

Glossary

aerodynamics. The way that air moves around objects.

aerospace. Having to do with the Earth's atmosphere and space beyond Earth.

algebra. A type of math that uses letters as symbols to represent numbers.

analysis. The examination of something in detail by studying its parts.

aquatic. Living or growing in water.

associate's degree. A degree usually earned from a community college, junior college or vocational school after completion of two years of full-time study. This degree generally is equal to the first two years of study toward a bachelor's degree.

asteroid. A rocky, metallic object that orbits a star.

Astro Journal. In Astro-Venture, your Astro Journal is where you record your observations and the scientific process.

astro. A prefix, which means star or space.

astrobiologist. A person who studies life on Earth and the possibilities for life in the universe.

astrobiology. The study of life in the universe.

astronomer. A person who studies the universe beyond Earth.

astronomical unit (AU). The average distance from Earth to the Sun, which is equal to 149,598,770 km or 93,000,000 miles.

astronomy. The study of space beyond Earth.

astrophysics. The science of the stars, objects related to stars and the forces that determine how they interact.

astrophysicist. A person who studies the science of the stars, objects related to stars and the forces that determine how they interact.

atmosphere. The air. The blanket of gases that surrounds some planets and moons.

atmospheric chemist. A person who studies what the atmosphere is made of and studies chemical reactions that change what it is made of.

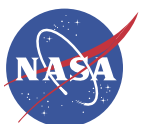
atom. The tiniest particle of an element that has the same chemical properties of the element. The building blocks of all matter.

average. Medium-sized. In the middle.

B.A. (bachelor of art) A university or college degree earned after completion of at least four years of study.

B.S. (bachelor of science) A university or college degree earned after completion of at least four years of study.

bachelor's degree. A university or college degree earned after completion of at least four years of full-time study following high school. A B.S. stands for a bachelor of science. A B.A. stands for a bachelor of arts.



bacteria. A form of life that has only one cell and can be seen only with a microscope.

bio. A prefix that means life. In Astro-Venture, bio is short for biography, which tells you more about a person's life or background.

biochemistry. The study of matter that makes up living things, what the matter is made of, how it's structured and its features.

biology. The study of life.

biotechnology. The use of living things to create new products such as medicines or new techniques such as waste recycling.

black hole. An area of space around an object where gravity is so strong that even light cannot escape from the area.

blue star. A hot, bright, massive star that has a surface temperature between 20,000°-60,000° Kelvin.

boiling point. The temperature at which a liquid becomes a gas.

bond. (chemical) The force between atoms in a molecule.

botany. The study of plants.

calculus. A type of math that uses special kinds of symbols.

capacity. The largest amount that something can hold.

carbon dioxide. A colorless gas that can absorb heat in the atmosphere. Plants use carbon dioxide to make their food and animals exhale it when they breathe.

career. The order of events that occur in a person's work, over time.

cause. Something that produces an effect or result. To produce an effect or result.

Celsius. A scale that measures temperature where water boils at 100°C and freezes at 0°C. Between the boiling and freezing points, the scale is divided into 100 parts. People in most countries use Celsius. It is named after Anders Celsius.

center of mass. The balancing point between two masses.

ceramic. Hard, breakable, heat-resistant material made by heating clay at a very high temperature.

chemical. Having to do with the study of matter, what it's made of, how it's structured and its features.

chemical change. (chemical reaction) When molecules interact to form new molecules.

chemist. A person who studies chemistry.

chemistry. The study of matter, what it's made of, how it's structured and its features.

chlorofluorocarbons. (CFCs) Human-made substances made up of chlorine, fluorine and carbon atoms bound together, which break up and react with oxygen atoms in the upper atmosphere, causing ozone depletion.

college. A school where bachelor's degrees can be earned following high school.



combustion. A rapid chemical change that occurs when heat is produced faster than it can dissipate. The process of burning.

comet. A ball of ice and rock that orbits a star.

community college/junior college. A school that offers a two-year degree or certificate that is generally equal to the first two years of a four-year college.

composition. The parts that form or make up a whole.

computer electronics. The study of computer devices and systems and how they work.

Conservation of Matter. During chemical change, the number of atoms does not change. Matter is neither created, nor destroyed.

database. A collection of data that is organized in a way so that it is quick and easy to find.

demo. A demonstration. In Astro-Venture, a demo demonstrates how to use the module.

density. The amount of matter in a certain unit of volume or space.

DNA. (Deoxyribo Nucleic Acid) A long, complex molecule that contains the codes that control your cells' activities, the chemicals that make up your body and heredity.

doctorate. The highest degree awarded by a university earned after completion of at least five years of study beyond a bachelor's degree. A Ph.D. is a doctorate of philosophy.

Doppler shift. The change in wavelength as a source of light or sound moves toward or away from you or as you move toward or away from a source of light or sound.

electrical engineering. The scientific technology of electricity for use in designing and developing equipment that produces power and controls machines.

electronics. The study of devices and systems that are powered by using electricity.

element. A substance that cannot be broken down into other substances. Oxygen, gold and hydrogen are 3 of the 115 elements.

elliptical orbit. An orbit that is more oval than circular.

engineer. A person who designs, constructs or builds. To design, construct or build.

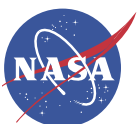
engineering. The use of math and science to design and build structures, equipment and systems.

evaporate. To change from a liquid to a gas.

Europa. One of Jupiter's 16 moons. Study of Europa shows that it is composed of liquid-water ocean covered by an ice crust. Because it has this liquid ocean, scientists hope to find life there.

Fahrenheit. A scale that measures temperature where water boils at 212°F and freezes at 32°F. In the United States, we use both Fahrenheit and Celsius, but most people are most familiar with Fahrenheit. It was developed by Gabriel Daniel Fahrenheit.

fieldwork. Observations and work done in an actual work environment to gain real-life experience and knowledge.



flammable. Easily set on fire.

fluid dynamics. The study of liquids and how they move.

fluid mechanics. The study of the effect of forces on liquids.

freezing point. The temperature at which a liquid becomes a solid.

galaxy. A large group of stars that are held together by gravity.

gas. A state of matter that has no definite shape or volume. In a gas, the molecules are so loose, they can spread apart or can squeeze together, depending on the container they are in.

genetics. The study of genes and how they transmit features from parents to their children.

geologist. A person who studies Earth's origin, history and structure.

geology. The study of Earth's origin, history and structure.

geometry. A type of math that involves the measurement and features of shapes, points, lines, angles, surfaces and solids.

global effect. The effect on the whole Earth that occurs as a result of some change.

graphics. Information that is represented with images or pictures.

gravity. A force of attraction that exists between objects. The greater the mass and diameter of an object, the greater its gravitational pull.

greenhouse effect. Some gases, such as carbon dioxide and water vapor, absorb heat energy and hold it in the atmosphere raising the surface temperature of a planet.

habitable. Fit to live in.

Habitable Zone (HZ). The range of distances from a star where liquid water can exist on a planet's surface.

hardware. Computers and the equipment used with computers such as monitors, printers and disk drives.

H-R Diagram. A diagram created by two scientists, Ejnar Hertzsprung and Henry Norris Russell, to show how the brightness and temperature of stars are related.

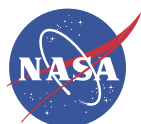
human factors engineering. The use of psychology and other areas of science to develop systems that people use in a way that makes the system easy, safe and useful.

hypothermia. An abnormally low body temperature.

Ice Age. A long, cold period when a large part of a planet is covered with glaciers.

inert. An element or substance that does not easily react or interact with other elements or substances.

junior college. A school that offers a two-year degree or certificate that is generally equal to the first two years of a four-year college.



Kelvin. A scale that many scientists use to measure temperature. Kelvin degrees are the same as Celsius degrees, but the scale is adjusted so that zero represents absolute zero, which is the temperature at which all particles (electrons, atoms, molecules, etc.) have minimal motion. Water boils at 373° Kelvin and freezes at 273° Kelvin. The Sun is about 5,000-6,000° Kelvin. This scale is named after the nineteenth-century British scientist Lord Kelvin.

laboratory. A building used for scientific research.

liquid. A state of matter that has a definite volume but no definite shape. In a liquid, the bonds of molecules are looser than in solids so that the molecules can slide past each other.

luminosity. The amount of power or "wattage" put out by a star. How bright a star appears to us depends on its luminosity and its distance.

M.A. (master of art) A university degree earned after completion of at least one year of study beyond a bachelor's degree.

M.S. (master of science) A university degree earned after completion of at least one year of study beyond a bachelor's degree.

main-sequence stars. Stars ranging from hot blue to cool red dwarfs. The most common type of star. They are not giants, supergiants, white dwarfs or red dwarfs.

mass. The amount of matter in an object.

master's degree. A university degree earned after completion of one to two years of study beyond a bachelor's degree. An M.S. stands for a master of science degree. An M.A. is a master of arts degree.

matter. Anything that has mass and volume. Anything that takes up space.

mechanical engineering. The use of math and science to design and build structures, equipment and systems that produce heat or power.

melting point. The temperature at which a substance changes from a solid to a liquid.

metal. A group of elements that is shiny, bendable and conducts heat and electricity.

meteoroid. Small rocky objects that orbit a star.

meteorology. The study of the conditions in the atmosphere, especially weather.

microbe. A living thing that is so small, it can be seen only with a microscope. Bacteria and viruses are microbes.

microbiology. The study of microbes.

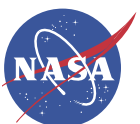
microscope. An instrument that uses lenses to make small objects appear large.

molecule. A group of atoms bonded together. Molecules act like a single particle.

moon. A natural object that orbits a larger object, usually a planet.

navigate. To control the path or route of a ship, aircraft or spacecraft.

Nitrogen Cycle. The continuous movement of nitrogen from the atmosphere through bacteria, into the soil, to plants, to animals and its return to the air.



nebula. A huge cloud of gas and dust in space from which stars are born.

nervous system. A system in animals that controls the body functions and senses. In humans it includes the brain, spinal cord and nerves.

network. A number of computers connected together so that information can be sent between them.

neutron star. The remains of a supernova that become an extremely dense, tightly packed star.

nitrogen. A colorless, tasteless, odorless gas that makes up 78 percent of the atmosphere and is a necessary part of all living tissues.

observation. The act of watching carefully.

observatory. A building designed for making observations of stars or other objects in space.

occupation. The activity that a person does as their regular work. A job.

orbit. The path of an object around another object, caused by gravity. To move around another object.

oxidation. A chemical change in which a substance combines with oxygen.

oxygen. A colorless, odorless gas that is released by plants into the air, is essential to animals for breathing, and is highly flammable.

ozone. A gas made of three oxygen atoms bonded together. When ozone is located high in the atmosphere, it protects life from harmful ultraviolet radiation but can be harmful to life at Earth's surface.

ozone depletion. When ozone loss is greater than ozone creation.

ozone layer. The layer of gas in the stratosphere that protects the Earth from harmful ultraviolet rays.

paleontology. The study of fossils.

period of revolution. (period) The amount of time it takes the planet to orbit its star. Earth's period is 365 1/4 days or one year.

Ph.D. (doctorate of philosophy) The highest degree awarded by a university, earned after completion of at least nine years of college study following high school. This includes four years to earn a bachelor's degree and five to seven years to earn a Ph.D.

photometer. An instrument that measures the intensity of light.

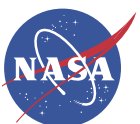
photometry. The measurement of the intensity of light.

photosynthesis. The process by which plants convert sunlight and carbon dioxide to oxygen and sugar.

physical science. Any of the sciences, such as chemistry, physics, astronomy and geology that investigate the features of energy and nonliving matter.

physics. The study of matter and energy and how they work together.

physiology. An area of biology that studies the major functions of plants and animals such as growth, reproduction, photosynthesis, respiration and movement.



planet. A body that orbits a star and does not give off its own light. A planet is generally much smaller than a star and can be made of solid, liquid, and/or gas.

planetarium. A device that projects images of stars, planets and other objects in space and their movement onto the surface of a round dome.

planetary sciences. The study of a planet or planets, what they are made of, how they are structured and their orbits.

pre-calculus. A math class taken to introduce calculus.

precipitate. To cause water vapor to become liquid and fall as rain or snow.

predict. To tell what you think will happen in the future.

pressure. The amount of force pushing on an object caused by the molecules surrounding it.

prism. A three-dimensional glass or crystal object with flat sides and edges that can break up light into separate colors, creating a spectrum.

probe. A device sent into space to explore and research objects.

property. A quality that defines a substance.

propulsion dynamics. The study of the forces that move, drive or propel an object forward.

protein. Building blocks of life that make up skin, fingernails and other plant and animal tissues. Proteins also help animals to digest food and perform many other important functions for life.

protostar. A young star that glows as gravity makes it collapse.

psychology. The study of how the brain processes information and how humans behave.

radiation. The transfer of energy by waves. Humans and other life forms can become very ill or even die from exposure to too much of certain types of radiation.

reactive. An element or substance that tends to easily interact with other elements or substances.

reactivity. The tendency to easily interact with other elements or substances.

red giant. A very large, bright, but cool star that normally has a temperature between 3,000°-6,000° Kelvin. After millions or even billions of years, when a main-sequence star has burned up the fuel in its core, it expands into a red giant.

red star. (red dwarf) A very cool, dim, small star that burns very slowly and has a surface temperature less than 3,500° Kelvin.

reproduction. The act of producing children or offspring.

respiration. The act or process of breathing.

restart. To start over.

role-play. To take on the role of another person. To pretend to be that person.



sensor. A device that detects and responds to a signal.

software. Computer programs that control how a computer functions.

solar flare. A burst of gases from a small area of the sun's surface that puts out intense radiation.

solar system. Our Sun and the objects that travel around it.

solid. A state of matter that has a definite shape and volume. In a solid, molecules are bonded together very tightly so that the solid keeps its shape or it is broken.

space science. Any of several sciences, such as astrobiology, that study occurrences and objects in space other than Earth.

specialist. A person who is an expert on a particular topic.

spectrometer. An instrument that measures spectra.

spectroscopy. The measurement and analysis of spectra.

spectrum. (pl. spectra) A rainbow or band of different colors made when light is broken up into wavelengths.

star. A large, hot ball of gases, which gives off its own light.

star system. A star and the objects that orbit around it.

star type. The category that a star fits into based on the features it shares with other stars in that category.

statistics. A type of math that involves collecting, organizing and interpreting numbers.

stratosphere. A layer of the Earth's atmosphere that is above the troposphere, between about 11 and 50 km above the Earth's surface.

submit. To send, give or turn in. In Astro-Venture, you click "Submit" to send your Astro Journal answers to scientists for review.

supergiant. Stars that are greater than ten times the mass of the Sun, expand into extremely large, bright stars called supergiants.

supernova. A star that explodes. Often a supernova is a supergiant that has become unstable.

surface effect. The effect on a small section of Earth as seen from the surface that occurs as a result of some change.

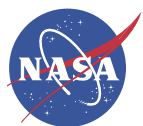
systems engineering. The use of math and science to design and build groups of connected parts that work together as a whole.

technical institute. A school that trains people in specific skills for certain occupations that use technology.

Tech Notes. In Astro-Venture, the Tech Notes give you background information and a glossary about the topics you select.

telescope. An instrument that collects light and makes distant objects appear larger and closer.

temperature. The measurement of how hot or cold something is.



thermal. Having to do with heat.

thermodynamics. The study of how heat moves.

trigonometry. A type of math that studies and compares angles in a right triangle.

trivia. Factual information that is not important but may be interesting to know.

troposphere. A layer of the Earth's atmosphere that begins at Earth's surface and extends to 11 km above the Earth's surface.

ultraviolet radiation. Invisible radiation between visible violet light and X rays. Ultraviolet radiation causes sunburn and can harm life.

uninhabitable. Not fit to live in.

universe. All existing things, including Earth, the solar system and the galaxies.

university. A school where bachelor's degrees, master's degrees and doctorate degrees can be earned following high schools.

virus. A particle so small it can be seen only with a microscope and can reproduce inside a living cell.

vocational school. A school that trains people in specific skills for certain occupations.

volume. The amount of space an object takes up.

water vapor. The form water takes when it is a gas in the atmosphere.

wavelength. The distance from one peak to the next on a wave.

white dwarf. The end of a low mass star's life, when the star's core shrinks and its surface becomes white hot. These stars are very hot but dim.

yellow star. A medium-sized star that has a surface temperature between 5,000°-6,000° Kelvin.

zoology. The study of animals.

