



Level 5

Science

Help Pages

## Help Pages

### Glossary

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

Abiotic	not biotic; refers to things that are not and never were alive (rocks, minerals, soil, water, sunlight, and air) (Lesson #24)
Absolute Zero	the coldest point possible; temperature at which all motion of particles stops (Lesson #84)
Acceleration	the rate at which velocity changes; acceleration may increase or decrease (Lesson #122)
Air Pressure	the weight of the atmosphere pressing toward Earth's core (Lesson #49)
Alto	from the Latin, altus, meaning "high"; it identifies clouds that look high, but are really middle clouds (Lesson #59)
Amphibian	a cold-blooded vertebrate that hatches in water and is born with gills but develops lungs and lives on land as an adult (Lesson #19)
Anemometer	an instrument that measures wind speed (Lesson #54)
Appliance	anything that is powered by electric current; part of a circuit (Lesson #101)
Atmosphere	a blanket of air surrounding the Earth and made up of several layers: troposphere, stratosphere, mesosphere, thermosphere, and exosphere (Lesson #49)
Atom	the smallest bit of any given type of matter (Lesson #94)
Balance	a tool used to measure the mass of objects (chart)
Balanced Forces	forces that are equal in strength and cancel each other out (Lesson #114)
Barometer	weather instrument used to measure air pressure (Lesson #54)
Bedrock	layer of soil beneath the subsoil
Biomass	organic material that can be burned to release energy (Lesson #91)
Bird	one of five vertebrate groups; all birds have beaks, wings, and bodies that are covered with feathers (chart)
Body System	a group of organs working together within the body (nervous, circulatory, digestive, etc.) (Lesson #16)

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Botanist	a scientist who specializes in the study of plants (Lesson #21)
Buoyancy	the force of water pushing up on an object and keeping it afloat (Lesson #115)
Carbon Dioxide	one of the gases found in Earth's atmosphere; plants take in carbon dioxide during photosynthesis
Carnivore	meat-eating; an animal that eats other animals (Lesson #12)
Carrying Capacity	population size that a certain ecosystem can support without damaging the ecosystem (Lesson #18)
Cell Division	the way cells make more cells; the nucleus divides itself, and one cell becomes two cells (Lesson #16)
Cell Membrane	a protective covering that allows nutrients to be absorbed into a cell and allows waste to pass out of the cell (Lesson #13)
Cell Wall	an outer covering of plant cells which helps the plant cells stick together and gives support to the plant (Lesson #14)
Celsius	one of three types of thermometers used to measure temperature or average kinetic energy (Lesson #84)
Cementation	to bond pieces together like cement; one of the processes by which sedimentary rock is formed
Characteristics	properties; anything that describes a substance
Chemical Change/ Reaction	a change in matter in which an entirely new substance is formed; atoms are rearranged during a chemical reaction (Lesson #74)
Chemical Potential Energy	stored energy that can be converted to kinetic energy (Lesson #79)
Chlorophyll	the substance in plant cells that causes the green color in plants and enables plants to make food through photosynthesis (Lesson #7)
Chloroplast	cell part that makes food for the plant; found only in plant cells (Lesson #14)
Chrysalis	cocoon; pupa; the third stage of complete metamorphosis of insects (Lesson #21)
Circuit	a path that electricity follows (Lesson #101)
Cirrus	Latin for "curl of hair;" wispy, featherlike, high altitude clouds (Lesson #59)

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Classification	a system that scientists use to organize living and non-living things (Lesson #15)
Clay	a very fine-grained soil which does not easily allow air and water to pass through it (Lesson #32)
Climate	established weather pattern of a certain area over a long period of time (Lesson #58)
Closed Circuit	a circuit with no breaks or open switches; allows electricity to freely flow through it (Lesson #102)
Cold Front	condition that occurs when cold air moves in to replace warmer air; may bring heavy rain, thunderstorms, hail, or snow (Lesson #57)
Community	all of the populations that live in an ecosystem at one time
Compaction	pressing together with great force/pressure; one of the processes by which sedimentary rock is formed
Complete Circuit	a closed circuit (Lesson #101)
Conclusion	final step of the scientific method; report of results of an inquiry (Lesson #6)
Conclusive	definite; certain; results that are not questionable (Lesson #14)
Condensation	process by which water vapor turns to liquid water (Lesson #40)
Condensation Point	the temperature at which a given substance changes from gas to liquid; the same temperature as the boiling point for that material (Lesson #67)
Conduction	a transfer of heat that occurs when a heat source comes into contact with an object that is cooler (Lesson #86)
Conductor	substance which allows electricity to flow easily through it (metals, dried wood, tap water) (Lesson #99)
Conifer	type of plant that produces its seeds within a cone
Conservation	the wise use of natural resources
Constant	unchanging; in an experiment, a variable that does not change (Lesson #9)
Consumer	any organism that gets energy by consuming (eating) other organisms (Lesson #10)



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Control Group	the persons or items in an experiment that do not receive the experimental treatment (Lesson #11)
Convection	transfer of heat through the circulation of a gas or liquid as it warms and then cools (Lesson #87)
Corrosion	rust; a chemical reaction in which water and oxygen react with metal
Crust	Earth's surface; the outermost layer of Earth (Lesson #28 & chart)
Crystalline Solid	formed with atoms arranged in a definite repeating pattern; a crystal (Lesson #37)
Cumulus	Latin for "heap" or "pile"; dense, white, fluffy clouds (Lesson #59)
Current Electricity	electricity that moves through wires (Lesson #99)
Cytoplasm	a jelly-like substance that fills cells (Lesson #13)
Data	facts, statistics and other information (Lesson #5)
Deciduous	plants that shed their leaves at the end of the growing season
Decomposer	organisms that break down the remains of other organisms and return vital nutrients to the soil; bacteria, protists, fungi, earthworms, etc. (Lesson #10)
Deforestation	the permanent destruction of forests caused by the cutting of too many trees too quickly (Lesson #37)
Demonstration	a way of showing a scientific concept (Lesson #38)
Density	a measure of how closely molecules are packed in a given amount of space (Lesson #69)
Dependent Variable	a variable that changes, depending upon other factors in the experiment; a dependent variable may change.
Deposition (Phase Change)	process by which a gas turns to a solid
Deposition (Rock Cycle)	the process by which sediments settle in layers on the bottoms of lakes, rivers, and oceans
Desert	an ecosystem which is very dry, getting less than 10 inches of rain per year

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Dwarf Planet	a round body that orbits the sun but is much smaller than a regular planet and has not cleared the neighborhood around its orbit (Lesson #131)
Ecosystem	all of the living and nonliving things interacting and affecting each other in a certain area (Lesson #18)
Elastic Potential Energy	the type of stored energy that is in a stretched-out rubber band or spring (Lesson #79)
Electricity	energy produced by the movement of electrons (Lesson #97)
Electron	negatively charged particle that spins in an orbit around the nucleus of an atom (Lesson #95)
Element	a substance made up of only one kind of atom (Lesson #94)
Elliptical	egg-shaped; the shape of the orbit of anything that travels around the sun in the solar system (Lesson #127)
Energy	the ability to do work (Lesson #77)
Energy Conservation	a way to protect and preserve natural resources by recycling, using less, and reusing materials (Lesson #92)
Energy Efficiency	consuming resources carefully as well as reducing the amount of waste (Lesson #92)
Entomology	the study of insects (Lesson #21)
Environment	the natural world; everything around us
Environmentalist	scientist who studies the natural world; those who work to protect it (Lesson #93)
Erosion	process by which broken down rocks are carried away by wind, water, or moving ice (Lesson #27)
Evaporation	process by which a liquid changes to vapor or gas (Lesson #40)
Evidence	facts that support conclusions (Lesson #14)
Experiment	one of the steps of the scientific method; a set of procedures meant to test a hypothesis (Lesson #4)
Fahrenheit	one of three temperature scales; used to measure temperature or average kinetic energy (Lesson #84)

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Fish	one of the five vertebrate groups; all fish live in water, breathe through gills, and are covered with scales (chart)
Food Chain	process by which energy travels between organisms (Lesson #5)
Force	a push or a pull (Lesson #114)
Fossil	the imprint or remains of things that lived long ago (Lesson #29)
Fossil Fuels	nonrenewable resources formed from the remains of organisms over the past several hundred years; coal, oil, natural gas (Lesson #89)
Frame Of Reference	everything that is not moving around an object that is in motion (Lesson #119)
Freezing Point	temperature at which a liquid will become a solid (Lesson #67)
Frequency	number of vibrations per second (Lesson #107)
Freshwater	water that does not have a large amount of salt in it (lakes, streams, rivers, ponds)
Friction	a force created by two objects rubbing against each other; a force that reduces motion by working against it (Lesson #115)
Fulcrum	the fixed point on a lever (chart)
Gas	one of the three states of matter; substance made of widely-spaced particles that break away from each other easily (Lesson #65)
Geothermal Energy	heat energy that comes from the Earth (Lesson #83)
Grassland	a somewhat dry, flat ecosystem where the main vegetation is grass
Gravitational Potential Energy	energy created by an attraction between two objects; gravity pulls objects toward Earth (Lesson #79)
Gravity	a force that pulls objects toward each other
Ground Water	water that has soaked into the ground and has collected in underground reservoirs (Lesson #41)
Habitable	able to support life; means the same as inhabitable (Lesson #130)

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Habitat	where an organism lives
Hand Lens	a hand-held magnifying glass
Hardness	one of the physical properties of minerals (Lesson #37)
Hazardous Waste	harmful pollutants that contaminate the environment
Heat Energy	thermal energy created by the movement of atoms; the more heat energy an object absorbs, the more its kinetic energy will increase (Lessons #83 - 84)
Herbivore	an animal that eats only plants (Lesson #12)
Hibernation	a very inactive state in a safe, hidden place; animals hibernate when temperatures are cold and food is scarce (winter)
Homogeneous	all the same
Humidity	a measure of the amount of moisture in the air (Lessons #54 - 55)
Humus	the decayed remains of plants and animals (Lesson #32)
Hydropower	water power (Lesson #91)
Hydrosphere	all the waters of the Earth (Lesson #36)
Hygrometer	a weather instrument that measures the humidity level or how much moisture is in the air (Lesson #54 - 55)
Hypothesis	an educated guess (Lesson #3)
Igneous	one of the three kinds of rock; formed by the cooling and hardening of molten rock (Lesson #31)
Immunization	medicine meant to prevent a certain type of disease (Lesson #44)
Inclined Plane	a slanted surface used to move things to higher or lower places; one of the simple machines (chart)
Incomplete Metamorphosis	growing through three different life stages: egg, nymph, and adult; except for size, the insect looks mostly the same during the second two phases (chart)

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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 the experimenter will change to see what effect it has on the dependent variable (Lesson #9)
Inertia	the tendency of an object not to move unless a force acts upon it; the tendency for a moving object to continue moving unless a force acts upon it (Lesson #118)
Inner Core	the solid sphere-shaped center of the Earth; the core is made of iron and nickel (Lesson #28 & chart)
Inner Planets	the four planets closest to the sun: Mercury, Venus, Earth, and Mars (Lesson #130)
Inorganic	not related to living organisms; example: minerals (Lesson #30)
Instinct	natural impulse; behavior an animal knows without being taught
Insulator	non-conductor; material that is a poor conductor of electricity (rubber, glass, paper) (Lesson #100)
Invertebrates	multi-celled organisms that do not have backbones (chart)
Investigation	inquiry (Lesson #1)
Kelvin	one of three temperature scales used to measure temperature or average kinetic energy (Lesson #84)
Kinetic Energy	energy in motion (Lessons #78 – 79)
Kingdom	one of the major groupings that scientists use to organize and classify living things (Lesson #17)
Larva	the second of the four stages of complete metamorphosis; a larva hatches from an egg (chart)
Law of Conservation of Matter	law that states that matter is neither created nor destroyed (Lesson #75)
Lever	a type of simple machine; a bar that pivots on a fulcrum to move or lift heavy loads (chart)
Light Energy	a type of energy that travels in waves (Lesson #109)
Liquid	one of the three states of matter; liquids have a definite volume and take on the shape of their containers (Lesson #64)

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Lithosphere	Earth's crust and the top part of the mantle
Loam	a mixture of soil that contains sand, silt, and clay along with humus, water, and air; the best soil for growing plants (Lesson #32)
Lunar Cycle	the pattern of the phases of the moon (new, waxing crescent, first quarter, waxing gibbous, waning gibbous, last quarter, waning crescent, full) that takes about 30 days to cycle through
Luster	one of the physical properties that scientists use to classify minerals: the way light reflects off of the mineral (Lesson #37)
Magma	melted rock (Lesson #33)
Magnet	a substance that attracts iron, nickel, or cobalt; magnetic (Lesson #105)
Mammal	a warm-blooded animal whose body is covered with hair or fur, is able to regulate its body temperature, gives birth to live young, and feeds its young with mother's milk (chart)
Mantle	the thickest layer of Earth located between crust and outer core (Lesson #28 & chart)
Mass	the amount of matter in an object; mass can be measured using a balance (Lesson #62)
Materials List	items needed to complete an experiment (Lesson #4)
Matter	anything that has volume and mass (Lesson #61)
Melting Point	the temperature at which a solid will become a liquid (Lesson #67)
Mesosphere	one of the outer layers of the atmosphere; the mesosphere is beyond the troposphere and the stratosphere (Lesson #50)
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 #31)
Metamorphosis	changing shape; the series of changes in phase and appearance from birth to adulthood (Lesson #21 & chart)
Meteorology	the study of the atmosphere and weather conditions (Lesson #54)
Microscope	a lab instrument that magnifies the view of tiny objects to hundreds of times their natural size (chart)

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Migration	an instinctual animal behavior; the seasonal movement of animals to places that are warmer, safer, or have a better food supply
Mimicry	imitating the look of another animal; an instinctual self-defense behavior
Mineral	a naturally occurring inorganic solid (Lesson #30)
Mixture	a combination of two or more substances (Lesson #70)
Model	a replica or smaller version meant to show the characteristics of something (model airplane, human heart, erosion, etc.) (Lesson #38)
Molecule	the atoms of two or more different elements joined together (Lesson #94)
Moon Phases	appearance of the moon at different times during a thirty-day cycle; caused by the sun's shadow blocking the light that is reflected off of the moon
Motion	movement; can only be stopped or started by a force acting on an object (Lessons #114 & 118)
Natural Resources	all of the naturally occurring materials that humans and other organisms use for survival (air, water, trees, coal, oil, animals, etc.) (Lesson #89)
Neutron	atomic particle that has a neutral (neither positive nor negative) charge (Lesson #95)
Nimbus	Latin word for "cloud" that always signals rain (Lesson #59)
Non-Conductor	insulator; material that is a poor conductor of electricity (rubber, glass, paper) (Lesson #100)
Nonliving	not alive
Nonrenewable Resources	natural resources that cannot be replaced within a person's lifetime (Lesson #89)
Nourishment	food, water, and other nutrients; anything that feeds an organism
Nucleus	the part of a cell that controls the cell's activities; the center of an atom which contains protons and neutrons (Lessons #13)
Nutrients	anything that nourishes or feeds an organism (food, water, vitamins, minerals, etc.)
Omnivore	an animal that eats both plants and other animals (Lesson #12)

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Opaque	material that does not allow light to pass through it (Lesson #37)
Open Circuit	an incomplete circuit; a circuit which does not allow for the complete flow of an electrical current through it (Lesson #102)
Orbit	a path that a body in space follows around another body in space (Lesson #127)
Organic Material	any substance that comes from living or once living things
Organism	a living thing (Lesson #5)
Outer Core	the liquid layer of molten rock nearest to the hard center of the Earth (Lesson #28 & chart)
Outer Planets	the four planets beyond the asteroid belt and farthest from the sun: Jupiter, Saturn, Uranus, and Neptune (Lesson #131)
Ozone Layer	the layer of atmosphere that protects life on Earth by absorbing harmful ultraviolet radiation from the sun (Lesson #49)
Parallel Circuit	a circuit with multiple paths which are side by side and receive electric current from the same source, but carry the current to separate receivers (Lesson #103)
Periodic Table of Elements	an organized list of all known elements (Lesson #94)
Photosynthesis	process by which green plants make their own food using sunlight, water, and carbon dioxide (Lessons #1, #3, & #4)
Physical Change	a change in the phase or state of matter which does not change what the substance is at a molecular level (Lesson #73)
Physical State or Phase	one of the properties of matter (solid, liquid, and gas are three states of matter) (Lesson #61)
Physics	the study of matter and energy (Lesson #93)
Pitch	how high or low a sound is (Lesson #107)
Planet	a large mass that has settled into a nearly spherical (round) shape, orbits a star, and has cleared the neighborhood around its orbit (Lesson #130)
Population	a certain group of the same kind of organism living in an ecosystem (Lesson #18)
Potential Energy	stored-up energy (Lesson #78)



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Precipitation	rain, snow, sleet, hail, fog, dew, or water in any form that falls to Earth's surface (Lesson #39)
Predator	an animal that hunts another animal as food
Prevailing Winds	the constant flow of air created by the movement of cooler air into warmer areas (Lesson #53)
Prey	an animal that is hunted by another animal as food
Primary Consumer	herbivores; animals that only eat producers (plants) (Lesson #12)
Procedure	a step by step explanation of what to do while performing an experiment (Lesson #4)
Process	an on-going movement or series of changes (weathering, rock cycle, water cycle, photosynthesis, cementation, freezing, etc.)
Producer	an organism, such as a green plant, that can make its own food (Lesson #8)
Properties	characteristics; anything that describes a substance
Proton	atomic particle that has a positive charge (Lesson #95)
Pulley	a simple machine that uses grooved wheels and ropes to raise and lower objects (chart)
Pupa	the third of the four stages of complete metamorphosis; the pupa is also called a cocoon or chrysalis (chart)
Question	the first step of the scientific method; what the investigation or inquiry is meant to answer (Lesson #1)
Radiant Energy	energy that moves in waves (light waves, radio waves, microwaves, x-rays) (Lesson #79)
Radiation	one of the three ways that thermal energy is transferred; movement of heat energy through waves (Lesson #87)
Recycle	use again; to save resources and the environment by reusing materials instead of disposing of them (Lesson #92)
Reflection	light bouncing off a shiny or smooth surface; creates a mirror image (Lesson #109)
Refraction	the bending of light as it passes from one substance to another, such as from air to water (Lesson #109)

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Renewable Resources	natural resources that are replaced by natural ecological cycles and when used wisely, can be used over and over again (Lesson #89)
Replicate	repeat (Lesson #14)
Reptile	one of the vertebrate groups; animal whose body is covered with scales and breathes through lungs (chart)
Research	the second step of the scientific method; to investigate and explore in order to find more information about a topic of inquiry (Lesson #2)
Rock	a natural substance made of one or more minerals
Rock Cycle	process by which rocks constantly change from one form to another (igneous, sedimentary, metamorphic) (Lesson #31)
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 and precipitation that drains off the land and soaks into the ground or flows toward a body of water (Lesson #41)
Sand	a type of soil that has very large particles, is loose, and feels coarse or rough (Lesson #32)
Scavenger	an animal that feeds on the remains of dead animals and helps to clean up the environment by getting rid of decaying organic matter (Lesson #12)
Scientific Inquiry	an organized way to find answers to questions or solutions to problems (Lesson #1)
Scientific Method	a series of steps that includes asking a question, doing research, formulating a hypothesis, experimenting, gathering data, and drawing conclusions (Lesson #1)
Scratch Test	test to determine the hardness of a mineral; a harder mineral will scratch a softer mineral (Lesson #37)
Screw	a type of simple machine; an inclined plane spiraled around a post used to fasten or hold things together (chart)
Secondary Consumer	a carnivore; an animal that eats other animals (Lesson #12)
Sedimentary	a type of rock formed when sediments bond together by pressure over time (Lesson #31)
Seed	the first stage of life for many plants; contains the food to help a new plant grow
Series Circuit	an electrical circuit that has only one pathway from the source, through the conductor, to the receiver (Lesson #103)

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Silt	smooth, powdery soil made of small particles (Lesson #32)
Simple Machine	a machine that has only a few or no moving parts and needs a single force such as a push, a pull, or a lift to make it work (chart)
Soil	a mixture of broken down rock, air, water, and organic material (Lesson #32)
Solar Power	energy that comes from the sun (Lesson #81)
Solid	one of the three states of matter; solids have a definite shape and volume (Lesson #63)
Solidification	moving from a liquid or gas to a solid state; freezing (Lesson #66)
Solution	a type of mixture in which all the parts are evenly distributed (Lesson #71)
Sound	a type of energy that is created by vibrations and travels in waves (Lesson #107)
Source (Power Source)	the supply of power in an electric circuit; may be a battery, generator, or electrical outlet (Lesson #101)
Spring Scale	a tool used to measure weight or friction (chart)
States of Matter	solid, liquid, and gas (Lesson #61)
Static Electricity	a type of potential energy that builds up on an object as the result of freed electrons (Lesson #98)
Stationary Front	a barely moving mass of air (Lesson #57)
Stem	the part of a plant that grows above ground; gives the plant support and carries water and nutrients from the roots to the rest of the plant
Stratosphere	layer of Earth's atmosphere that is closest to the troposphere and contains most of the ozone (Lesson #50)
Stratus	Latin for "spread out"; clouds that are layered and look like blankets or mattresses (Lesson #59)
Streak	one of the properties of minerals; the color of the mark that a mineral leaves when it is slid over a streak plate (Lesson #37)
Sublimation	process by which a solid changes directly to a gas; occurs when ice or snow changes directly to water vapor (Lesson #68)

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Subsoil	the bottom layer of soil which is made of large soil particles and some pieces of rock
Surface Water	water that is above ground in lakes, rivers, and oceans (Lesson #41)
Switch	a device that opens and closes an electric circuit (Lesson #101)
Tectonic Plates	continental or oceanic plates that float over the surface of the Earth's mantle (Lesson #27)
Temperate Forest	a moderate climate ecosystem which is rich in plant and animal life
Temperature	a measure of average kinetic energy (Lesson #84)
Tertiary Consumer	third level consumer; an animal that eats animals that eat other animals (Lesson #12)
Thermal Energy	heat energy; related to the speed of the particles (Lesson #79)
Thermosphere	one of the outermost layers of the atmosphere (Lesson #50)
Tissue	a group of cells that work together to form organs (Lesson #16)
Topsoil	the top layer of soil; contains a mixture of various rock particles, air, water, and decayed organic material
Transfer of Energy	the movement of energy (Lesson #84)
Translucent	one of the properties of minerals; allows only a little light to pass through (Lesson #109)
Transparent	one of the properties of minerals; allows light to pass through (Lessons #37, 109)
Troposphere	the layer of atmosphere covering Earth's entire surface and containing 90% of all the gases in the atmosphere (Lesson #50)
Unbalanced Force	a force that causes a change in motion; a force that is not cancelled out by another force (Lesson #114)
Uninhabitable	not habitable; not able to support life
Vaporization	evaporation; process of changing from liquid to gas (Lesson #68)

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Variable	any factor that can vary or change in an experiment (Lesson #9)
Velocity	speed in a specific direction (Lesson #119)
Verify	prove (Lesson #14)
Vertebrate	an animal that has a skull and a backbone (Lesson #19, chart)
Vibrations	back and forth movements of matter (Lesson #107)
Volume (Matter)	the amount of space that matter takes up (Lesson #61)
Volume (Sound)	the loudness of a sound (Lesson #107)
Warm Front	a warm moist air mass that rises and moves in to replace colder air; may bring rain (Lesson #57)
Waste Disposal	process by which an ecosystem disposes of its own waste by constantly recycling organic material (Lesson #18)
Water Cycle	the process by which liquid water continually evaporates, condenses, and falls to Earth as precipitation (Lesson #39)
Water Vapor	water that has evaporated; water in its gaseous state (Lesson #39)
Weathering	the wearing away of rock by water, wind, and ice (Lesson #27)
Wedge	simple machine with a slanted side and a sharp edge for cutting (chart)
Weight	a measure of the force of gravity on an object (Lesson #62)
Wheel-And-Axle	a wheel with a rod (called an axle) through its center; used to move heavy loads (chart)
Wind Sock / Wind Vane	a weather instrument which shows the direction of the wind (Lesson #54 & chart)
Work	effort or activity; what is done when a force is applied to an object over a distance
Zoologist	a scientist who specializes in the study of animals (Lesson #21)

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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 body; may be parasitic; prefers 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		lives in the oceans; spines and arms spread out from center of body	starfish, sea urchin, sand dollar, sea cucumber

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#### 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 & live on land	salamander, frog, toad, newt
Bird		has beak, wings, and feathered body; 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; breathes with gills; uses fins & tails to swim	salmon, shark, tuna, clownfish, marlin, baracuda, catfish, eel, perch, trout, blowfish, carp,
Mammal		most give birth to fully developed young; hair or fur-covered body; feeds young with milk	tiger, monkey, rat, seal, wolf, dolphin, whale, kangaroo, cat, raccoon, bear, squirrel, human
Reptile		breathes with lungs; may live on land or in water; body covered with scales	alligator, turtle, snake, gecko, iguana, crocodile, komodo dragon, chameleon

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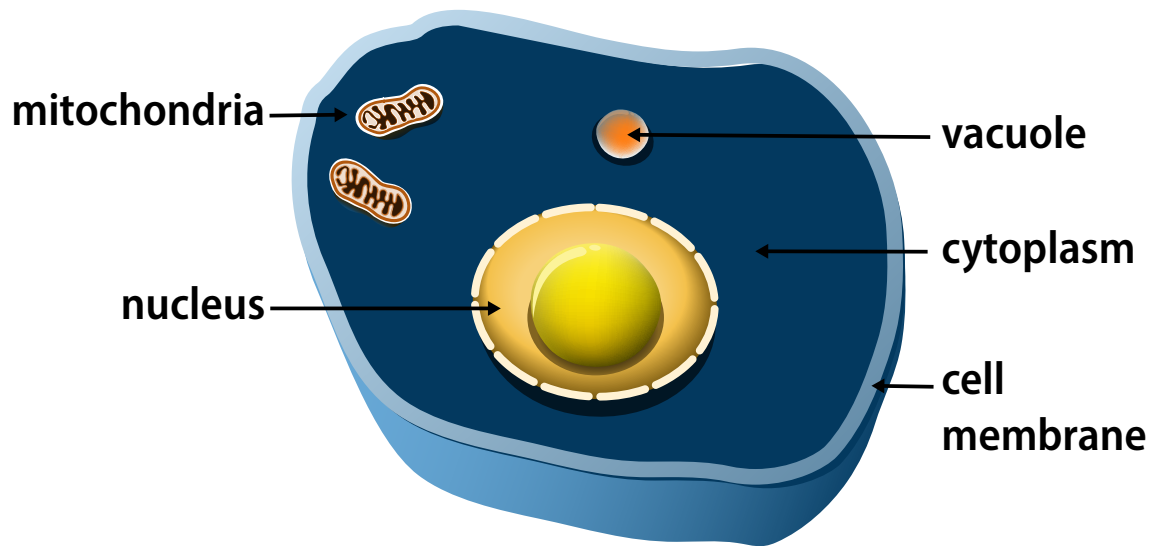
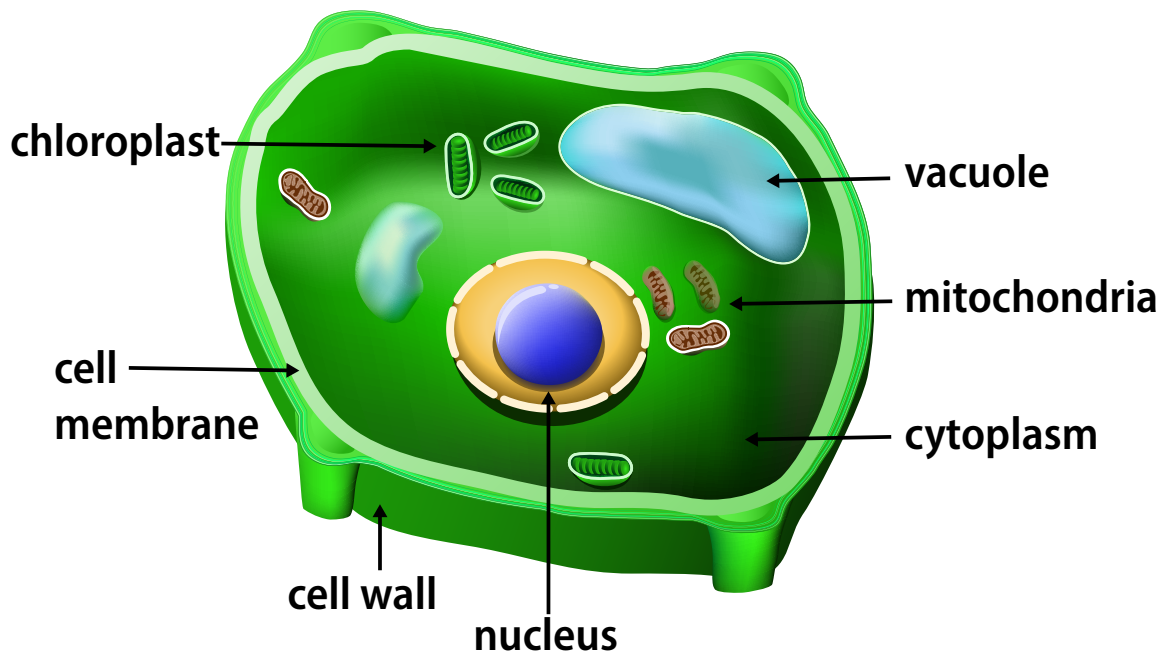
#### Mammals

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 tail & fins for swimming and blowhole for breathing	beluga, orca, blue whale, narwhal, humpback, dolphin, porpoise
Marsupial		babies not fully developed at birth; lives 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 & opposable thumbs	monkey, baboon, orangutan, chimpanzee, gorilla, human
Rodent		large incisor teeth; lives above ground & burrows underground; hibernates in winter	beaver, guinea pig, rat, porcupine, chipmunk, squirrel, gerbil, mouse, prairie dog






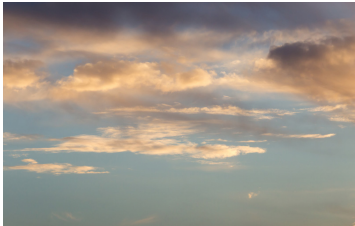


## Help Pages

**ANIMAL CELL****PLANT CELL**

## Help Pages

### Cloud Types

Type	Description	Image
cirrus	Latin for “curl of hair”; wispy, featherlike, high altitude clouds	 A photograph showing wispy, white cirrus clouds against a clear blue sky.
stratus	Latin for “spread out”; low altitude horizontal sheets of clouds	 A photograph showing a layer of low, grey stratus clouds covering the sky.
cumulus	Latin for “heap” or “pile”; dense, white, fluffy clouds	 A photograph showing a large, white, fluffy cumulus cloud against a blue sky.
cirrocumulus	series of small rippling cloudlets	 A photograph showing a series of small, white, rippling cloudlets against a blue sky.
cumulonimbus	very dense, heavy storm clouds	 A photograph showing very dense, dark, heavy storm clouds (cumulonimbus) over a field.
stratocumulus	low-lying, horizontal layers of clouds	 A photograph showing low-lying, horizontal layers of stratocumulus clouds, often seen during sunsets or sunrises.

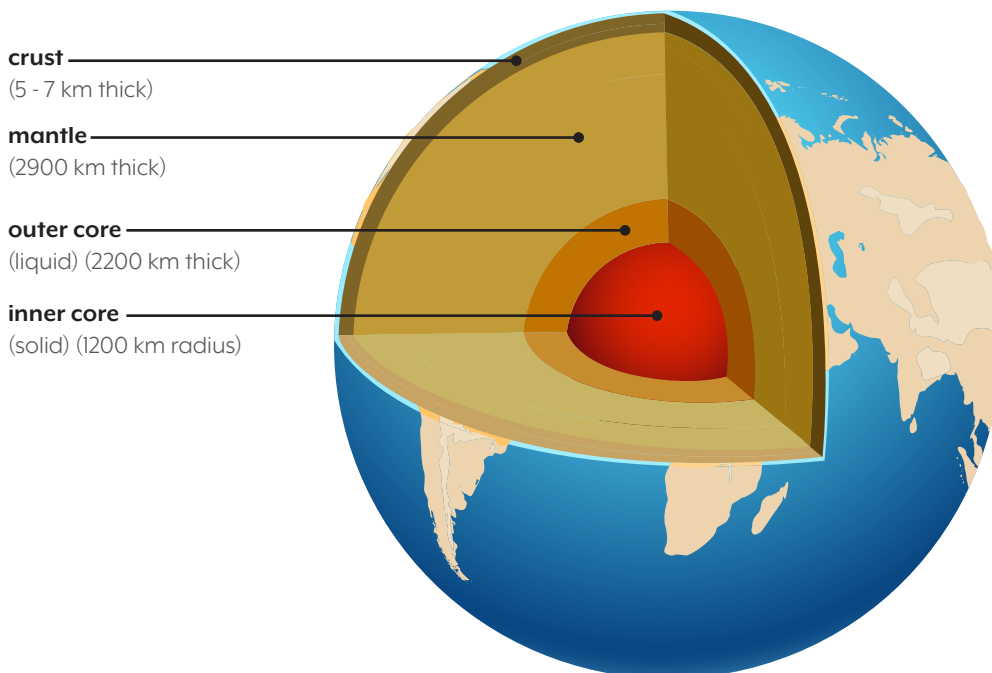
## Help Pages

### Cloud Terms

Latin Word	Meaning	Cloud Name	Description
cirrus	curl	cirrus	wispy, like spider webs or feathers; high clouds
cumulus	heap or pile	cumulus	puffy, rippled or piled up, like cotton balls
stratus	spread out	stratus	layered, like blankets, mattresses, or waves
alto	middle (from Latin meaning “high”)	altocumulus altostratus	puffy & patchy; thin & uniform
nimbus	rain (from Latin meaning “cloud”)	cumulonimbus nimbostratus	storm clouds; dark, low layers

### Earth

Earth's Layers
<p>The four layers of Earth are crust, mantle, outer core, and inner core. The crust is the thinnest layer, and it varies in thickness because of landforms. The crust may be 5 km thick in some places and as much as 70 km thick in other places. The mantle is the thickest layer; it's about 2900 km thick. The solid upper part of the mantle and the crust make up the lithosphere—Earth's outer shell. The outer core is made of a liquid—molten iron. The inner core is solid but it is the hottest layer. In fact the center of the Earth is nearly as hot as the sun.</p>



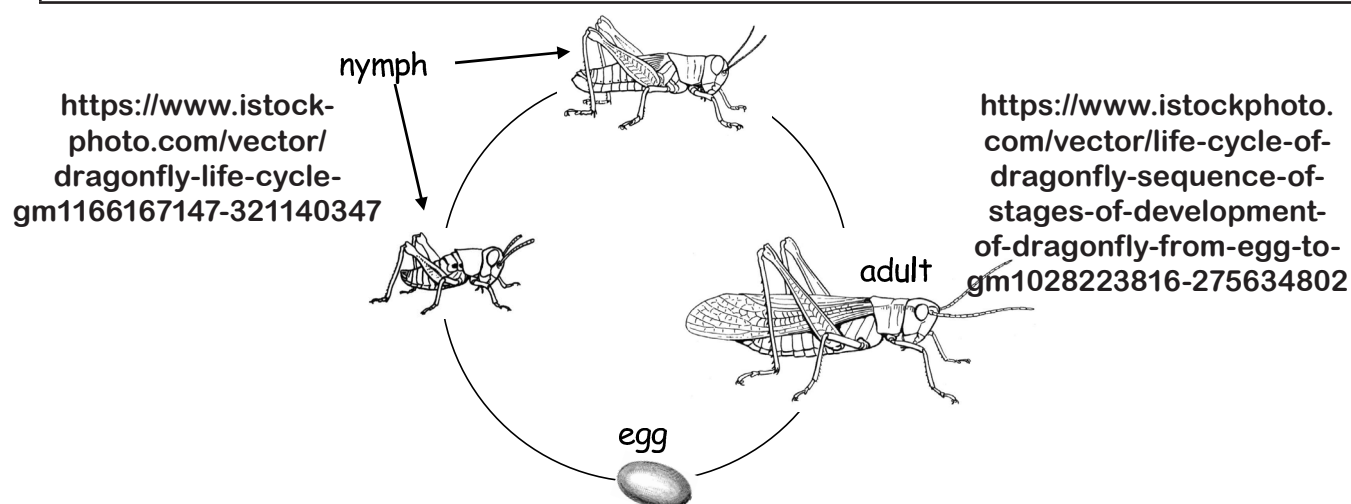
Although the Earth's crust is its thinnest layer, it contains many layers of soil and subsoil made of organic matter, sediments, sand, minerals, and rock. Beneath all of these layers is **bedrock**.

## Help Pages

### Metamorphosis

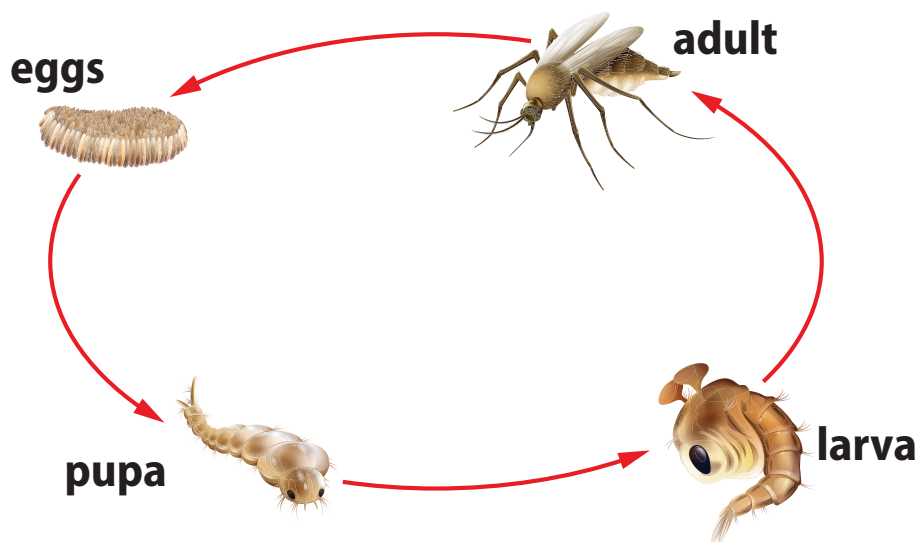
#### Incomplete Metamorphosis

**Incomplete Metamorphosis** involves three stages of development: egg, nymph, and adult. The nymph looks very similar to the adult. The nymph and the adult have the same habitat and diet. Insects that go through incomplete metamorphosis include cockroaches, grasshoppers, and dragonflies.



#### Complete Metamorphosis

**Complete Metamorphosis** involves four stages: egg, larva, pupa, and adult. The insect starts out as an egg. When it hatches, it is in the larva stage. Caterpillars are butterfly larva. Larvae eat as much as they can. Then they go into a dormant (inactive) state called the pupa. Butterflies spend the pupa phase in a cocoon. When the insect comes out of the pupa, it is a fully grown adult. Beetles, moths, and flies are some of the other insects that go through complete metamorphosis.

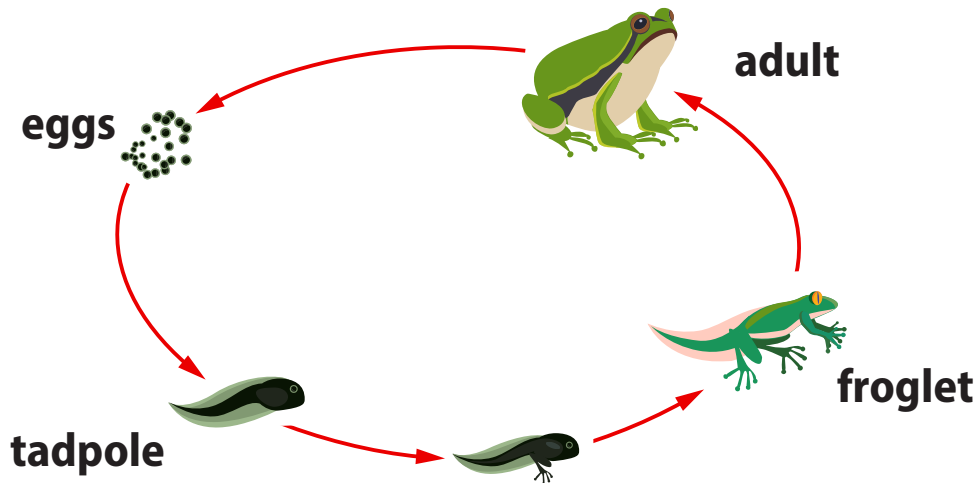


## Help Pages

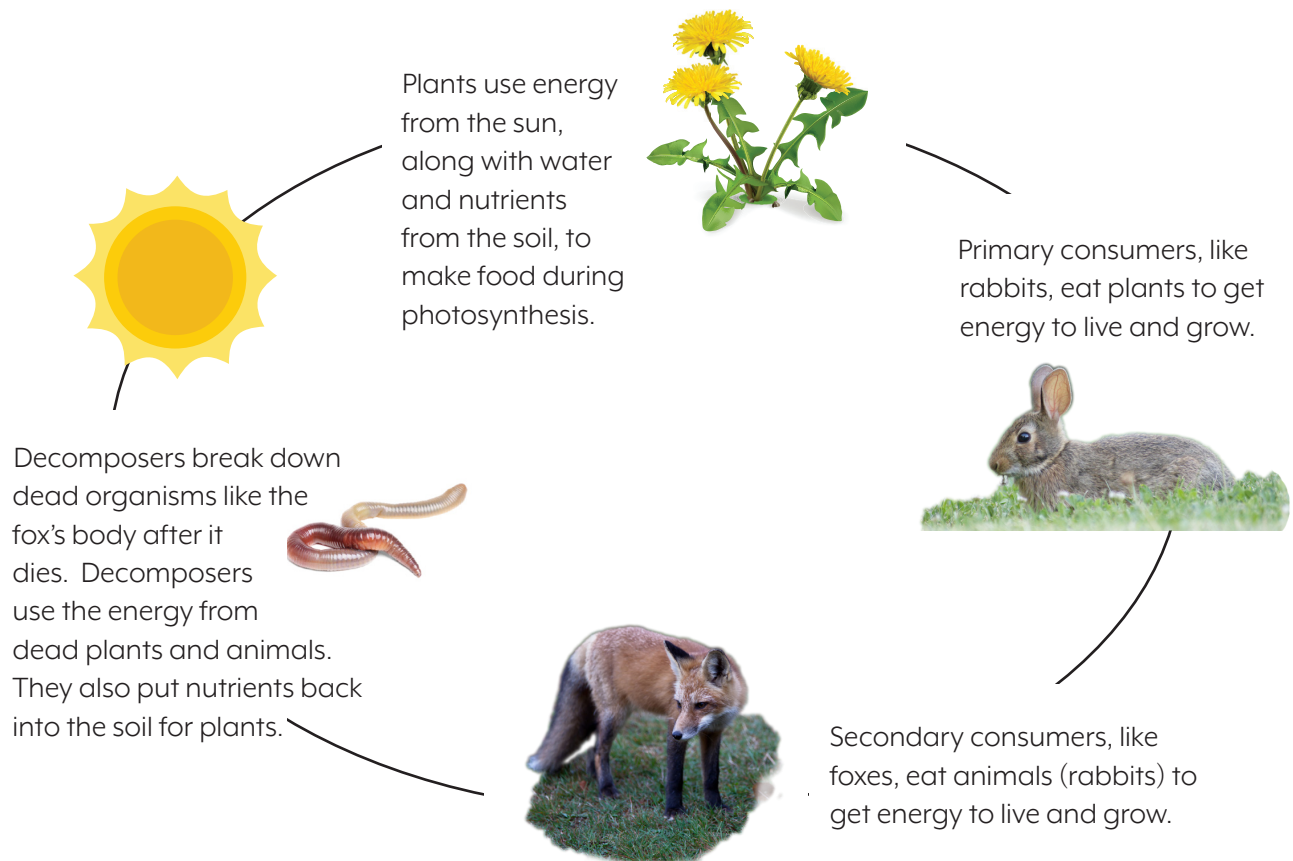
## Metamorphosis

## Metamorphosis of Amphibians

**Amphibians** like frogs, toads, salamanders, and newts also go through a **metamorphosis**. These cold-blooded animals are hatched from eggs and must live in water during the first phases of life. Newborn amphibians have no legs, and they breathe through gills. They change shape as they grow, developing lungs and legs while losing their gills and tails. As adults, amphibians live on land but always prefer to be near water.



## Organism — Environmental Interaction

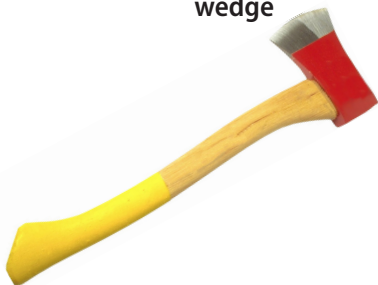


## Help Pages

### Simple Machines

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

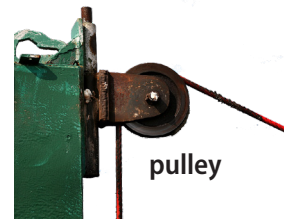
wedge



wheel and axle



pulley



lever



screw


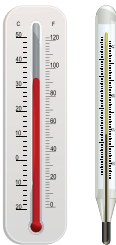





inclined plane



## Help Pages

### Laboratory Instruments

Tool	Measures	Units	Image
Balance	measures an object's mass (the amount of matter in the object)	grams kilograms	
Thermometer	used to measure temperature	degrees	
Spring Scale	used to measure forces like weight and friction	Newtons	
Beaker	holds and measures the volume of liquids	liters milliliters	
Ruler or Measuring Tape	measures the length and width of objects	meters centimeters inches	

## Help Pages

## Laboratory Instruments (continued)

Tool	Use	Image
magnifying glass (hand lens)	magnifies/makes things look larger	
microscope	magnifies the view of tiny objects to hundreds of times their natural size	
dropper / pipette	measures small amounts of liquid	
forceps	holds or picks up small objects	
safety goggles	provides eye protection	



