

Astronomy

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Glossary

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absolute magnitude actual brightness of a star (10)

apparent magnitude how bright a star looks in the sky when seen from Earth (10)

artificial satellite human-made object that orbits a planet or other space object (17)

asteroid small, rocky space object, usually less than 1 kilometer (0.62 mile) in diameter; most orbit the Sun in a belt between Mars and Jupiter (5, 6, 19, 20)

astronomical unit (AU) unit of measure equal to the average distance between Earth and the Sun; 1 AU = 150 million kilometers (about 93 million miles) (3–7, 9)

astronomy scientific study of space, its objects, and its origins (2, 21)

axis imaginary line that runs through the middle of an object, about which the object rotates (2, 4–7)

big bang theory that proposes the universe began with a huge explosion and expanded rapidly, forming space and everything in it (15, 21)

binary system pair of stars that orbit each other and are held together by gravity (13)

black dwarf white dwarf that has cooled down to the point at which it no longer emits light (12)

black hole area around the remains of a collapsed star that is so dense that not even light can escape its gravity (12, 17)

comet frozen chunk of ice, gas, and dust that regularly orbits the Sun (7, 19, 20)

constellation group of stars that creates a pattern resembling a person, animal, or object (13)

crater bowl-shaped depression on the surface of a rocky or icy body—such as a planet, moon, or asteroid—caused by a meteorite impact (4)

electromagnetic radiation energy given off by stars and other objects that travels through space in the form of waves; includes gamma rays, x-rays, ultraviolet rays, visible light, infrared waves, microwaves, and radio waves (8, 17)

electromagnetic spectrum all of the types of electromagnetic radiation (9)

elliptical oval in shape rather than perfectly circular (2, 5, 7, 14)

elliptical galaxy large, oval-shaped group of older stars with little gas and dust (14)

frequency number of waves that pass through a point per second; short wavelengths have high frequencies, long wavelengths have low frequencies (9, 17)

galaxy large group of stars, gas, and dust that is held together by gravity (14, 15, 17, 18, 21)

gamma rays type of electromagnetic radiation with the shortest wavelengths (highest frequencies) and highest energy (8, 17)

geosynchronous orbit orbit in which a satellite revolves around Earth at a speed that matches the speed of Earth's rotation (17)

gravity universal force that attracts, or pulls, all objects that have mass toward one another (3, 5, 11–14, 21)

Hertzprung-Russell (H-R) diagram graph that shows the relationship between the temperatures of stars and their brightness or absolute magnitude (10)

infrared radiation electromagnetic waves with wavelengths that are shorter than radio waves, but longer than visible light waves (8, 17)

inner planets four small, rocky planets that orbit closest to the Sun; Mercury, Venus, Earth, and Mars (4, 6)

irregular galaxy large group of stars, dust, and gas that has an irregular shape (14)

light-year distance that light can travel in one year; equal to 9.5 trillion kilometers (5.9 trillion miles) (9, 10, 14)

main sequence diagonal band, from upper left to lower right, on the H-R diagram where 90% of stars can be plotted (10, 11)

meteoroid piece of rock or metal, much smaller than an asteroid, traveling in space (7)

moon natural satellite that revolves around a planet (2, 4–8, 19, 20, 23)

nebula large, cold cloud of dust and gas in space that may form a star (3, 11, 12, 21)

neutron star small, extremely dense star that forms when the core of a supernova collapses and shrinks (12)

nuclear fusion reaction in which atoms of lighter elements fuse, or combine, to form atoms of another, heavier element (8, 11)

orbit (n.) path an object takes when revolving around another object (2, 3–7, 9, 13, 17–20, 23)

outer planets five planets in the solar system farthest from the Sun; the four gas giants—Jupiter, Saturn, Uranus, and Neptune—and small, rocky Pluto (6, 7, 20)

parallax apparent shift in position of an object due to the changing location of the observer (9)

planet sphere-shaped space object that revolves around the Sun or other star and does not produce its own light (2–8, 12, 15, 17–20, 22)

planetary nebula glowing cloud of gases surrounding a low-mass, dying star (12)

protostar contracting nebula (cloud of gas and dust) with enough mass to form a star (11)

radio telescope large, curved dish with an antenna that gathers radio waves from space (17)

radio waves electromagnetic radiation having the longest wavelengths (lowest frequencies) and lowest energy (8, 17)

red giant large star that is extremely bright but not very hot (11, 12)

red shift shift, toward longer (red) wavelengths, in the spectrum of radiation given off by a star or galaxy because it is moving away from Earth (15)

reflecting telescope optical instrument that uses mirrors to focus light collected from objects in space (16, 18)

refracting telescope optical instrument that uses lenses to focus light collected from objects in space (16)

revolve to move in a curved path around another object; to orbit (2, 5)

rotate to spin on an axis (2, 5–7)

solar system a star, such as the Sun, and the planets, moons, and other objects that revolve around it (2–9, 14, 18, 23)

space probe space vehicle, which does not carry humans, that is sent to study distant space objects and returns data or samples to Earth (19, 20, 23)

spectrograph instrument that separates visible light by wavelength into the spectrum of colors that make it up (10, 18)

spectrum range of colors that make up visible light (10, 15, 17)

spiral galaxy large group of stars, dust, and gas with “arms” that extend outward like a pinwheel from a central disk (14)

star system two or more stars that are held together by gravity (13)

supernova violent explosion of a high-mass star that occurs when the core collapses (12, 17)

ultraviolet (UV) rays electromagnetic waves with wavelengths shorter than the violet end of the visible spectrum, but not as short as x-rays or gamma rays (8, 17, 18)

universe space and everything it contains; all the matter and energy that exist (2, 9, 14, 15, 17, 21)

visible light electromagnetic radiation that humans are able to detect with their eyes (8, 10, 15–18)

wavelength distance from one wave crest, or peak, to the next (9, 10, 15, 17)

white dwarf small, hot star that is not very bright (10, 12, 17)

x-rays electromagnetic radiation that has short wavelengths (high frequencies) and high energy (8, 17)