Definitions and Concepts for WJEC (Wales) Physics GCSE

Topic 2.5: Stars and Planets

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Artificial Satellites: Man-made satellites that have been sent into space for purposes such as satellite imaging and communications.

Asteroids: Clumps of metal and rock. They are mainly found in the asteroid belt, located between Mars and Jupiter.

Astronomical Unit: A unit of distance equal to the distance between the Earth and the Sun.

Black Hole: A region formed by the collapsing of a giant star. Its gravitational field strength is so strong that not even light can escape it.

Comets: Objects consisting of rock, dust and ice that travel in the universe at high speeds. When they approach the sun they vaporise and produce a trail.

Galaxy: A system containing billions of stars.

Gaseous Planets: Planets that have a gaseous composition, often involving hydrogen and helium. In our solar system the gaseous planets are Neptune, Jupiter, Uranus and Saturn.

Hertzsprung-Russell Diagram: **A plot of the luminosity of stars against their temperatures. It can display the properties and evolutionary path of a star.**

Light-Year: An astronomical unit of distance. One ly is equal to the distance that light travels through space in a single year.

Main Sequence Star: The stable state of all stars. The gravitational forces pulling the star together, and the pressure pushing outwards, are balanced.

Milky Way Galaxy: The galaxy in which our solar system is located.

Natural Satellites: The moons that orbit planets.

Nebula: A cloud of dust and gas.

Neutron Star: A very dense region formed by the core of a giant star collapsing. It is mainly composed of tightly packed neutrons.

Orbital Speed: A measure of how fast an object orbits. It is directly proportional to the orbital radius and inversely proportional to the orbital period.

Orbital Period: The time it takes for an object in orbit to complete one full cycle.

Planet: A body that has a sufficiently large mass and that orbits a star. Our solar system contains eight planets, all of which orbit the sun.

Protostar: The first stage all stars go through after forming from a nebula. In this stage the star becomes hot enough for hydrogen nuclei to fuse.

Red Giant Star: When their hydrogen is used up and larger nuclei are produced by fusion, stars of a similar magnitude to the Sun will expand to form a red giant.

Star Life Cycle: The stages that a star passes through in its lifetime, dependent on the size of the star relative to the sun.

Star Stability: The stability of a star is determined by balance of the pressure produced by the star and the strength of the gravitational force acting on it.

Sun: A star formed from a cloud of dust and gas being pulled together by gravitational attraction. Fusion reactions occur in the sun.

Supernova: The explosion of a massive star, that distributes the elements created by the fusion reactions in the star, throughout the universe.

Terrestrial Planets: Planets that mainly consist of rocks and metals. In our solar system the terrestrial planets are Earth, Mars, Venus and Mercury. They are the planets found closest to the sun.

Universe: A large system of billions of galaxies.

White Dwarf: When the fusion reactions in stars of a similar magnitude to the sun come to an end, the star will contract under gravity and cool down to form a white dwarf.