

6.2 Galaxies - Vocabulary

Star A giant ball of hot, glowing gases (usually hydrogen & helium)

Nuclear Fusion A process where the nuclei of atoms join and emit energy as light, heat and other electromagnetic radiation.

Apparent Magnitude Scale A measurement of a celestial object's brightness when viewed from Earth (the more positive the number the dimmer the star).

Absolute Magnitude Scale A measurement of a celestial object's brightness if viewed from the same distance; a measure of a celestial object's *actual* brightness or **luminosity**.

Hertzprung--Russel Diagram (HR) A graph that plots a star's temperature on the x-axis and absolute magnitude on the y-axis.

6.2 Galaxies - Vocabulary (cont)

Main Sequence A diagonal band most stars fall into when plotted on the HR Diagram..

Speed of Light Light travels at 300,000 km/s.

Light-Year The distance that light travels in a year (9,500,000,000,000 km).

Parsec Approx. 3.26 light--years.

Parallax The effect where an object appears to move when viewed from two different positions.

Galaxy A group of stars held together by their gravity, galaxies form three shapes, elliptical, spiral and irregular.

Constellation An imaginary picture in the night sky made up of stars.

6.3 Life Cycle of a Star - Vocabulary

Nebula(e) A cloud of gas and dust held together by the gravity of the hydrogen atoms within it.

Protostar When the center of a nebula heats up and pressure increases.

6.3 Life Cycle of a Star - Vocabulary (cont)

Hydrostatic Equilibrium The balance of the forces of a star's gravity and energy output.

Red giant Hydrogen decreases, gravity is stronger than energy output, a new type of nuclear fusion begins, releasing more energy, reaching a new hydrostatic equilibrium and cooling to red.

Planetary Nebula Helium supply decreases in a red giant and the outer region fades to a shell.

White Dwarf The core of a planetary nebula continues nuclear fusion, increases energy rate and temperature to get a small, white hot star.

Black Dwarf The result of a white dwarf cooling and fading away.

Red Supergiant A continuation of the red giant until iron is formed, resulting in a much larger, red star.

6.3 Life Cycle of a Star - Vocabulary (cont)

Supernova The event where a red supergiant runs out of energy and collapses, resulting in a large explosive death.

Neutron Star The aftermath of a supernova with a mass of less than 3 solar masses, an incredibly dense star with a diameter of only tens of kilometers.

Black Hole The result of a supernova with a mass greater than 3 solar masses, a region of space with an extraordinary gravitational pull and density that even light cannot escape.

6.4 Moving Galaxies

Absorption Spectrum A spectrum with lines missing from the pattern due to elements of the star absorbing their light wavelengths, therefore removing them from the spectrum.

6.4 Moving Galaxies (cont)

Emission Spectrum The pattern of wavelengths (or frequencies) that appear as coloured lines on a spectroscope; the light wavelengths that are emitted from certain gases when they return to a stable state.

Doppler Effect The effect that occurs when an object is moving slower than the speed of sound; waves in front of the object compress while waves behind disperse.

Red Shift An increase in wavelength of radiation emitted by a celestial body which shifts the absorption spectra in the red direction of the spectrum, indicating that the object is moving away from the Earth.

Blue Shift A decrease in wavelength of radiation emitted by a celestial body which shifts the absorption spectra in the blue direction of the spectrum, indicating that the object is moving towards the Earth.

6.4 Moving Galaxies (cont)

Hubble's Law The further the galaxy, the higher the tendency to have a more red-shifted spectra; the further the galaxy, the faster it was moving away.

Big Bang Theory the theory that the universe began from a hot dense state which has continued to expand and will continue to do so.

6.5 The Big Bang Theory

Singularity A single, dense, hot point.

Cosmic Microwave Background Radiation A form of electromagnetic radiation in the microwave spectrum left over from the formation of the Universe; evidence of the Big Bang theory.