- GRADE 8 -

Glossary

How to Use This Glossary

This Glossary provides the definitions of the key terms that are shown in boldface type in the text. (Instructional boldfaced words such as "observe" and "explain" are not included.) The Glossary entries also show the sections where you can find the boldfaced words. A pronunciation guide, using the key below, appears in square brackets after selected words.

a = mask, back
ae = same, day
ah = car, farther
aw = dawn, hot
e = met, less
ee = leaf, clean
ih = idea, life
i = simple, this
oh = home, loan
oo = food, boot
u = wonder, Sun
uh = taken, travel
uhr = insert, turn

A

absorption the process in which nutrients are absorbed by the small intestine (2.2)

abyssal plains [a-BIS-uhl] the wide, flat part of the ocean lying between the continental margins and mid-ocean ridges (11.1)

acid precipitation precipitation with a pH of less than 5.0 that forms when water vapour combines with nitrogen oxides and sulfur dioxide (produced by the burning of fossil fuels) to form sulfuric, sulfurous, nitric, and nitrous acids (12.3)

acquired immune response a highly specific attack on a pathogen or antigen by the creation of antibodies to fight it (3.1)

action-at-a-distance forces forces that affect objects without touching them (e.g., gravitational, magnetic, and electrostatic forces) (8.1)

active immunity long-lasting disease protection that is acquired through the production of antibodies in response to an invading pathogen (3.1)

adhesion the attraction between the molecules of two different substances in contact with each other (8.3)

allergen [AL-uhr-jen] any substance that causes an allergic reaction (3.2)

allergy an unusually high sensitivity to a substance, which causes an immune reaction (3.2)

alveoli [ahl-vee-OH-lee] in the lungs, tiny air sacs at the ends of the bronchioles, where gas exchange takes place (singular: alveolus) (2.3)

amplitude [AM-pli-tyood] the height of a wave crest or depth of a wave trough as measured from the wave's rest position; a measure of energy carried by the wave (4.1)

analogy a comparison made to help explain new ideas (plural: analogies) (1.2)

anaphylactic shock [an-uh-fil-AK-tik] a severe allergic reaction that can result in swelling, breathing difficulty, and sometimes death (3.2)

angle of incidence *(i)* the angle formed by the incident ray and the normal (5.1)

angle of reflection *(r)* the angle formed by the reflected ray and the normal (5.1)

angle of refraction *(R)* the angle of a ray of light emerging from the boundary between two materials, measured between the refracted ray and the normal (5.1)

anorexia nervosa [a-nuh-REK-see-uh ner-VOH-suh] an eating disorder in which a person severely restricts the amount of food she or he eats (2.2)

antibodies specific particles created by the immune system to destroy specific disease-causing invaders (singular: antibody) (3.1)

antigen [AN-ti-jen] any substance the body cannot recognize; usually a non-living particle (3.1)

aorta the largest artery in the body (2.3)

aperture [A-puhr-chuhr] in a camera, the opening through which light passes (6.2)

aquifer [AK-wi-fuhr] an underground layer of porous rock through which water can flow quite easily (10.3)

arête [a-RET] a narrow ridge (high ground) between two cirques (10.4)

arteries blood vessels that carry blood away from the heart (2.3)

arterioles the smallest arteries of the body with a diameter of about 0.5 mm (2.3)

asthma a disease of the respiratory system that interferes with the normal flow of air into the lungs (9.3)

astigmatism [a-STIG-muh-tiz-uhm] blurred vision caused by an irregularly shaped cornea (6.1)

atria [AE-tree-uh] the two upper chambers of the heart, which allow the blood to move from the body into the heart (singular: atrium) (2.3)

B

B cell a type of white blood cell that recognizes antigens present in the body and produces specific antibodies to fight them (3.2)

bacteria any of various groups of single-celled micro-organisms, some of which can cause disease (singular: bacterium) (1.2)

balanced forces forces that are equal in strength and opposite in direction; they do not change the motion of an object (8.1)

barometer [buh-RAWM-uh-tuhr] a device for measuring the pressure of the atmosphere (9.3)

bay an indented area of coastline where the ocean reaches into the land (11.2)

benthic zone the cold, dark part of the ocean that extends deeper than 4000 m from the surface (12.2)

bile a substance in the body that breaks down globs of fat into smaller droplets; produced by the liver and stored in the gall bladder (2.2)

biological weathering physical or chemical weathering caused by plants or animals (10.4)

blind spot place on the retina where the optic nerve is attached and which cannot detect light because of the absence of both cone and rod cells (6.1)

blindness any vision impairment that prevents people from carrying out important life activities; ability to detect very little or no light (6.1)

blood the fluid that transports substances to and from all parts of the body; consists of plasma, red blood cells, and white blood cells (2.3)

blood pressure the force of the blood on the walls of the blood vessels (9.3)

blood vessels the arteries, veins, capillaries, and venules that carry blood throughout the body (2.3)

boiling point the temperature at which a liquid changes into a gas (7.1)

bolus [BOH-luhs] a softened lump of food that has been chewed and covered in saliva so that it can be swallowed (plural: boli) (2.2)

bronchi [BRAWN-kee] two tubes that branch out from the trachea into the right and left lungs (singular: bronchus) (2.3)

bronchioles [BRAWN-kee-ohlz] in the lungs, small air tubes branching out from the bronchi (2.3)

bulimia nervosa [boo-LEE-mee-uh ner-VOH-suh] an eating disorder in which a person eats large amounts of food and then vomits or takes laxatives to get rid of the food before it can be completely digested (2.2)

buoyancy [BOY-uhn-see] the ability or tendency to float in a fluid (9.1)

buoyant force the upward force exerted by a fluid (9.1)

C

capacity unit unit used to measure the volume of liquids (e.g., the litre (L)) (Science Skills)

capillaries the networks of tiny blood vessels that connect arteries to venules (singular: capillary) (2.3)

carbohydrates essential nutrients that are the body's quickest source of energy. A simple carbohydrate is one sugar molecule; a complex carbohydrate is a chain of simple carbohydrates. (2.2)

cartilage a slippery layer of tissue covering the ends of bones (2.1)

cave a large underground hollow in rock created over time by weathering and erosion (10.4)

cell the basic unit of life. (1, introduction)

cell membrane a thin protective covering that separates the interior of a cell from its surroundings; also controls the movement of particles into and out of the cell (1.2)

cell theory one of the main ideas of modern biology: 1. The cell is the basic unit of life. 2. All organisms are composed of one or more cells. 3. All cells come from other living cells. (1.2)

cell wall a tough, rigid structure that surrounds and protects a plant cell and gives the cell its rectangular, box-like shape (1.2)

cellular respiration a process in which the chemical energy taken in through food is changed into energy that cells use to carry out their activities (1.2)

charge-coupled device (CCD) an electronic device that senses and absorbs light and provides electrical signals needed to produce a digital image (6.2)

check valve in hydraulics, a valve that allows fluids to flow in only one direction (9.2)

chemical digestion the breakdown of food by chemicals in the body; begins when amylase, an enzyme produced by saliva, helps break down complex carbohydrates into simple carbohydrates (2.2)

chemical weathering the process through which rock is broken down when its minerals react with chemical agents such as oxygen, carbon dioxide, water, and acids (10.4)

chloroplasts parts of plant cells that trap energy from the Sun and change it into chemical energy that plants use (1.2)

chyme a thin liquid produced in the stomach during the digestion process (2.2)

cilia tiny hair-like projections on the inside of respiratory passages, which trap and remove dirt and other particles (singular: cilium) (2.3)

circulatory system [SER-kyoo-luh-toh-ree] the body system that moves blood throughout the body; includes the heart, blood vessels, and blood (2.3)

cirque [SERK] a bowl-shaped valley at the head of a glacier (10.4)

climate the weather characteristics for a specific region averaged over a long time period (11.3)

cohesion the strength with which the particles of an object or fluid attract each other (8.3)

colour blindness ability to see only in shades of grey (6.1)

colour vision deficiency inability to distinguish certain colours (6.1)

compound light microscope the type of microscope usually used in science classes and medical laboratories to enlarge images (1.1)

compression a decrease in volume produced by a force (8.2)

compression wave a wave in which matter in the medium moves back and forth along the same direction that the wave travels (4.1)

concave curved inward (e.g., like the bowl of a spoon) (5.2)

concave lens a lens that is thinner and flatter in the middle than around the edges; refracts light rays so they spread out (5.3)

concave mirror a reflective surface that curves inward and can magnify objects (5.2)

concentration the amount of a substance contained in a given space; the more there is, the higher the concentration (1.3)

concept map a diagram made up of words or phrases in circles or boxes with connecting lines; used to show various relationships among concepts; can also contain references to events, objects, laws, themes, classroom activities, or other items or patterns related to the concepts (Science Skills)

conclusion an explanation of the results of an experiment as it applies to the hypothesis being tested (Science Skills)

condensation the process of changing state from a gas to a liquid (7.1, 10.1)

cone cells cone-shaped cells located in the retina that absorb light; they allow us to see colour in bright light (6.1)

contact forces forces that affect objects they touch (e.g., tension, elastic, and friction forces) (8.1)

continental margins the part of continents that lies under the ocean and includes the continental shelf, the continental slope, and the continental rise (11.1)

continental rise an area at the foot of the continental slope, created from the accumulation of sediments deposited by turbidity currents (11.1)

continental shelf the shallowest part of a continental margin that extends out into the ocean from the shore (11.1)

continental slope an area that drops off rapidly to the ocean basin from the edge of the continental shelf (11.1)

control in a scientific experiment, a standard to which the results are compared; often necessary in order to draw a valid conclusion; ensures a fair test (Science Skills)

convection the process of heat transfer through the flow of a heated substance such as air or water (9.1, 11.3)

converging coming together at a point (5.2)

convex curved outward (e.g., like the back of a spoon) (5.2)

convex lens a lens that is thicker in the middle than around the edges; focusses light rays at a focal point (5.3)

convex mirror a reflective surface that curves outward (5.2)

Coriolis effect [kor-ee-OH-luhs] an alteration of direction in the paths of winds and currents due to Earth's spin; in the northern hemisphere, winds and currents are deflected east, and in the southern hemisphere, they are deflected west (11.2)

cornea a transparent tissue covering the iris and pupil of the eye (6.1)

crest the highest point in a wave (4.1)

crevasse deep crack that forms in a glacier (10.3)

cubic unit unit used to report the volume of a substance (e.g., cm^3) (Science Skills)

cytoplasm [SIH-toh-pla-zuhm] a jelly-like substance within a cell, containing organelles, water, and other life-supporting materials (1.2)

D

deformation a change of shape of a solid without a change of volume (8.2)

delta an area of built-up sediment deposited by a river where the river empties into an ocean or a lake (10.4)

density the mass of a given volume (7.2, 10.2)

density current the movement of a mass of cold, dense ocean water as it sinks beneath warmer surface water (11.2)

deoxyribonucleic acid (DNA) [dee-AHK-si-rih-boh-nyoo-KLAE-ik] the substance in the nucleus of a cell that carries the heredity material that is passed on from generation to generation during reproduction (1.2)

deposition in physics, the change in state of a substance from gas directly to solid without forming a liquid (7.1); in geology, the process in which eroded sediments and other material are dropped or left by water or ice, creating built-up landforms such as deltas and eskers (10.4)

diaphragm [DIH-uh-fram] in the respiratory system, a sheet of muscle in the lower chest that moves downward with each inhalation (9.3); in a camera, an adjustable opening, similar to the iris of the eye, which controls the amount of light allowed in (6.2)

diffusion the movement of particles from an area of higher concentration to an area of lower concentration (1.3)

digestion the process in which food is broken down, its nutrients are absorbed and stored, and the wastes are eliminated (2.2)

digestive system the system of organs and body structures that work together during the process of digestion, such as the mouth, esophagus, stomach, and intestines (2.2)

displacement the amount of space an object takes up when placed in a fluid (7.2)

diverging spreading apart (5.2)

drainage basin the area of land on which precipitation falls and drains into a common river; also called a watershed (10.3)

duodenum [DYOO-oh-DEE-num] the first metre-long section of the small intestine; once food particles leave the duodenum, their nutrients can be absorbed by the rest of the small intestine (2.2)

dynamic pressure the force exerted by a fluid in motion (9.2)

E

el Niño [el NEEN-yoh] a warm ocean current that develops each year (typically in December) off the coast of Ecuador and Peru, sometimes producing unusual weather in many parts of the world (11.3)

electromagnetic radiation [e-LEK-troh-mag-NET-ik] the transmission of energy in the form of waves or rays, from the longest radio waves to the shortest gamma rays (4.3)

electron micrograph an image made by an electron microscope (1.1)

elimination the end of the digestion process, when waste products stored in the rectum leave the body through the anus (2.2)

endoplasmic reticulum [en-doh-PLAZ-mik re-TIK-yoo-lum] in cells, a network of membrane-covered channels that transport materials (plural: endoplasmic reticula) (1.2)

energy the capacity for applying a force (4.1)

enzyme a protein found in the body that helps speed up chemical reactions, such as digestion; there are many different types of enzymes (2.2)

epiglottis [e-pi-GLAW-tis] a small flap that covers the airway tube during swallowing to prevent food from entering the tube (2.2)

equilibrium in cells, a state in which there are the same number of particles on both sides of the cell membrane (1.3)

erosion the transport of sediments from one place to another by agents such as water, glaciers, gravity, and wind (10.4)

erratic a large boulder deposited on the ground by a glacier (10.4)

esker a winding ridge of material deposited by a stream running under a glacier (10.4)

esophagus the part of the digestive tube that connects the pharynx and stomach (2.2)

estuary an area of brackish water that forms where a river or stream enters the ocean (12.1)

eukaryotic cell [yoo-kahr-ee-AW-tik] a type of cell whose organelles are surrounded by membranes (1.2)

evaporation the process of changing state from a liquid to a gas (7.1, 10.1)

excretion the process in which liquid and gas wastes are flushed from the body (2.2)

excretory system the system that removes liquid and gas wastes from the body through the urinary tract; includes the kidneys, ureters, bladder, and urethra (2.2)

expansion an increase in volume caused by a decrease in external pressure (7.1)

exponent in science or mathematics, a number, or power, that indicates how many times the number is multiplied by itself (e.g., 10^3 means $10 \times 10 \times 10$ or 10 000) (Science Skills)

F

fair test an investigation (experiment) carried out under strictly controlled conditions to ensure accuracy and reliability of results. In a fair test, all variables are controlled except the one variable under investigation. (Science Skills)

far-sighted vision a focussing problem in which distant objects are clear but nearby objects are blurred (6.1)

fats essential nutrients that are used to build cell membranes and that can be stored by the body for future energy needs (2.2)

feces the undigested, solid waste products of the digestion process (2.2)

field of view the area seen through the eyepiece of a microscope (1.1)

fiord a narrow inlet of ocean between steep cliffs carved by glaciers (10.4)

flow rate the speed at which a fluid flows from one point to another (8.2)

fluid a form of matter that can flow; liquids and gases are fluids (7.2)

focal length the distance from the centre of a lens or mirror to the focal point (5.3)

focal point the point at which converging light rays meet or from which light rays diverge (5.2)

force a push or pull that acts on an object; anything that changes the motion or shape of an object (8.1)

force meter a device that measures force by means of a spring or elastic that stretches or compresses when pulled or pushed (e.g., a newton gauge) (8.1)

freezing point the temperature at which a liquid becomes a solid as heat is removed (10.1)

frequency in a wave, the number of repetitive motions, or vibrations, that occur in a given time, measured in cycles per second or hertz (Hz) (4.1)

friction force that opposes the sliding motion between two touching surfaces (8.1)

G

gamma rays electromagnetic radiation having the highest energy and frequency and shortest wavelengths in the electromagnetic spectrum (4.3)

gas exchange in the lungs, a process in which carbon dioxide passes into the alveoli, and oxygen passes into the capillaries (2.3)

gastric juice a mixture of hydrochloric acid, mucus, and enzymes that is secreted by the stomach lining and aids in digestion (2.2)

glacier a large moving mass of compressed ice and snow (10.3)

Golgi body [GOHL-jee] a structure in cells that sorts proteins and packs them into vesicles (1.2)

graphic organizer a visual learning tool that helps clarify the relationship between a central concept and related ideas or terms (Science Skills)

gravitation/gravity the attractive force between objects; the force that causes objects to be pulled toward the centre of Earth (8.1, 10.3)

ground water the water that has seeped into the ground from the surface of Earth (10.3)

H

hanging valley a U-shaped valley cut off by a bigger valley created by a larger glacier (10.4)

headland a section of coastline that extends out into the ocean (11.2)

heart a muscular organ that pumps blood throughout the body (2.3)

heat thermal energy transferred from a warmer material to a cooler material (7.1)

heat capacity a measure of how long it takes for a material to heat up or cool down (11.3)

hertz (Hz) cycles per second; measures the frequency of a wave (4.1)

histamine a chemical released by the body in response to an injury or allergen; can cause symptoms such as a runny nose and watery eyes (3.2)

horn a pyramid-shaped peak located between three cirques (10.4)

hydraulic multiplication using an incompressible fluid to increase and transmit a force from one point to another (9.2)

hydraulic system a device that transmits an applied force through the use of liquid under pressure (9.2)

hydraulics the study of pressure in liquids (9.2)

hydrologist [hih-DRAW-luh-jist] a scientist who studies Earth's water systems and helps find solutions to problems related to water quality and quantity (10.1)

hypothesis [hih-PAW-thuh-sis] a testable proposal used to explain an observation or to predict the outcome of an experiment; often expressed in the form of an "If ..., then ..." statement (Science Skills)

I

iceberg a large chunk of ice that breaks off a glacier into the ocean (10.3)

immune system the body system that defends the body against infection and disease-causing substances such as bacteria, viruses, and cancer cells (3.1)

incident ray a light ray that strikes a reflecting or refracting material (5.1)

infectious disease a disease that can be spread by contact with infected people, animals, water, or food (3.1)

inferior vena cava [VEE-nuh CAE-vuh] a large vein that carries deoxygenated blood from the lower body to the right atrium of the heart (2.3)

inflammation swelling and redness at the site of an infection, caused by disease-fighting substances in the blood; part of an immune response (3.1)

infrared radiation [IN-fruh-RED] electromagnetic radiation that has a wavelength longer than the red end of the visible spectrum but shorter than that of radio waves (4.3)

ingestion taking food into the body, the starting point of the digestion process (2.2)

innate immune response a quick, general immune response that all living things are born with (3.1)

iris the coloured ring of muscle surrounding the pupil of the eye (6.1)

joint the point of connection between two or more bones (2.1)

K

karst an area with many sinkholes (10.4)

kilopascal (kPa) [KIL-oh-PAS-kuhl] a unit of pressure equal to 1000 Pa (8.2)

kinetic energy [ki-NET-ik] the energy of motion (7.1)

kinetic molecular theory an explanation of the behaviour of molecules in matter (7.1)

L

la Niña [lah NEEN-yuh)] colder-than-normal water coming to the surface off the coast of South America due to upwelling; often produces unusual weather such as wetter than normal (11.3)

landslide a sudden, rapid movement of rock material down the slope of a hill or mountain (10.4)

larynx a tube-like structure (also called the voice box) that contains the vocal cords; air passes through the larynx to produce the sounds of the voice (2.3)

laser light light that has only one wavelength and in which all the light waves are moving in the same direction and all the crests and troughs are lined up (6.2)

law of reflection a predictable behaviour of reflected light, stated as: the angle of reflection equals the angle of incidence (5.1)

lens a curved piece of transparent material that refracts light in such a way as to converge or diverge parallel light rays; in the eye, the flexible convex structure behind the pupil and iris (5.3)

ligaments bands of tissue that hold bones in place at the joints (2.1)

light the form of electromagnetic energy we can see (4.2)

line of best fit on a graph, a smooth curve (or straight line) that has the general shape outlined by plotted points; shows the trend of the data (Science Skills)

lungs the major organs of the respiratory system, which take in oxygen and excrete carbon dioxide (2.3)

lysosome [LIH-soh-sohm] a cell structure containing digestive chemicals that function to break down food particles, cell wastes, and worn-out cell parts (1.2)

M

magnetic force a pushing or pulling force that acts on certain metals and compounds, such as iron, nickel, and cobalt (8.1)

magnification power the number of times larger an image appears under a particular lens (1.1)

manipulated variable in an experiment, a factor that is selected or adjusted to see what effect the change will have on the responding variable (Science Skills)

mass the amount of matter in a substance or an object; the more matter, the greater the mass (7.1, Science Skills)

matter anything that has mass and volume (7.1)

mechanical digestion the breakdown of food by chewing into pieces small enough to swallow (2.2)

medium matter in which a wave travels (4.1)

melting the process of changing state from a solid to a liquid (7.1, 10.1)

melting point the temperature at which a solid begins to liquefy (7.1)

meniscus the slight curve at the top of a liquid where the liquid meets the sides of a container (Science Skills)

metabolism the total of all chemical reactions that take place in the cells (1.2)

microwave a type of radio wave that has the shortest wavelength of radio waves (4.3)

mid-ocean ridge a long underwater chain of mountains rising in the middle of an ocean, created by magma forcing apart two oceanic plates (11.1)

minerals essential nutrients needed in small amounts to perform various body functions (e.g., calcium, which helps build strong bones) (2.2)

mirage a misleading appearance or illusion (e.g., the image of a distant object); can be the result of refraction of light through air layers of different densities (5.1)

mitochondria [mih-toh-KAWN-dree-uh] the energy producers in a cell that carry out cellular respiration to produce energy for the cell (singular: mitochondrion) (1.2)

model a verbal, mathematical, or visual representation of a scientific structure or process, which allows scientists to construct and test inferences and theories (e.g., the particle theory of matter) (Science Skills)

moraine a ridge of rocky material deposited by a glacier; moraines can be found at the sides and farthest advance of a glacier (10.4)

mucus a thick, slippery substance that lines various structures and organs in the body such as the nose, lungs, and stomach (2.2)

multicellular made up of many cells (1, introduction)

N

near-sighted vision a focussing problem in which nearby objects are clear but distant objects are blurred (6.1)

night blindness a condition in which it is difficult or impossible to see in dim light (6.1)

normal an imaginary line drawn perpendicular to a reflecting or refracting surface at the point where an incident ray strikes the surface (5.1)

nucleus the organelle that controls all the activities within a cell (plural: nuclei) (1.2)

nutrient a substance the body needs for energy, growth, development, repair, or maintenance (2.2)

O

ocean basin deep, wide depressions in Earth's surface that contain the oceans (11.1)

ocean current a large amount of ocean water that moves, almost like a river, in a particular direction (11.2)

oceanographer a scientist who studies oceans (10.1)

one atmosphere (1 atm) the atmospheric pressure at sea level, equal to 101.3 kPa (9.1)

opaque [oh-PAEK] absorbing or reflecting all light and not allowing any light to pass through (5.1)

optic nerve the nerve that connects the eye to the brain (6.1)

optical fibre a transparent glass fibre that transmits light from one place to another, even around corners (6.2)

organ a group of tissues (such as heart tissues) working together to perform a task (such as pumping blood) (2.1)

organ system a system that includes one or more organs that work together to perform specific functions in the body (e.g., the circulatory system that moves blood through the body) (2.1)

organelle a cell part in which functions are carried out to ensure the cell's survival (1.2)

organism a living thing (1, introduction)

osmosis [oz-MOH-sis] the diffusion of water particles through a selectively permeable membrane; particles move from an area of higher concentration to an area of lower concentration (1.3)

outwash material deposited by water from melting glaciers (10.4)

P

particle model of light a model that represents light as a stream of fast-moving, tiny particles that travel in a straight line to the eye, where they are absorbed to form an image (5.1)

pascal (Pa) a unit of pressure equal to 1 newton per square metre (8.2)

pathogen [PATH-uh-jen] an organism or substance that can cause a disease (3.1)

pelagic zone [pel-A-jik] the upper part of the ocean that extends from the surface to a depth of 4000 m (12.2)

pepsin an enzyme in gastric juice that breaks down protein (2.2)

peristalsis [per-i-STAWL-sis] the process in which muscles in the esophagus push boli down to the stomach; also occurs in the small and large intestines (2.2)

phagocyte [FAE-goh-siht] a type of white blood cell that fights infection by swallowing up pathogens (3.1)

pharynx [FE-rinks] a tube at the meeting point of the airway passage and the esophagus (2.2)

photosynthesis a chemical reaction that takes place in plant cells when carbon dioxide and water react in the presence of sunlight to produce glucose and oxygen (1.2)

physical weathering the gradual process of breaking down rock physically without changing its composition (10.4)

plane mirror a flat, smooth mirror that reflects light (5.1)

plankton microscopic plants and animals that are an essential food source for all other organisms in the ocean (11.2)

plaque [PLAK] a fatty material that is deposited along the walls of blood vessels; a build-up of plaque increases the risk of heart attacks and strokes (2.2)

plasma a clear, yellowish fluid that forms part of the blood (2.3)

platelets a component of blood; cell fragments that are important for blood clotting (2.3)

pneumatic system [nyoo-MA-tik] a system in which an enclosed gas transmits a force, causing motion (9.2)

pneumatics the use of gas (usually air) in an enclosed system under pressure (9.2)

porous describes something that has many spaces, or pores, between the particles (e.g., porous rock) (10.3)

pressure the amount of force applied over a given area to an object (8.2)

prokaryotic cell [PROH-kah-ree-AW-tik] a type of cell whose organelles are not surrounded by membranes (1.2)

proteins essential nutrients used to build muscles, skin, hair, and nails; within cells, they are used to build various structures and are required for certain chemical reactions (2.2)

prototype a full-size trial model of a device based on an original design (Science Skills)

pupil the dark, transparent region in the centre of the eye where light enters (6.1)

R

radar a type of shorter-wavelength microwave; an acronym for radio detecting and ranging (4.3)

radiant energy energy carried by electromagnetic waves (4.3)

radio wave the type of electromagnetic wave that has a wavelength longer than about 1 mm; used for communication (4.3)

rapids an area of fast-moving, churning water in a steep, rocky river (10.4)

ray model of light a model that represents light as a straight line, or ray, indicating the path of a beam of light (5.1)

red blood cells blood cells that carry oxygen from the lungs to the body and carbon dioxide from the body to the lungs; formed in the bone marrow, liver, and spleen (2.3)

reflected ray light that is bounced back (reflected) from a reflecting surface (5.1)

reflecting telescope a telescope that has a concave mirror, a plane mirror, and a convex lens to collect and focus light from distant objects (6.2)

reflection the visible effect when light strikes an object and bounces off (4.2)

refracting telescope a telescope that has a convex lens to collect and focus light from a distant object, and a convex eyepiece lens to magnify the image; the lenses bend the light to focus it (6.2)

refraction the bending or changing direction of a wave as it changes speed in moving from one material to another (4.2)

reservoir a large natural or artificial lake or holding pond used to collect and store water for human use (10.3)

resolving power the ability of a microscope to distinguish between two objects that are very close together (1.1)

respiratory system the body system that supplies blood with oxygen and removes carbon dioxide from the blood (2.3, 9.3)

responding variable in an experiment, the factor that changes in response to a change in the manipulated variable (Science Skills)

retina [RE-tin-uh] the inner lining of the back of the eye containing light-sensitive rods and cones that convert light images into electrical signals for interpretation by the brain (6.1)

ribosomes [RIH-buh-sohm] cell parts (organelles) that assemble proteins (1.2)

rod cells cylinder-shaped cells, located in the retina, that absorb light; they allow us to see images in shades of light and dark when the light is dim (6.1)

run-off water that is not absorbed immediately by Earth's surface but flows downhill over the land and buildings and into water bodies and sewers (10.3)

S

salinity [suh-LIN-i-tee] a measure of the amount of salts dissolved in a liquid (10.2)

saturated fat the type of fat found in animals and animal products (e.g., bacon and butter) (2.2)

scale drawing a drawing in which the objects appear in the same proportions as they are in reality (Science Skills)

scanning electron microscope a powerful microscope that scientists use for research (1.1)

sclera [SKLER-uh] an opaque tissue surrounding the cornea; visible as the white part of the eye surrounding the iris (6.1)

seamount an inactive, underwater volcano that developed near a mid-ocean ridge but has now shifted away as the oceanic plates continue to move apart (11.1)

selectively permeable membrane a membrane that allows some materials to pass through it but keeps other materials out (1.3)

SI (from the French *Le Système international d'unités*) the international system of measurement units, including terms such as kilogram, metre, and second (Science Skills)

sinkhole a large circular depression in the ground caused by the collapse of an underground cave (10.4)

snow blindness a painful condition of temporary partial or complete blindness caused by overexposure to the glare of sunlight on snow (6.1)

solidification the process of changing state from a liquid to a solid by the removal of heat (7.1, 10.1)

spectrum a range of frequencies for a given type of radiation (4.2)

sphygmomanometer [SFIG-moh-muh-NAW-muh-tuhr] a device for measuring blood pressure (9.3)

static pressure the force exerted by an enclosed, non-moving fluid when pressure is applied to the fluid (9.2)

stimulus anything that causes a living thing to respond (plural: stimuli) (1.1)

striations scratch marks cut into rock by glaciers slowly moving over it (10.4)

sublimation the process of changing state from a solid to a gas without going through the liquid stage (7.1, 10.1)

submarine canyon a deep gully carved in the continental shelf and continental slope by turbidity currents (11.1)

superior vena cava [VEE-nuh CAE-vuh] a large vein that carries deoxygenated blood from the head and arms back to the right atrium of the heart (2.3)

surface tension a property of a liquid in which molecules at the surface of the liquid attract each other, causing the surface to act like a thin skin or membrane (8.3)

swells large, rolling ocean waves (11.2)

system a group of parts that interact with each other and function together as a whole (e.g., the digestive system) (2.1)

T

T cells specialized white blood cells that fight disease either by activating B cells (helper T cells) or by attacking antigens directly (killer T cells) (3.1)

technology the application of scientific knowledge and everyday experience in solving practical problems by designing and developing devices, materials, systems, and processes (Science Skills)

tectonic processes [tek-TAW-nik] the movements of Earth's tectonic plates (the crust and upper mantle broken into large rock slabs) as they float over Earth's molten layers (11.1)

temperature a measure of the average kinetic energy of the particles in a substance (7.1)

tendons thick white tissue that connects muscles to bones (2.1)

theory an explanation of an event that has been supported by consistent, repeated experimental results and has therefore been accepted by most scientists (Science Skills)

thermal contraction a decrease in volume in a substance when its temperature is lowered (7.1)

thermal energy the total energy of the particles making up a substance (7.1)

thermal expansion an increase of volume in a substance when its temperature is raised (7.1)

thermocline the cold middle layer of ocean water, between the warmer surface layer and the coldest deep-water layer (11.2)

tides the daily cycle of the rise and fall of ocean water (11.2)

tissue a group of cells that have the same structure and function (e.g., muscle tissue) (2.1)

total internal reflection a type of reflection in which light strikes a boundary between two materials and is completely reflected (6.2)

trachea [TRAY-kee-uh] the airway passage that leads from the larynx to the lungs (2.3)

translucent [tranz-LOO-sent] allowing some light rays to pass through but not enough to see objects clearly (5.1)

transparent allowing light to pass through freely, so that images are clearly seen (5.1)

transverse wave a wave in which matter in the medium moves at right angles to the direction that the wave travels (4.1)

trench a long V-shaped groove created in the ocean floor when an oceanic plate pushes against a continental plate (11.1)

trough the lowest point in a wave (4.1)

tsunami [tsoo-NAH-mee] a great ocean wave created by an underwater earthquake (11.2)

turbidity current a fast-moving underwater landslide caused by the sudden collapse of sediment built up along the continental slope (11.1)

U

ultraviolet radiation [ul-truh-VIH-oh-let] electromagnetic radiation that has a wavelength shorter than that of the violet end of the visible spectrum but longer than that of X rays (4.3)

unbalanced forces forces that cause a change in the speed or direction of an object (8.1)

unicellular made up of one cell (1, introduction)

unsaturated fat the type of fat found in fruits, vegetables, fish, and vegetable oils (2.2)

upwelling a current of cold, dense water flowing upward from the ocean floor (11.2)

V

vaccine a special version of an antigen that provides immunity against a disease (3.2)

vacuoles [VAC-yoo-ohlz] temporary storage compartments in cells, sometimes used to store waste; they are much larger in plant cells than in animal cells (1.2)

valve a structure positioned between each of the four chambers of the heart that allows blood to flow in only one direction (2.3); in hydraulics, a device for controlling the passage of fluid through a pipe (9.2)

variable a factor that can influence the outcome of an experiment (Science Skills)

veins blood vessels that carry deoxygenated blood back to the heart (2.3)

ventricles [VEN-tri-kuhlz] the two lower chambers of the heart, which pump the blood out of the heart to the lungs and the rest of the body (2.3)

venules [VEN-yoolz] the smallest veins in the body, they join veins to capillaries (2.3)

vesicles [VES-i-kuhlz] membrane-wrapped structures that carry proteins, nutrients, and water into, out of, and around the inside of a cell (1.2)

villi [VIL-ee] fold-like structures lining the wall of the small intestine, which increase the surface available to absorb nutrients (singular: villus) (2.2)

viruses tiny non-living particles capable of reproducing only when they are inside a host cell; they have no nucleus or organelles and are usually disease-causing (singular: virus) (1.2)

viscosity [vis-KAW-si-tee] the resistance of a fluid to flow; the slower the flow, the greater the viscosity (8.2)

visible light electromagnetic waves with wavelengths of 750-billionths to 400-billionths of a metre, which can be detected by human eyes; also called the visible spectrum (4.2)

vitamins essential nutrients needed in small amounts to perform various body functions (e.g., vitamin D, which helps the body absorb calcium) (2.2)

volume the amount of space taken up by a substance or object (7.1)

W

water a fluid essential for life; contains no nutrients but transports nutrients and wastes and is necessary for many chemical reactions and for cooling the body through perspiration (2.2)

water cycle the continual movement of water between the oceans, land, and atmosphere (10.1)

water table in the ground, the level beneath which porous rocks are filled with water (10.3)

wave a repeating disturbance or movement that transfers energy through matter or space without causing any permanent displacement of material (4.1)

wave model of light a model of light behaviour that represents light travelling as a wave (4.2)

wavelength the distance from one point on a wave to the same point on the nearest wave (e.g., from crest to crest or from trough to trough) (4.1)

weather the condition of the atmosphere at a given time (11.3)

weathering the gradual process of breaking down rock into smaller fragments (10.4)

weight the amount of force on an object due to gravity (8.1)

wet mount slide a microscope slide made by mounting a specimen in a drop of water on the slide (1.1)

white blood cells blood cells that fight infection and help prevent the growth of cancer (2.3)

wind action one of the forces that cause ocean surface currents to move (11.2)

X

X rays electromagnetic radiation having shorter wavelengths and higher energy and frequency than ultraviolet rays (4.3)