

Glossary

How to Use This Glossary

This Glossary provides the definitions of the key terms that are shown in **boldface** type in the textbook. Additional terms that you may wish to know are also included in the Glossary. In addition, the Glossary entries list related words in parentheses after the definition.

A

adaptations characteristics or behaviours that give an organism a better chance of surviving and reproducing in its surroundings (*see also* behaviour, organism)

aerobatics movements of an airplane that demonstrate yaw, pitch, and roll in a controlled manner to perform maneuvers such as spins and turns

aileron a moveable flap on the main wings of a plane that alters the amount of lift each wing experiences

airlock an airtight chamber where air pressure can be reduced until it matches the vacuum of space (*see also* vacuum)

altitude elevation; how high a location is above sea level

amphibian a class of vertebrates; most live in water when young and on land as adults (*see also* classification systems, vertebrates)

angle of attack the angle that a wing makes compared to the flow of air

animal an organism with more than one cell that must eat other organisms to survive

Animalia one of six kingdoms used to classify organisms; includes all multicellular organisms that need to eat plants or other animals to obtain food and can move from place to place to find food, shelter, mates, and to escape from enemies (*see also* classification systems, kingdom, multicellular, organism)

archaea micro-organisms with one cell; can live in environments that are hostile to most other organisms

arthropods organisms covered by a hard outer shell called an exoskeleton such as crabs, lobsters, spiders, insects, and centipedes

asteroid an irregularly shaped rock orbiting the sun; larger ones are considered to be “minor planets”; can range in size from a few metres to hundreds of kilometres.

astronaut an explorer who travels in space (*see also* exploration)

atmosphere the gases that surround Earth

atoms tiny particles that make up everything

aquatic having to do with water; used to describe water biomes (*see also* biomes)

attract used to describe how electricity “pulls together” objects (*see also* repel)

aviation flight

axis an imaginary line drawn through Earth or other bodies in space from pole to pole

B

bacteria microorganisms with one cell (unicellular) (*see also* micro-organisms)

battery a device that turns chemical energy into electricity (*see also* source)

behaviour the way an organism acts (*see also* adaptations)

behavioural adaptations habits and activities of organisms that are important for survival in a particular habitat (*see also* behavioural adaptations, organism)

Bernoulli’s principle a scientific theory that explains how flight is possible; based on the observation that a liquid or a gas produces less pressure as it moves faster; states that the air above an airplane’s wing must travel faster than the air below it, because the top of the wing is curved, so the air has a greater distance to travel; explains how lift results from lower pressure on top of a wing and higher pressure below the wing

binoculars a hand held instrument that uses lenses and mirrors to make distant objects appear larger and closer, with an eyepiece that allows both eyes to view the object

biomass energy bioenergy; the energy stored in all plant and animal tissues

biomes large land regions that have a distinct climate, soil, plants, and animals (*see also* climate)

birds a class of winged vertebrates that lay eggs with hard shells (*see also* classification systems, vertebrates)

booster rockets engines in a space vehicle that provide thrust during launch (*see also* rocket, thrust)

buoyancy an upward force that is produced by a liquid or gas surrounding an object

C

camouflage an organism's ability to blend into its surroundings (*see also* adaptations, colouration)

Canadarm a Canadian remote manipulator or robot designed to carry out jobs normally done by astronauts during space walks; built as a permanent attachment to the space shuttle (*see also* Dextre, robot)

Canadarm2 a technologically advanced version of the Canadarm used on the International Space Station

cell membrane the part of a cell that controls what enters and leaves the cell (*see also* cells)

cells the basic units of life

cell wall a rigid structure that provides protection and support for plant cells (*see also* cells)

charged used to describe an atom with an imbalance, or unequal number, of positive or negative charges (*see also* atoms, imbalance)

chlorophyll a green chemical found in plant cells that traps energy from the Sun that the plant uses to make food (*see also* cells, chloroplasts)

chloroplasts parts of plant cells that contain chlorophyll, which traps energy from the Sun to make food (*see also* cells, chlorophyll)

circuit a complete pathway or loop for the flow of electricity (*see also* source, load)

circuit breakers safety devices that prevent too much current from flowing through a circuit (*see also* circuit, fuses)

classification systems ways of grouping things based on similarities

climate the average weather patterns of an area according to records that have been kept for many years (*see also* weather)

closed circuit a complete and unbroken pathway (circuit) for the flow of electricity from a source to a load and back to the source (*see also* circuit, load, open circuit, source, switch)

coal a solid fossil fuel (*see also* fossil fuels)

colouration the colour and pattern on an animal's skin, fur, feathers, or exoskeleton (*see also* adaptations, camouflage)

comet a mass of dust and ice that is surrounded by gases, water vapour, and rocky dust particles; has a long and narrow orbit that extends far out in space, even beyond our solar system; begins to evaporate (dissolve) as it gets closer to the Sun, forming tails that can be thousands of kilometres long

compact fluorescent bulb (CFL) a device that turns electrical energy into light energy more efficiently than a traditional incandescent bulb does; charges pass through a tube containing mercury gas and give off energy that causes the coating of the tube to give off visible light; only about 30 percent of the energy used by a compact fluorescent bulb is lost as heat

conductors materials that allow negative charges to flow through them easily (*see also* electrons, insulators)

constellation patterns made by stars in the sky

control surfaces special surfaces built into airplanes to help them to maintain control during flight; include the vertical stabilizer, the rudder, the aileron, the elevator, and the horizontal stabilizer; help to control yaw, pitch, and roll; enable a plane to do aerobatics

cover slip a thin, transparent cover that can be placed on top of a sample on a microscope slide to hold the sample in place and keep water off the lens of the microscope (*see also* microscope, slide)

cryobot a robot that can penetrate thick ice (*see also* robot)

current the flow of negative charges through a circuit within a certain amount of time; measured in units called “amperes” or “amps” (*see also* circuit, electrons)

current electricity electricity that results when negative charges from an imbalanced charge move through a conductor (*see also* electrons, imbalance)

cytoplasm a clear, jelly-like material that surrounds the nucleus of a cell and holds the organelles in place (*see also* cells, nucleus, organelles)

D

dependent variable in an experiment, a condition that is influenced or affected by the independent variable (*see also* independent variable)

Dextre a robot used to carry out jobs normally done by astronauts during space walks; part of Canada’s contribution to the International Space Station (*see also* robot)

discharge the transfer of negative charges from one object to another (*see also* electrons)

drag the force that acts backward on an object in flight, slowing it down

E

Earth-centred universe an ancient belief that everything, including the Sun, orbited around Earth

electric generator a machine that uses the energy of motion to produce electricity (*see also* turbines)

electric meter a device that measures how much electricity is used in a building

electrocution death caused by a strong electric current passing through a living organism

electromagnet a temporary magnet (object that can attract some metals) created by an electric current (*see also* electromagnetism)

electromagnetic waves waves of energy, including radio waves, light waves, X-rays, and microwaves

electromagnetism magnetism (an attraction to some metals) produced by electricity (*see also* electromagnet)

electrons small particles around the nucleus (centre) of an atom (*see also* atoms, nucleus)

elevator flap on the back wing of a plane that controls the amount of lift experienced by the plane

endangered species a species that is nearly extinct

energy conservation used to describe how certain things can be done without electricity or with a reduced amount of electricity to save energy

energy consumption the amount of energy we use

energy efficiency used to describe how less energy or electricity can be used to accomplish the same task

environment refers to the conditions that surround people and affect how they live

exoskeleton a hard outer covering on the body of an arthropod or other organism

exploration travelling to discover what a place is like

extinct a species that no longer exists

F

fair test a proper experiment that has been planned and controlled so that only one factor affects the results

filament a thin wire used in light bulbs; when a light is turned on, electrons are pushed through the filament, which resists the flow of electrons, heats up, and produces light. (*see also* electrons, light bulb, resistance)

fish a class of vertebrates that live in water and gather oxygen through specialized structures called gills (*see also* classification systems, vertebrates)

flow chart a graphic organizer that shows the order of events in a process

fossil the remains or impressions of ancient organisms that have been preserved in rock for thousands or even millions of years

fossil fuel energy energy produced by burning fossil fuels such as coal, oil, or natural gas; the resulting heat is used to boil water into steam to spin a turbine

fungi (plural)/fungus (singular) organisms that obtain the nutrients they need to survive by absorbing them from other organisms (*see also* organism)

fuses devices that prevent too much current from flowing through a circuit (*see also* circuit, circuit breakers)

G

geosynchronous used to describe how higher satellites move at the same speed as Earth rotates, making one complete orbit in 24 hours (*see also* satellites)

geothermal energy renewable energy from Earth's crust (*see also* renewable)

gravity a force that pulls together any two objects that have mass

ground used to describe how an object can be connected through a conductor to the ground, or Earth, to prevent an electric charge from building or to get rid of an electric charge (*see also* conductor)

H

habitat a place where an organism is able to meet its needs; organisms are adapted to the specific conditions in that area, such as climate (average weather patterns), altitude (height above sea level), and available food and shelter

hazard used to describe something that is dangerous, such as when electricity flows through a closed circuit in a way that is not controlled (*see also* short circuit)

helicopter flying machine that generates lift using a pair of spinning blades; the revolving blades create lift so that a helicopter can fly without having to constantly move forward like a plane.

HHPS an acronym that stands for Hazardous Household Product Symbols; symbols that appear on containers to help people use household products safely

hibernation a period of time when animals are much less active and use a lot less energy (*see also* behavioural adaptations)

horizontal stabilizer back wing found on most planes; adds stability

hydro hydro-electric energy; energy produced by falling water that spins turbines in an electric generator (*see also* electric generator, turbines)

hydro-electric dam a large barricade that blocks a river to create a fall of water for the production of hydro-electric energy (*see also* electric generator, hydroelectric energy, turbines)

hydro-electric energy energy produced by falling water that spins turbines in an electric generator (*see also* electric generator, turbines)

I

imbalance a condition in which the number of negative charges on an object do not equal the number of positive charges on the object (*see also* atoms, electrons, nucleus)

incandescent bulb (also called a traditional light bulb) produces light by passing charges through a very thin wire, called a filament, inside the bulb; as charges pass through the wire, their electrical energy is given off as heat; as the wire heats up, it glows and produces light; as much as 95 percent of the energy used by an incandescent bulb is lost as heat

independent variable in an experiment, a condition that might affect another condition (dependent variable) (*see also* dependent variable)

inference a conclusion made by analyzing the results of an experiment and using logic

inherited characteristic a characteristic that an organism is born with (*see also* adaptations)

insulators materials that block the flow of electrons (*see also* conductors, electrons)

introduced species any species that is new to a geographic area; may be brought into the area either on purpose or by accident

invertebrates animals that do not have backbones or any other bones (*see also* vertebrates)

J

jet engine takes in and compresses air; uses oxygen in the air to burn fuel, and then generates thrust by exhausting, or releasing, hot gases that result from the burning of the fuel

K

kingdom in biology, the term used for the largest and most general groups of types of organisms (*see also* classification systems)

Know-Wonder-Learn chart

a table that helps you plan and record your study of different science topics; has the following three columns: "What I Know," "What I Wonder," and "What I Have Learned"

L

lander a special spacecraft used to transport rovers to Mars and designed to land safely on the planet's surface (*see also* rovers)

latitude the distance north or south of the equator; measured in degrees north (N) or south (S)

life-support used to describe methods of providing air, water and food using special techniques

lift the force that acts upward on an aircraft, helping it become and remain airborne

light bulb a device that converts electric energy into heat and light energy (*see also* load)

like charges when two charges are the same type (both positive or both negative)

load any component along an electric circuit that uses electricity; a basic component of an electric circuit (*see also* circuit, light bulb)

lunar eclipse occurs when the Earth moves between the Sun and the Moon; the Sun's light is blocked from reaching the Moon by the Earth's shadow, blocking it from our view for a short time

lunar phases the changes we see over the course of a month in the amount of surface that reflects sunlight as the Moon travels around the Earth

M

magnify to make objects appear larger (*see also* microscope)

mammal a class of vertebrates that give birth to live young (*see also* classification systems, vertebrates)

meteorite a large fragment of rock from space that survives its travel through the atmosphere and strikes Earth's surface (*see also* meteors)

meteors fragments of rock from space that burn up when they enter Earth's atmosphere, leaving no trace behind; if a fragment is large enough, it can create enough heat and light to make it visible in the sky (*see also* meteorite)

metric system a system of measurement based on powers of 10

microgravity zero gravity; used to describe a condition where objects fall together at the same rate and seem to float (*see also* gravity)

micro-organisms very small organisms that can only be seen using a microscope (*see also* microscope, organism)

microscope a tool that magnifies objects by bending light through a piece of curved glass (a lens) (*see also* magnify)

migration the movement of animals from one region to another in response to a change in seasons (*see also* behavioural adaptations)

mimicry a form of adaptation in which some animals make themselves look like something else in order to avoid being eaten by predators (*see also* adaptations, colouration)

mind map a tool that you can use for note-taking, brainstorming, planning a presentation, and many other purposes

moon an object that orbits a planet

motor a device with an electromagnet that spins within a permanent magnet and causes other components, such as wheels and fans, to turn (*see also* electromagnet)

multicellular used to describe organisms that have many cells (*see also* cells, organism)

myth a story that is created to explain an event or to tell about a hero

N

natural gas a fossil fuel that is usually found as a mixture of gases (*see also* fossil fuels)

negative a negative charge; expressed as a minus sign (–)

negative charge the charge on an electron (*see also* electrons, positive charge)

neutral a term used to describe an object that does not have a charge

Newton's third law of motion a scientific theory stating that when a particle applies a force to another particle, the other particle will react by applying the same force back

non-renewable a term used to refer to an energy source that cannot be replaced within a human lifetime (*see also* renewable)

nuclear energy the energy released when the nucleus of an atom is split apart (*see also* atoms, nucleus)

nucleus in biology, an organelle that controls all of the activities in the cell (*see also* cells, organelles); in chemistry, the centre of an atom (*see also* atoms)

O

observatory a special type of building with a large telescope and a roof that rotates and opens allowing a clear view of the sky

oil a liquid fossil fuel (*see also* fossil fuels)

open circuit an incomplete electric circuit that cannot carry the flow of electricity (*see also* circuit, closed circuit)

orbit the path of an object in space around a larger object

organelles parts (structures) inside a cell that do specific jobs (*see also* cells)

organism living thing

P

paleontology the study of fossils and ancient life

parallel circuit an electric circuit in which negative charges have more than one complete pathway to follow; each load in the circuit can be turned on or off without affecting the other (*see also* circuit, electrons, load, series circuit)

payload the cargo, measuring instruments, astronauts, and equipment that a rocket carries; makes up much of the weight of a rocket (*see also* rocket)

philosopher a person who tries to understand the world and why things happen

photosynthesis the process by which plants use energy from the Sun to make food

physical adaptations structures or physical features that give an organism a better chance of surviving and reproducing in its surroundings (*see also* organism)

pitch alternate rising and falling movements of the nose and tail of a plane

planet a large body that orbits a star (*see also* solar system)

Plantae one of six kingdoms used to classify organisms; includes wildflowers, grasses, trees, mosses; all plants are multicellular and most use energy from the Sun to obtain food (*see also* classification systems, kingdom)

plants members of the plant kingdom (Kingdom Plantae); all plants are multicellular and most use energy from the Sun to obtain food

Polaris the North Star; used for navigation, as it indicates which direction is north

positive a positive charge; expressed as a plus sign (+)

positive charge the charge of the particles in the nucleus (centre) of an atom (*see also* atoms, negative charge, nucleus)

power the rate at which electrical energy is transformed into a useable form such as heat, light, or motion

precipitation rain, snow, sleet, or hail that falls to the ground

propeller a device with two or more twisted blades that are spun by an engine; the blades of a propeller act like a pair of spinning wings.

propulsion forward motion

protists members of the protist kingdom; one-celled or many-celled organisms that usually live in moist or wet environments; some make food and some hunt for food (*see also* classification systems, kingdom)

pterosaurs ancient group of reptiles that are thought to be Earth's largest gliders

R

recycling reusing a material

renewable a term used to refer to an energy source that can renew or replace itself (*see also* non-renewable)

repel used to describe how electricity "pushes" objects away from each other (*see also* attract)

reproduction the process by which living things produce offspring

reptiles a class of vertebrates that have dry, scaly skin (*see also* classification systems, vertebrates)

resistance used to describe how difficult it is for charges to pass through a material; measured in units called "ohms" (Ω) (*see also* circuit, electrons, load)

robot a machine or device that works automatically or by remote control

rocket a tube containing fuel at the lower end; when the fuel burns, the force of hot gases escaping from the bottom of the tube pushes the rocket upward

rocket engine engine that carries all of the chemicals necessary for combustion, or the burning of fuel; generates thrust by exhausting hot gases that result from the combustion of fuel; can operate in the atmosphere or in space

roll movement of a plane in which its wings move up and down, similar to a seesaw

rovers exploration vehicles that are controlled and operated by signals that are sent by scientists on Earth (*see also* lander, robot)

rudder the flap on the tail of a plane that helps steer the plane during a turn

S

satellite any object that orbits around another object in space, such as Earth or another planet; can also refer to artificial, or man-made, satellites that are used for observation and communication

science a way of thinking and asking questions about nature on Earth and far beyond Earth; a collection of knowledge and ideas that help people understand and explain how nature works

series circuit a single pathway for electricity to travel from a source(s) through to a load(s) and then from the load(s) back to the source(s) (*see also* circuit, load, parallel circuit, source)

short circuit a closed circuit that does not have a useful load (*see also* circuit, hazard, load)

slide a flat piece of glass that objects can be put on for viewing through a microscope (*see also* microscope)

society used to describe all the people who live together in a certain place and at a certain time

solar eclipse occurs when the Moon travels between Earth and the Sun, casting a shadow on the Sun and preventing most of the Sun's light from reaching Earth

solar energy renewable energy from the Sun (*see also* renewable, Sun)

solar system term used to describe all of the planets and their moons, asteroids (chunks of rock), dust, gases, and other objects that orbit the Sun (*see also* planets, Sun)

source a basic component of an electric circuit that provides the "push" that causes negative charges to move through the circuit (*see also* circuit, electrons)

space junk refers to the satellites, parts of spacecraft, tools, and other garbage travelling in orbit around Earth at very high speeds (*see also* satellites)

spaceplane a rocket-powered plane; it differs from a space shuttle in that it can be reused

species the most specific level of classification of an organism (*see also* classification systems, organism)

stable the ability of passenger aircraft to correct their flight if air turbulence occurs

stage the name for each section of a rocket's engine; as a rocket travels towards space, each section drops off after all of its fuel is burned up (*see also* rocket)

static electricity a buildup of electric charges on two objects that have become separated from each other; "static" refers to the fact that the charges do not move through the object, but rather remain in one place

Sun a huge ball of hot gases, similar to billions of other stars that we see in the night sky (*see also* solar system)

Sun-centred planetary system the theory first proposed by Copernicus in the 1500's that the Sun is at the centre of the universe, with Earth and other planets orbiting around it

surveillance close observation, sometimes performed by aircraft or satellites to monitor military activity

sustainability our ability to meet society's present needs without using up or harming resources

switch a device that closes or opens a circuit to start or stop the flow of electricity (*see also* circuit, closed circuit, open circuit)

T

technological problem solving using available knowledge to build a device or design a process that will solve a practical problem

technology the practical knowledge and tools that people use to make life easier; the use of devices, methods, and scientific knowledge to solve practical problems

telescope an instrument that uses lenses and mirrors to make distant objects appear larger and closer

thrust the force that pushes a flying machine or organism forward during flight

tidal energy renewable energy of the moving water in the tides (*see also* renewable)

tides the regular rise and fall in the level of the ocean caused by the gravitational force of the Moon pulling on the Earth

time line a graphic organizer that shows you the order in which events occurred and how much time passed between events

turbine a spinning device used by an electric generator to create motion that produces electricity (*see also* electric generator)

U

uncharged electrically neutral; an object or atom that contains an equal number of positive and negative charges (*see also* atoms)

unicellular used to describe organisms that are made up of only one cell (*see also* cells, organism)

unlike charges when two charges are different (one positive and one negative)

unstable when air turbulence disrupts flight

Ursa Major one of the most famous constellations in the northern sky, also known as the Great Bear

V

vacuum a region where there is very little or no air or other gases

variables all of the factors that could change (vary) or be different in different parts of an experiment

vertebrates animals with spines (backbones) (*see also* invertebrates)

vertical stabilizer the tail of a plane; adds stability

voltage used to describe the size of the “push” from a source that forces negative charges through a circuit; measured in units called “volts” (V) (*see also* circuit, electrons)

W

weather the local conditions that change from day to day, or even hour to hour

wet mount a fresh sample prepared on a slide for viewing under a microscope (*see also* microscope, slide)

WHMIS an acronym that stands for Workplace Hazardous Materials Information System; safety symbols used throughout Canada to identify dangerous materials that are found in all workplaces

wind energy the renewable energy of moving air (*see also* renewable)

wind tunnel a special flight-research tool that helps engineers study how air moves around and over a solid object such as an airplane, helping them to understand how different forces act on aircraft at high speeds

Y

yaw the side-to-side motion of a plane, like the swishing tail of a fish