Simple Solutions.

Minutes a Day–Mastery for a Lifetime!

Level 6

Science

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Glossary

Abiotic	not biotic; refers to things that are not and never were alive (Lessons #30, 32)
Absolute Zero	the coldest point possible; temperature at which all motion stops (Lesson #100)
Acceleration	the rate at which velocity changes; a change in speed or direction (Lesson #117)
Air Mass	a large body of air that forms over the Earth (Lesson #50)
Air Pressure	the weight of the atmosphere pressing toward Earth's core
Amplitude	the height of a transverse wave; a light wave with large amplitude is very bright (Lesson #104); also, the amount of energy in a compressional wave; the higher the amplitude, the louder the sound (Lesson #105)
Animals	in the Linnaean System, organisms that are multi-cellular, motile, and must consume plants or other animals to survive (Lesson #27)
Aquifer	an underground lake (Lesson #49)
Asexual Reproduction	one cell splits into two, and a new cell becomes a new organism; a unicellular organism creates an identical copy of itself in this way (Lesson #14)
Atmosphere	a mixture of gases surrounding Earth, made up of several layers (Lesson #50)
Atom	the smallest particle of matter that has all of the same properties found in a larger piece of the same matter (Lesson #72)
Atomic Mass	also called *mass number*, the sum of all the protons and neutrons in an atom (Lesson #73)
Atomic Number	the number of protons that an atom has; atomic number is listed in the Periodic Table of Elements (Lesson #72)
Bacteria	see Monera
Biomes	regions of the world that have similar climates and similar types of vegetation and animals (Lesson #36; see summary in Help Pages)
Biotic	refers to living components of an ecosystem; biotic factors include migration, predators, disease, parasitism, and competition (Lesson #30)
Body System	a group of organs working together within the body (nervous system, digestive system, circulatory system, etc.)

*(The lesson number included in the definition refers to the first time a question or teaching on this topic appears in the book.)

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Bond	the force that holds atoms together (Lesson #76)
Buoyancy	the force of water pushing up on an object and keeping it afloat
Carnivore	an animal that gets its energy by consuming other animals (Lesson #34)
Carrying Capacity	the population size that an ecosystem can support without damaging the ecosystem (Lesson #31)
Cell	smallest unit of any living thing; all living things are made of cells (Lesson #7)
Cell Division	the way cells make more cells; the nucleus divides itself, and one cell becomes two cells
Cell Membrane	a protective covering that allows nutrients to be absorbed into a cell and allows waste to pass out of the cell (Lesson #8)
Cell Theory	a scientific theory with three main parts: The cell is the building block of all living things. Cells are the smallest unit of life. All new cells are created from other living cells. (Lesson #7)
Cell Wall	found in plant cells only; surrounds the cell; helps to make the plant firm and protects it from injury or loss of water (Lesson #8)
Celsius	a scale used to measure temperature or average kinetic energy (Lesson #100)
Central Vacuole	fluid-filled sack found in the middle of a cell; an organelle that provides support and stores extra water (Lesson #8)
Characteristics	properties; anything that describes a substance
Chemical Change	chemical reaction; a change in matter in which an entirely new substance is formed; atoms are rearranged during a chemical change (Lesson #84)
Chemical Potential Energy	stored energy that can be converted to kinetic energy (Lesson #94)
Chemical Properties	describe an object's ability to change; can only be observed by permanently changing the object (Lesson #82)
Chloroplasts	organelles in which photosynthesis occurs (Lesson #8)
Chromosomes	tiny structures in the nucleus of a cell that carry all the genetic information needed for reproduction (Lesson #13)
Classification	a system that scientists use to organize living and non-living things (Lesson #24)

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Cleavage	one of the physical properties of minerals; the tendency to break in clean, regular patterns (Lesson #43)
Climate	established weather pattern over a long period of time for a certain area (Lesson #36)
Cold Front	weather condition that occurs when cold, dense air moves toward warmer air; brings sudden, strong changes in weather (Lesson #51)
Community	all of the populations that live in an ecosystem at one time (Lesson #30)
Competition	struggle among organisms over limited food, air, or water supply in an ecosystem (Lesson #32)
Compound	two or more elements joined together by a chemical bond to make a single unit (Lesson #76)
Compressional Wave	longitudinal wave; the type of wave in which sound travels (Lesson #105)
Conclusive	definite, certain; results that are not questionable (Lesson #6)
Condensation	process by which water vapor turns to liquid water (Lesson #80)
Condensation Point	the temperature at which a substance changes from gas to liquid; it is the same temperature as the boiling point for that material (Lesson #80)
Conduction	a transfer of heat that occurs when a heat source comes into contact with something that is cooler (Lesson #101)
Conductor	substance which allows energy to easily flow through it; metals are conductors (Lessons #75, 102)
Conifer	type of plant that produces seeds within a cone (Lesson #37)
Connective Tissue	tissue that provides support and structure; it connects one kind of tissue to another (Lesson #10)
Constant	unchanging; in an experiment, the factor that does not change
Consumer	any organism that gets energy by consuming other organisms (Lesson #33)
Continental Air Mass	an air mass that forms over land (Lesson #50)
Control Group	factors in an experiment that do not receive the experimental treatment

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Convection Currents	currents in which a heated fluid (air or water) moves upward, then falls as it cools (Lesson #102)
Corrosion	rust; a chemical reaction in which water and oxygen react with metal
Covalent Bond	the bond that occurs when the two elements involved share their electrons (Lesson #76)
Crust	Earth's surface; the thinnest and outermost layer of Earth
Crystalline Solid	a substance formed with atoms arranged in a definite and repeating pattern; one of the properties of a mineral (Lesson #42)
Current Electricity	electricity that moves through wires (Lesson #111)
Data	facts; statistics and other information
Deciduous	trees that shed their leaves at the end of the growing season or just before winter
Decomposer	organism that breaks down the remains of dead plants and animals, returning vital nutrients to the soil; bacteria, earthworms, fungi (Lesson #31)
Deforestation	the permanent destruction of forests caused by cutting too many trees too quickly
Density	a measure of how closely molecules are packed in a given amount of space; (D = m ÷ V) (Lesson #88)
Dependent Variable	a variable that changes, depending upon other factors in the experiment
Deposition	process by which a gas changes directly to a solid (Lesson #80)
Dermal Tissue	tissue that protects a plant and keeps it from drying out (Lesson #12)
Diffraction	the bending of light around an object or the bending of light as it passes through an opening (Lesson #109)
Doldrums	area above the equator where no winds blow (Lesson #53; see chart in Help Pages)
Dominant Trait	a trait that will show if the gene is contributed by one of the parents (Lesson #21)
Ecosystem	all of the living and nonliving things interacting with and affecting each other in a certain area (Lesson #30)

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Eggs	sex cells that come from the mother (Lesson #15)
Elastic Potential Energy	the type of stored energy that is in a stretched out rubber band or spring (Lesson #94)
Electricity	energy produced by the movement of electrons
Electromagnetic Spectrum	all the types of light rays including gamma, x-rays, ultraviolet, visible light, infrared, microwaves, and radio waves (Lessons # 106-107)
Electron	negatively charged subatomic particle that spins in an orbit around the nucleus of an atom (Lesson #72)
Element	a substance made up of only one kind of atom (Lessons # 72-74)
Embryo	a newly formed cell; the union of a sperm and egg (Lesson #15)
Energy	the ability to do work
Energy Pyramid	an illustration of how energy travels from producers to primary consumers, to secondary consumers, and so on (Lesson #35)
Energy Transformation	the changing of energy from one form to another (Lesson #96)
Environment	the natural world; everything around us (Lesson #29)
Epithelial Tissue	tissue that provides a protective lining to several organs and covers the entire outside of the body (Lesson #10)
Erosion	process by which broken down rocks are carried away by wind, water, or moving ice (Lesson #45)
Evaporation	process by which a liquid changes to a gas (Lesson #80)
Evidence	facts that support conclusions (Lesson #6)
Experiment	one of the steps of the scientific method
Fahrenheit	scale used to measure temperature or average kinetic energy (Lesson #100)
Fertilization	process by which two sex cells meet, fuse together, and become one cell; results in an embryo in an animal or a seed in a plant (Lesson #15)

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Food Chain	process by which energy travels between organisms (Lesson #33)
Food Web	the flow of energy from organism to organism, resulting from the interconnection of several food chains (Lessons #34, 40)
Force	a push or a pull
Fossil	the imprint or remains of things that lived long ago
Fossil Fuels	non-renewable resources formed from the remains of organisms over several hundred years; examples are coal, oil, natural gas
Fracture	see *cleavage*
Freezing	process by which a liquid changes to a solid (Lesson #80)
Freezing Point	temperature at which a liquid will become a solid (Lesson #81)
Frequency	in a transverse (light) wave, the number of crests that move past a given point in a given amount of time; in compressional (sound) waves, frequency refers to how quickly a number of compressions pass a given point in a given amount of time (Lesson #104–105)
Freshwater	water that does not have a large amount of salt in it; lakes, rivers, streams
Friction	a force created by two objects rubbing against each other; a force that reduces motion by working against it
Front	weather condition that occurs when two air masses meet; each air mass has a different density and temperature (Lesson #50)
Fungi	in the Linnaean System, organisms that are more complex than protists; may be unicellular or multi-cellular; fungi are decomposers (Lesson #27)
Gas	one of the three states of matter; a substance that has no definite shape or volume (Lesson #79)
Genes	pieces of DNA; the basic units of heredity (Lesson #13)
Geothermal Energy	heat energy that comes from the Earth (Lesson #113)
Gravitational Potential Energy	energy created by an attraction between two objects (Lesson #94)
Gravity	a force that pulls objects toward each other

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Ground Tissue	in plants, the tissue where photosynthesis occurs (Lesson #12)
Groundwater	water that has soaked into the ground and has collected in underground reservoirs (Lesson #49)
Growth	process by which old cells make new cells through cell division (Lesson #16)
Hardness	one of the physical properties of minerals (Lesson #43)
Hazardous Waste	harmful pollutants that contaminate the environment
Heat Energy	thermal energy created by the movement of atoms (Lesson #101)
Herbivore	an animal that gets its energy by consuming only plants
Heredity	the passing on of traits from parent to offspring (Lesson #20)
Homogeneous	all the same
Host	organism that is afflicted with parasites (Lesson #32)
Humidity	a measure of the amount of moisture in the air
Hydropower	water power (Lesson #113)
Hydrosphere	all the waters of the Earth (Lesson #49)
Hypothesis	an educated guess (Lesson #3)
Igneous	one of the three kinds of rock; formed by the cooling and hardening of molten rock (Lesson #44)
Inconclusive	not proving anything; results of an experiment are inconclusive if they neither prove nor disprove the hypothesis (Lesson #4)
Independent Variable	the variable in an experiment that is changed to see what effect it has on the dependent variable (Lesson #2)
Inertia	the tendency of an object to remain at rest or moving unless acted upon by an outside force (Lesson #117)

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Inherited	passed down from parent to child; genetic traits are inherited (Lesson #20)
Inorganic	not related to living things (Lesson #41)
Instinct	a natural impulse; a behavior that an animal knows without being taught
Insulator	a nonconductor; material that does not allow energy (heat or electricity) to easily flow through it (Lesson #102)
Ionic Bond	the bond that results from a transfer of electrons from one atom to another (Lesson #76)
Isotopes	atoms of the same element which have different numbers of neutrons (Lesson #73)
Kelvin	a scale used to measure temperature or average kinetic energy (Lesson #100)
Kinetic Energy	energy of motion (Lesson #94)
Kingdom	one of the major groupings in the Linnaean System of classification (see Kingdom chart in Help Pages)
Law of Conservation of Energy	the law that states that energy is neither created nor destroyed but only changes in form (Lesson #96)
Law of Conservation of Matter	the law that states that matter is neither created nor destroyed but may change in form
Light Energy	a type of energy that travels in waves (Lesson #104)
Linnaean System	system of classification of all living things developed by Karl von Linne (Lesson #25)
Liquid	one of the three states of matter; a liquid has a definite volume but no definite shape (Lesson #78)
Lithosphere	Earth's crust and the upper part of the mantle
Lunar Cycle	the pattern of the phases of the moon that goes through its cycle approximately every 30 days (Lessons #64, 65)
Luster	one of the physical properties of minerals; the way light reflects off of a mineral (Lesson #42)
Malleable	flexible or bendable; a property of metals (Lesson #75)

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Mass	the amount of matter in an object; mass is measured using a balance
Matter	anything that has volume and mass
Meiosis	process by which reproductive cells make more cells; the original cell divides twice, resulting in four daughter cells (Lesson #18)
Melting	process by which a solid changes to a liquid (Lesson #80)
Melting Point	the temperature at which a substance melts or changes from solid to liquid (Lesson #81)
Metaloids	elements that have some characteristics of metals and some characteristics of nonmetals (Lesson #75)
Metamorphic	one of the three types of rock; forms when high heat and pressure change a rock's shape and substance into a new type of rock (Lesson #44)
Migration	an instinctual animal behavior; seasonal movement of animals to places that are warmer, safer, or have a better food supply (Lesson #32)
Mineral	a naturally occurring inorganic solid having a definite chemical composition and structure (Lesson #41)
Mitochondria	organelles that provide the energy that a cell needs (Lesson #8)
Mitosis	process of cell division by which body cells make more body cells; each cell divides, resulting in two cells (Lesson #17)
Mixture	a combination of two or more substances (Lesson #91)
Mohs Hardness Scale	developed by Frederick Mohs, a scale for rating the hardness of minerals (Lesson #43)
Molecule	the atoms of two or more different elements joined together
Monera (Bacteria)	in the Linnaean System, the simplest organisms; bacteria are tiny and unicellular (Lesson #26)
Moon Phases	the appearance of the moon at different times during a thirty-day cycle; phases are caused by the sun's shadow blocking the light that is reflected off of the moon (Lesson #64)
Motile	able to move (Lesson #27)

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Glossary

Motion	a change in position; motion can only be stopped or started by a force acting on an object (Lessons #94, 116)
Multi-cellular	describes an organism made up of many, many cells (Lesson #9)
Muscle Tissue	tissue that contracts and relaxes to allow the body to perform voluntary and involuntary functions (Lesson #10)
Mutation	during meiosis, an event that causes genes to be copied incorrectly; results in differences that may be beneficial or harmful (Lesson #23)
Natural Resources	all of the naturally occurring materials that humans and other organisms use for survival (air, water, trees, coal, etc.)
Nervous Tissue	tissue that sends messages from the brain and spinal cord to all parts of the body (Lesson #10)
Neutron	atomic particle that has a neutral (neither positive nor negative) charge (Lesson #72)
Niche	an animal's role in an ecosystem; includes the animal's needs and what the animal does (Lesson #30)
Nocturnal	describes animals that hunt and move around at night (Lesson #39)
Nonconductor	see *insulator*
Non-renewable Resources	natural resources that cannot be replaced within a person's lifetime (Lesson #113)
Nucleus	the part of a cell that controls the cell's activities (Lesson #8); also the center of an atom; the nucleus consists of protons and neutrons and contains most of the atom's mass
Omnivore	an animal that consumes both plants and other animals
Opaque	describes material that does not allow light to pass through it (Lesson #110)
Organ	a group of tissues working together inside the body (Lesson #11)
Organ System	a group of organs working together; examples: digestive system, respiratory system, circulatory system (Lesson #11)
Organelles	tiny structures inside each cell which perform various jobs (Lesson #8)
Organism	a living thing (Lesson #7)

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Glossary

Ovule	in seed plants, the part that holds the egg cells; found in the pistil (Lesson #28)
Ozone Layer	the layer of atmosphere that protects life on Earth by absorbing the sun's harmful ultraviolet rays
Parasites	organisms that feed off the flesh or body fluids of other living organisms (hosts) (Lesson #32)
Periodic Table of Elements	an organized list of all the known elements (Lesson #74; see table in Help Pages)
Permafrost	the condition of frozen soil in the tundra that never thaws (Lesson #39)
Phase Change	a change in the state of matter, for example solid to liquid or liquid to gas (Lesson #80)
Photosynthesis	process by which green plants make their own food using sunlight, water, and carbon dioxide (Lesson #8)
Physical Change	a change in appearance which does not change the substance at a molecular level (Lesson #83)
Physical Properties	properties that can be observed without changing the identity of the object (Lesson #82)
Physical State or Phase	one of the properties of matter; the phases are solid, liquid, gas, and plasma (Lesson #79)
Pistil	the female part of a plant (Lesson #28)
Pitch	how high or low a sound is; a note with high pitch has a high frequency; a low note has low frequency (Lesson #105)
Plants	in the Linnaean System, organisms that are able to make their own food through the process of photosynthesis (Lesson #27)
Plasma	one of the states of matter; a mixture of gas and charged particles (Lesson #79)
Polar Easterlies	air belt that originates over the North or South Pole (Lesson #53; see chart in Help Pages)
Pollen	fine, powdery grains or spores found in the stamen of a plant; pollen contain the sperm cells of a plant (Lesson #28)
Pollination	transfer of pollen from the male part to the female part of a plant (Lesson #28)
Population	a group of the same kind of organism living in an ecosystem (Lessons #30-31)

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Potential Energy	stored energy; energy of position (Lesson #94)
Precipitation	rain, snow, sleet, or hail; water in any form that falls to Earth's surface
Predator	an animal that hunts another animal as food (Lesson #32)
Prevailing Winds	the constant flow of air created by the movement of cooler air into warmer areas
Prey	an animal that is hunted by another animal as food (Lesson #32)
Primary Consumer	herbivores; animals that eat only plants
Process	an on-going movement or series of changes such as evaporation, weathering, the water cycle, photosynthesis, etc.
Producer	an organism, such as a green plant, that makes its own food through photosynthesis (Lesson #33)
Properties	characteristics; anything that describes a thing
Protists	in the Linnaean System, organisms that are more complex than bacteria; may be unicellular or multicellular (Lesson #26)
Proton	a subatomic particle that has a positive charge (Lesson #72)
Radiant Energy	energy that moves through waves (Lesson #94)
Radiation	movement of heat energy through waves (Lesson #102)
Recessive Trait	a trait that will show if the gene is contributed by both of the parents (Lesson #21)
Recycle	to use again; to save resources and the environment by reusing materials instead of disposing of them in landfills
Reflection	light bouncing off a shiny or smoother surface; creates a mirror image (Lesson #109)
Refraction	the bending of light as it passes from one medium to another, such as from air to water (Lesson #109)
Renewable Resources	natural resources that are replaced by natural ecological cycles and, when used wisely, can be used over and over again (Lesson #113)

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Replicate	repeat (Lesson #6)
Reproduction	the process by which organisms are created; may be sexual or asexual (Lesson #13)
Reservoir	a storage area; reservoirs for water are oceans, glaciers, polar ice caps, rivers, lakes, etc. (Lesson #49)
Rock Cycle	the process by which rocks constantly change from one form into another (Lesson #45)
Root	the part of a plant that anchors the plant in the soil and takes in water and nutrients from the soil
Runoff	melting ice or snow, as well as precipitation that drains off the land and soaks into the ground or flows to a body of water
Scarcity	shortage of air, food, water, shelter, or sunlight that may cause a population to decrease, move to another ecosystem, or die out (Lesson #31)
Scavenger	an organism that feeds on the remains of dead animals and helps to clean up the environment by getting rid of decaying organic matter (Lesson #31)
Scientific Method	a procedure that scientists follow when they want to answer questions or solve problems
Scratch Test	a test to determine the hardness of a mineral; a harder mineral will scratch a softer mineral
Secondary Consumer	a carnivore; an animal that gets energy by consuming other animals
Sedimentary	a type of rock formed when sediments bond together over time (Lesson #44)
Semiconductor	material that allows electricity to move through it but not as easily as electricity moves through a conductor; some metaloids are semiconductors (Lesson #75)
Sexual Reproduction	reproduction which requires the union of cells from two parent organisms; creates offspring that carry traits which are similar, not identical, to either parent (Lesson #15)
Simple Machine	a machine that has only a few or no moving parts and requires a single force to make it work (see chart in Help Pages)
Solar Power	energy that comes from the sun (Lesson #113)
Solid	one of the three states of matter; a solid has a definite shape and volume (Lesson #78)
Solution	a type of mixture in which all the parts are evenly distributed (Lesson #91)

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Glossary

Sound	a type of energy that is created by vibrations and travels in waves (Lesson #105)
Specialized	describes cells; having a specific purpose within the body (Lesson #9)
Sperm	sex cells that come from the father (Lesson #15)
Stamen	the male part of a plant (Lesson #28)
Static Electricity	a type of potential energy that builds up on an object as the result of freed electrons
Stationary Front	weather condition that occurs when two air masses move together and mix; neither air mass is strong enough to push the other air mass aside; brings gradual changes in weather (Lesson #51)
Streak	one of the properties of minerals; the color of the mark that a mineral leaves when it is dragged across a streak plate (Lesson #42)
Subatomic Particles	the particles that make up an atom: protons, neutrons, electrons (Lesson #72)
Sublimation	process by which a solid changes directly to a gas (Lesson #80)
Surface Water	water that is above ground such as, lakes, rivers, and oceans
Suspension	a heterogeneous mixture; in a liquid suspension, the particles are large and will settle to the bottom of the container (Lesson #91)
Temperate	moderate in temperature; describes areas that are warm in summer and cold in winter (Lesson #38)
Temperature	a measure of average kinetic energy (Lesson #99)
Tertiary Consumer	third level consumer; an animal that eats animals that eat other animals
Thermal Energy	heat energy (Lesson #94)
Tissue	a group of cells that work together with a common purpose; tissue forms organs (Lesson #10)
Trade Winds	air belt that originates over the equator (Lesson #53; see chart in Help Pages)
Trait	a characteristic that is inherited or passed from parent to child; examples: hair color, height, eye color (Lesson #13)

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Glossary

Translucent	describes material that allows only some (not all) light to pass through it (Lesson #110)
Transparent	describes material that allows light to pass through it (Lesson #110)
Transpiration	process by which plants take in water through their roots, then release it into the surrounding air through their leaves (Lesson #48)
Troposphere	the layer of atmosphere covering Earth's entire surface and containing 90% of all the gases in the entire atmosphere; the troposphere is where weather occurs (Lesson #50)
Unbalanced Force	a force that causes a change in motion; a force that is not cancelled out by another force
Unicellular	describes an organism made up of only one cell (Lesson #9)
Variable	any factor that can vary or change in an experiment (Lesson #2)
Variation	differences among offspring which are caused by the random mixing that occurs during meiosis (Lesson #22)
Vascular Tissue	in plants, the tissue that transports food and nutrients to all parts of the plant (Lesson #12)
Velocity	speed in a specific direction (Lesson #116)
Verify	prove
Volume (Matter)	the amount of space that matter takes up
Volume (Sound)	the loudness of a sound
Warm Front	weather condition that occurs when a new air mass moving in is warmer and less dense; causes gentle changes in weather (Lesson #51)
Waste Disposal	an ecosystem's ability to dispose of its own waste by constantly recycling organic material (Lesson #31)
Water Cycle	the process by which liquid water continually recycles itself by evaporating, condensing, and falling to Earth as precipitation (Lesson #48)
Water Vapor	water that has evaporated; water in its gaseous state
Waves	disturbances that carry energy through space and matter; energy is transferred through waves (Lesson #104)

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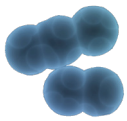
Glossary

Weathering	the wearing away of rock by water, wind, and/or ice
Weight	a measure of the force of gravity on an object
Westerlies	air belt that originates between the trade winds and the polar easterlies and moves from west to east across the Northern Hemisphere (Lesson #53; see chart in *Help Pages*)
Work	effort or activity; the result of force applied over distance

Kingdoms in the Linnaean Classification System

Kingdom	Illustration	Description	Examples
Monera (Bacteria)		one-celled; no nucleus; may absorb or make own food	green sulfur bacteria, purple bacteria, acidophilus
Protista (Protists)		one-celled with nucleus; absorb or make own food; some protists are multicellular	amoeba, diatom, euglena, algae, paramecium, protozoa
Fungi		many-celled; absorb food from their environment; some are unicellular	mushrooms, puffballs, mold, yeast, mildew, toadstools
Plants		many-celled; cells contain chloroplasts and can make food	trees, flowers, shrubs, grasses, cacti, seaweed, ferns, moss
Animals		able to move; many-celled; feed on plants and animals	monkeys, birds, fish, octopus, elephants, cats spiders, humans

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Animal Groups

Invertebrates
Most of the members of the Animal Kingdom are invertebrates. An invertebrate is a multi-celled organism that does not have a backbone (vertebrae) or a bony inner skeleton. Some invertebrates do have a hard outer shell called an exoskeleton; others have only a soft body; still others have a fluid-filled skeleton. The chart shows some of the sub-groups of invertebrates.

Invertebrate	Illustration	Description	Examples
Annelid		segmented bodies; may be parasitic; prefer moist environment	earthworm, leech
Arthropod		segmented body; hard exoskeleton, jointed legs; multiple limbs	insect, spider, centipede, shrimp, scorpion, crayfish
Mollusk		soft body covered by hard shell; some live on land, others in ocean	snail, slug, squid, oyster, clam, cuttlefish, nautilus
Echinoderm		live in the oceans; spines and arms spread out from center of body	starfish, sea urchin, sand dollar, sea cucumber

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Animal Groups

Vertebrates
Vertebrates are highly developed animals that have backbones and spinal chords. Only about 2% of all the animals in the world are vertebrates, but these are the animals we know best. That may be due to the fact that most vertebrates are much larger and take up more space than invertebrates. Also, vertebrates are very mobile – that means they can get around easily, and they tend to take control of the most favorable habitats.

Vertebrate	Illustration	Description	Examples
Amphibian		eggs hatch in water; young breathe with gills; adults develop lungs and live on land	salamander, frog, toad, newt
Bird		have beaks, wings, and feathered bodies; hollow bones for easy flight	crane, duck, robin, hawk, owl, penguin, ostrich, crow, swallow, bald eagle, chicken
Fish		most lay eggs; live in salt or fresh water; breathe with gills; use fins and tails to swim	salmon, shark, tuna, clownfish, marlin, baracuda, catfish, eel, perch, trout, blowfish, carp,
Mammal		give birth to fully developed young; hair or fur-covered bodies; feed young with milk	tiger, monkey, rat, seal, wolf, dolphin, whale, kangaroo, cat, raccoon, bear, squirrel, human
Reptile		breathe with lungs; may live on land or in water; bodies covered with scales	alligator, turtle, snake, gecko, iguana, crocodile, komodo dragon, chameleon

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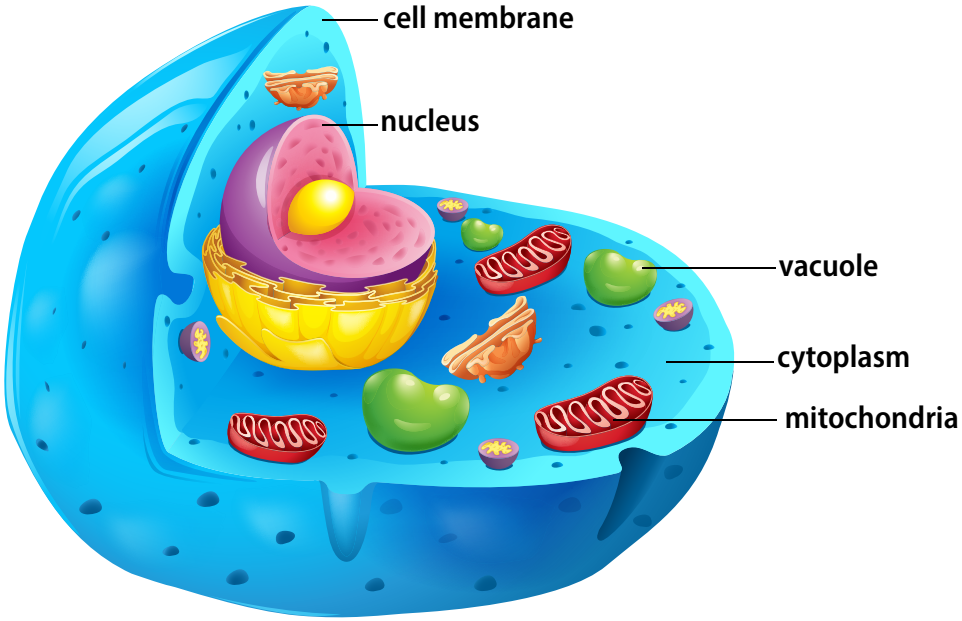
Animal Groups

Mammals
Most mammals have bodies that are covered with hair or fur. A mammal is warm-blooded, which means it is able to regulate its body temperature. Most mammals give birth to fully formed babies, and mammal mothers produce milk to feed their young. Mammals are classified in many different ways. The chart shows some of the sub-groups of mammals.

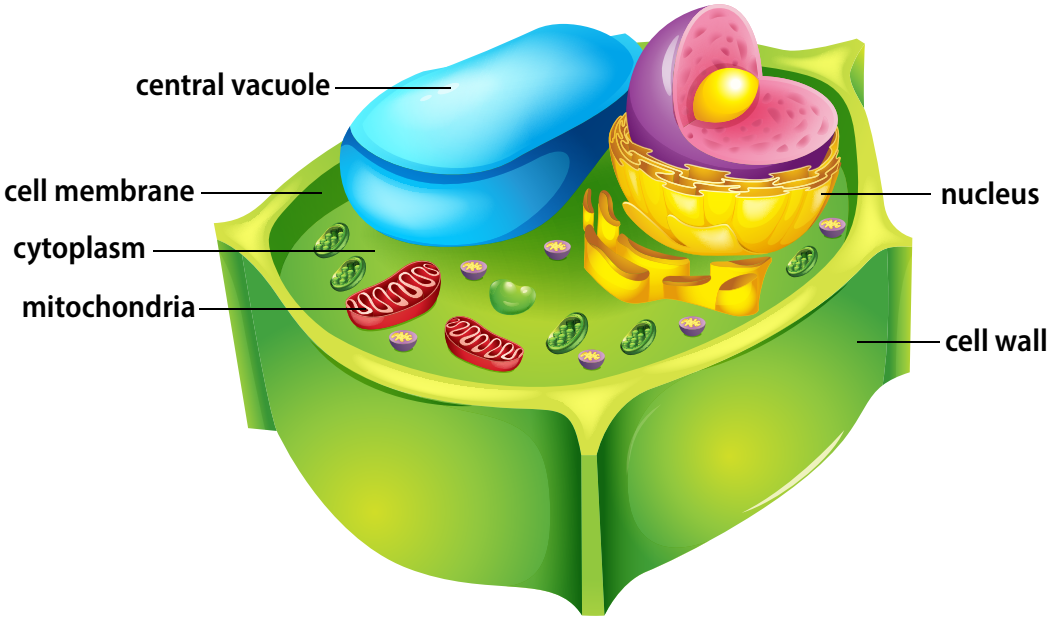
Mammal	Illustration	Description	Examples
Cetacean		lives in water; equipped with tails and fins for swimming and blowholes for breathing	beluga, orca, blue whale, narwhal, humpback, dolphin, porpoise
Marsupial		babies not fully developed at birth; live in mother's pouch during early development	kangaroo, wallaby, koala, wombat, Tasmanian devil, Virginia opossum
Carnivore		has four large canine teeth; highly developed brain; consumes animal flesh; some are omnivores	dog, bear, fox, raccoon, seal, walrus, tiger, weasel, skunk, lion, leopard, hyena, wolf
Primate		highly developed brain; arms, legs, hands with fingers and opposable thumbs	monkey, baboon, orangutan, chimpanzee, gorilla, human
Rodent		large incisor teeth; lives above ground and burrows underground; hibernates in winter	beaver, guinea pig, rat, porcupine, chipmunk, squirrel, gerbil, mouse, prairie dog

Help Pages

Animal Cell



Plant Cell



Help Pages

Terrestrial Biomes

Biome	Description	Location	Plant Life	Animal Life
Coniferous Forest (Taiga or Boreal Forest)	short warm and rainy summers; extremely cold and snowy winters; fewer species than deciduous forests or rainforests; many animals hibernate during winter	Northern Europe, North America, Asia, mountain ranges such as the Rocky Mountains and the Alps	large coniferous trees (fir, spruce, pine); evergreens, hardy deciduous trees, mosses, lichens, ferns; wildflowers	moose, elk, deer, bear, mountain lions, lynx, wolves, birds, small mammals and a few reptiles; migrating birds
Deciduous Forest (Temperate Forest)	four distinct seasons; short, mild winters; trees loose their leaves in fall; rich soil with lots of forest floor plant life	Eastern U.S., New Zealand, Europe, China, Japan	tall trees: cedar, elm, oak, maple, linden, hickory, beech; wildflowers and green plants	deer, black bear, wolves, birds, reptiles, amphibians, rodents & other small mammals
Tropical Rainforest	warm, moist, and humid with high precipitation; many hours of daylight; very rich in plant & animal life; holds the greatest diversity of life	located on or near the equator in Africa, Asia, Australia, Central & South America	lush, green trees and other plants that grow in layers: emergent, canopy, understory, and forest floor	a vast variety of insects, birds, bats, monkeys, snakes, frogs, & lizards

Help Pages

Terrestrial Biomes

Biome	Description	Location	Plant Life	Animal Life
Desert	hot and dry with extremely low precipitation; sometimes very cold at night; cloudless skies; sandy, coarse and rocky soil	Africa, Australia, Southern Asia, North America, South America	shrubs, small trees, and cacti with very deep root systems, thick skins, and prickly needles	nocturnal animals such as jack rabbits and kit foxes; camels, ants, & other insects; tortoises, owls, lizards, toads
Grasslands (Prairie, Steppe, Pampas, Savanna)	some are temperate; others have hot summers, cold winters; low or inconsistent rainfall; soil quality varies; wildfires are frequent	Asia, Africa, Australia, Europe, North America, South America	thousands of different species of flowering grasses with deep root systems; some short trees and shrubs	pollen-eating insects, humming birds, coyotes, rabbits, turkeys, prairie dogs, buffalo, zebras, lions, eagles, kangaroos
Tundra (Arctic Biome)	coldest and harshest of all land biomes; very little precipitation; constant under-layer of permafrost; tundra is nicknamed the “frozen prairie” or “ice desert”	North Pole, Antarctica, Iceland, Siberia, Alaska, Canada, Norway, Sweden, and Finland	mosses, lichens, wildflowers, grasses, shrubs; only plants that grow close to the ground & have roots close to the surface are able to survive	large numbers and varieties of insects, migrant birds, small mammals, sheep, oxen, wolves, foxes, caribou, polar bears, mountain goats

Help Pages

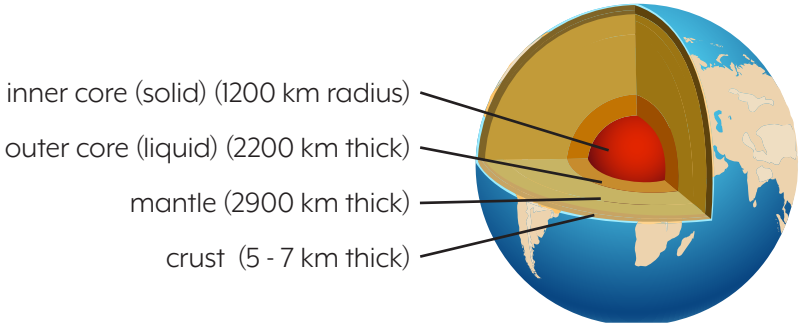
Earth

Earth's Layers

Earth has four layers:

- **crust** (the thinnest layer)
- **mantle** (the thickest layer)
- **outer core** (consists of molten rock)
- **inner core** (solid, hottest layer)

The solid upper part of the mantle and the crust make up Earth's outer shell known as the **lithosphere.**



Sedimentary Rock

Sedimentary rock forms on the Earth's surface. Pieces of broken off rock or chemicals that have settled out of water are called **sediment**. One type of sedimentary rock is clastic rock. **Clastic rock** is formed when small pieces of rock that have broken off through weathering or erosion end up in streams and rivers. These sediments are carried away by the water, eventually settling in riverbeds. Dissolved minerals wash into the cracks between the rock fragments. When the water from the river evaporates, these minerals dry up and become the glue that holds the rock pieces together. Depending on the size of the rock pieces, clastic rocks can be fine and smooth or very bumpy.

Another type of sedimentary rock is **chemical sedimentary rock**. It forms from minerals that have dissolved in water. Extra chemicals that were in the water settle on the floor of a lake. Then the water evaporates, leaving all of the chemicals that were in it behind. Because these minerals are very small, chemical sedimentary rocks tend to be very fine and smooth.

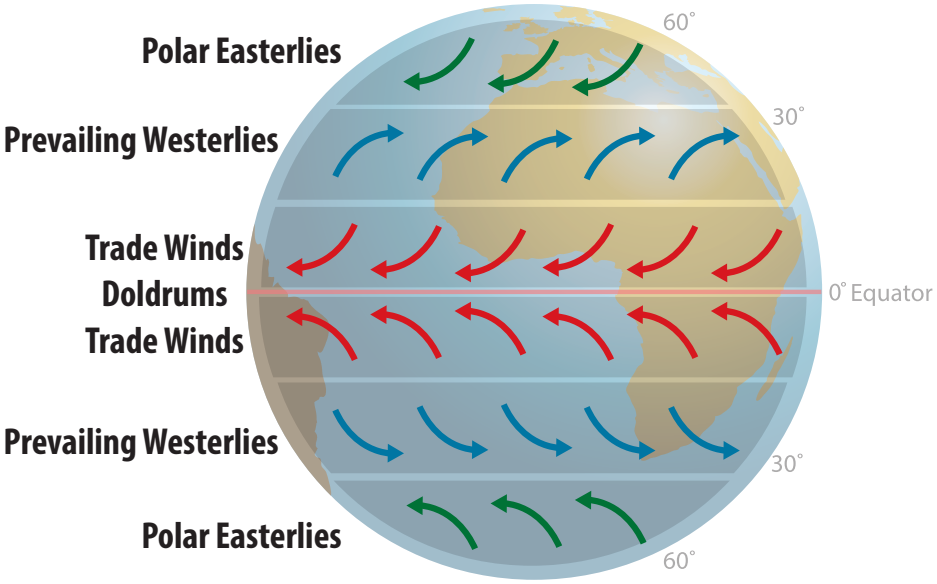
Sandstone is a type of **clastic** sedimentary rock

Chalk is a type of **chemical** sedimentary rock.

Help Pages

Local and Global Winds

Pattern	Where it Begins	How it is Formed
Local Winds	along shorelines, and over mountains and valleys	These are caused by geographic features, such as bodies of water or mountain ranges. Local winds only move short distances, but can blow in any direction.
Trade Winds	over the equator	Warm air moves away from the equator and begins to cool. Gradually, the air sinks down toward Earth again. Then the air is heated, and the cycle begins again.
Polar Easterlies	over the North Pole & South Pole	Cold air sinks and moves gradually toward the equator. As it moves closer to the equator, the air becomes warmer. Gradually, it becomes warm enough to rise. As it rises, the air begins to cool, and the cycle starts again.
Prevailing Westerlies	areas between the Trade Winds and Polar Easterlies	These are belts of air between the trade winds and the polar easterlies. Westerlies cause weather in the Northern Hemisphere to travel from west to east.
Doldrums	special area above the equator	Rising winds have created a low pressure area, and because of this low pressure, no winds blow in this area.



Help Pages

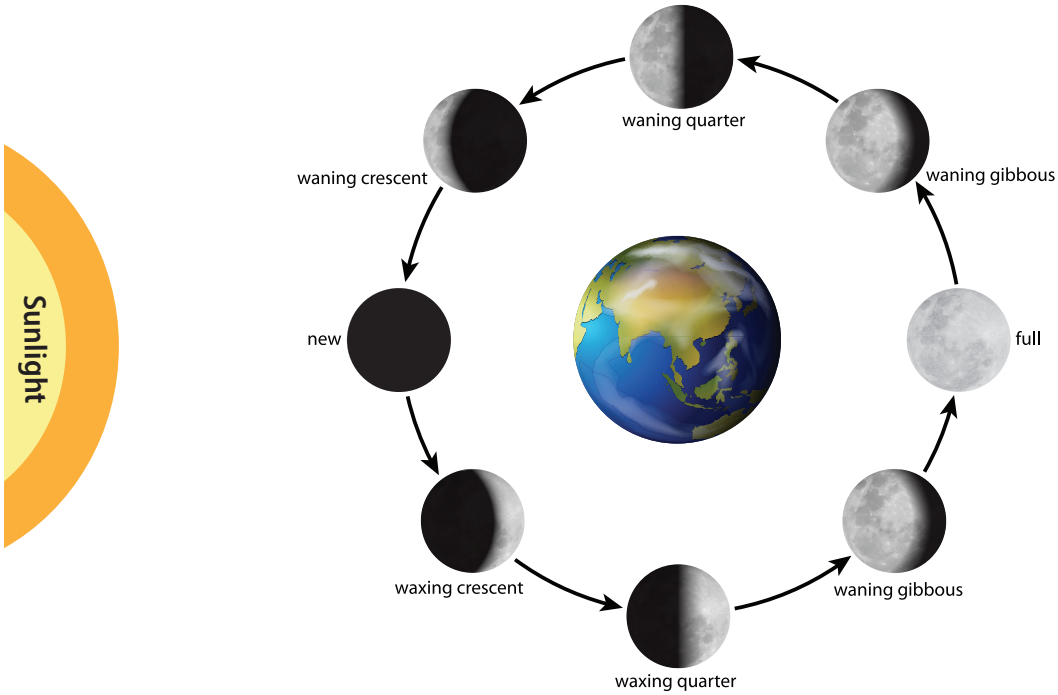
The Moon

The Phases of the Moon

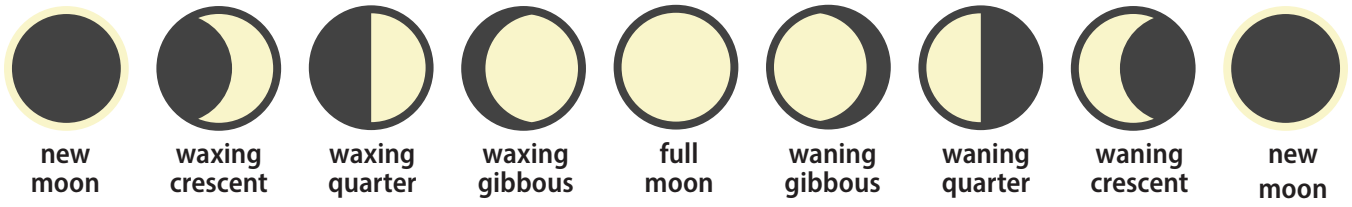
The *appearance* of the moon in the night sky changes as the moon orbits Earth. The **lunar phases** are caused by seeing the moon from the different angles. Most of the time, when we look at the moon, we are seeing part of the moon's lit-up side and part of the dark side.

The brackets radiating from the center of the diagram show how we see the moon from Earth. The right-to-left view shows how the sun's rays light up the surface of the moon, leaving the other half in darkness.

Phases of the Earth's Moon



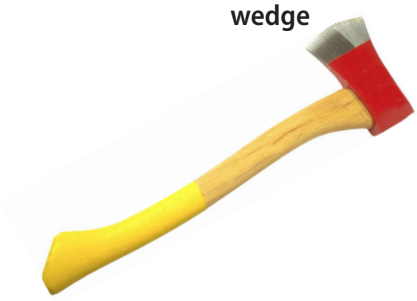
Moon Phases as Seen from the Earth



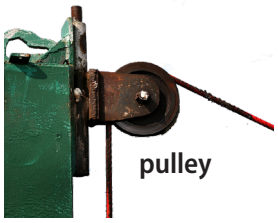
Help Pages

Simple Machines

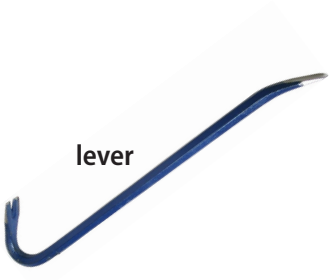
Simple Machine	Examples or Common Uses
Pulley uses grooved wheels and ropes to raise and lower things	flagpole lift, clothesline, window blinds
Lever bar that pivots on a fulcrum to lift or move heavy loads	seesaw, shovel, crowbar
Wedge has a slanted side and a sharp edge for sliding or for cutting	ax, knife blade, scissors, garden hoe
Wheel-and-Axle wheel with a rod through its center used to move loads	wheel, steering wheel, doorknob
Inclined Plane slanted surface (also called a ramp); used to move things to higher or lower places	boat ramp, wheelchair ramp, sliding board
Screw inclined plane spiraled around a post; used to fasten or hold things together	light bulb neck, screw-top on a bottle, spiral staircase


wedge


wheel and axle


pulley


inclined plane


lever


screw

Help Pages

Laboratory Instruments

Tool	Measures	Units	Image
Balance	mass	grams / kilograms	
Thermometer	temperature	degrees	
Spring Scale	weight / friction	Newtons	
Ruler / Measuring Tape	length / width	meters / centimeters / inches	

A **balance** is a tool that measures an object's mass (the amount of matter in the object).

A **thermometer** is used to measure average kinetic energy (temperature).

A **spring scale** is used to measure forces like weight and friction.

A **beaker** holds and measures the volume of liquids.

A **ruler** or **measuring tape** can be used to measure the length and width of objects.

Help Pages

Other Laboratory Instruments

Tool	Use	Image
Magnifying Glass (hand lens)	magnify; easy to carry	
Microscope	magnify the view of tiny objects to hundreds of times their natural size	
Dropper / Pipette	measure out small amounts of liquid	
Forceps	hold or pick up small objects	
Safety Goggles	provide eye protection	

PERIODIC TABLE OF THE ELEMENTS