

organism: a term used to mean any living thing. 94

ovary (OH-var-ee): the female reproductive organ that makes ova (eggs). 193

ovum (plural ova): the female sex cell, also called an egg. 193

parallax error: error that occurs when you don't look square-on to a measuring instrument. 30

parallel connection: a method of connecting electrical components (eg batteries and bulbs), so that the current divides and part passes through each component. 245

particle theory: the theory that all matter is made up of particles (atoms or molecules) that are too small to see and that are always moving. 215

photosynthesis (foe-toe-SIN-thu-sis): the process in which the energy of sunlight is absorbed by chlorophyll in green plants and is used to make food and oxygen. 56

physical change: a change where the properties of a substance change, but the substance is still the same; for example, when water freezes. 45

plasma (matter): fourth state of matter that exists at very high temperatures; it consists of charged particles even further apart than the particles in a gas. 222

plutonic (ploo-TON-ic) rock: igneous rock that formed from magma that hardened beneath the Earth's surface; for example, granite. 278

population: a number of organisms of the same kind that live in a particular area. 154

potential energy: stored energy, available to be converted to other forms of energy. 257

properties: the characteristics or features something has. 161

precipitate (pre-SIP-it-ate): a solid that forms as a result of mixing two solutions. 48

predicting: making a forecast of what a future observation will be, based on past observations. 25

producer: an organism that makes its own food using the energy of sunlight. 142

products: the new substances produced in a chemical reaction. 48

protist: an organism that belongs to the Protist kingdom; these organisms live in water and include mostly unicellular organisms and algae. 101

puberty: the period of time (usually between the ages of 10 and 15) during which sexual development occurs. 195

pure substance: matter containing only one substance (either an element or a compound); it has a fixed composition and fixed properties. 161

qualitative (KWAL-i-tate-ive): type of observation using words, without measurement. 29

quantitative (KWONT-i-tate-ive): type of observation that involves measurement. 29

reactants: the substances you start with and that react with each other in a chemical reaction. 48

reaction rate: the speed of a chemical reaction. 49

renewable energy: energy resources that can be replaced as they are used; for example, solar energy. 270

respiration (RES-per-AY-shun): the process in living things of getting energy from foods. 56

saturated: describes a solution that contains the maximum amount of solute that will dissolve at that temperature. 164

scavengers: animals that eat the flesh and organs of dead or dying organisms. 144

sediment: weathered material such as mud, sand, and gravel carried mainly by running water and deposited somewhere else. 285

sedimentary rock: a type of rock formed by the cementing together and hardening of sediments. 288

series connection: a method of connecting electrical components (eg batteries and bulbs), so that the current passes through one then the other. 244

sex cell: a special cell for reproduction. The male sex cell is a sperm and the female is an ovum (egg). 193

solubility: the amount of solute that will dissolve in a measured volume of solvent at a particular temperature. 164

solute: a substance that dissolves in a solvent to form a solution. 162

solution: a liquid (or solid) containing one or more solutes dissolved in a solvent; for example, salt water. 162

solvent: a substance that can dissolve other substances. 162

sperm cell: the male sex cell. 193

spores: tiny reproductive cells in some groups of organisms, eg fungi, ferns and mosses. 100

states of matter: there are three states of matter—solid, liquid and gas; a substance can exist in any of these three states. 206

supernova: an explosion of a massive star which scatters most of its matter into space. 133

suspension: a mixture in which tiny bits of solid (or liquid) are evenly spread through a liquid (or gas), but are not dissolved; if allowed to stand, the suspended matter slowly settles out. 162

testes (TES-teez): the two male reproductive organs that make sperm. 193

theory: what a hypothesis becomes after it has been supported again and again by experimental results. 215

tissue: a group of similar cells organised to do a particular job in the body, eg muscle tissue. 190

universe: space and everything in it. 116

vacuole (VAK-you-ole): a liquid-filled space found mainly in plant cells which is used to store water and dissolved food. 186

vertebrate (VER-te-brate): an animal that has a bony skeleton to support its body, eg dog, bird, fish. 94

volcanic rock: igneous rock formed from lava that hardened on the Earth's surface; for example, basalt. 278

voltage: the electrical 'push' causing current to flow in an electric circuit. 238

weathering: the slow physical and chemical breakdown of rocks by the action of rain, cold, etc. 282

weight: the force that is exerted on an object by gravity; it is measured in newtons. 83

work: the result of a force moving an object a certain distance; energy is needed to do work. 254