

The Sun

The Sun has only been considered to be the centre of the solar system for the last 500 years.

Geocentric Model – until 400 years ago, people believed that everything rotated around the Earth.

They thought all of the stars in the night sky proved this. This was also called Earth-centred model and was used for almost 2000 years.

Heliocentric Model – states that the Sun is the centre of our solar system. This model was created by a few astronomers who were arrested/denounced for their beliefs. These astronomers were Copernicus, Galileo, Kepler and Newton.

Layers and Characteristics of the Sun

The Sun is made up of many layers. It is also made up of gases (mostly hydrogen, some helium). It is about 1.4 million kilometres across, and has a mass of 2×10^{30} kg. (more than the size of 10⁹ earths)

The Core (Helium core) - inner most layer of the Sun temperature of nearly 15 million °C.

- in the core, a process called fusion, turns hydrogen gas into helium gas.
- This process creates all the Sun's energy.

The Solar Envelope (73% hydrogen and 25% helium) – layer that surrounds the core

- made up of five layers
- 1. **The Radiative Envelope** – where heat energy is transferred directly out of the core (4 million °C)
- 2. **The Convective Envelope** – where energy is circulated around this layer
- 3. **The Photosphere** – layer of the Sun we see. It is very thin and is around 6000 °C
- 4. **The Chromosphere** – a thin, red layer that is only seen during a solar eclipse. It is hotter than the photosphere. (7000 °C)
- 5. **The Corona** – the outermost layer of the Sun that is only visible during eclipses (1 million °C)

Some Other Properties of the Sun

Sunspots - darker spots on the Sun which are slightly cooler

Solar Flares - form just above a sunspot in the corona. They are violent, high temperature outbursts of energy that can last several hours.

Prominences - resemble solar flares, but they are longer lasting and less violent

Solar Winds - carry energy away from the Sun. These winds affect the magnetic fields of the planets in the solar system. They usually create bigger auroras in the thermosphere (above the Earth's atmosphere).

Acetate 4-3

The Phases in the Life of Stars

