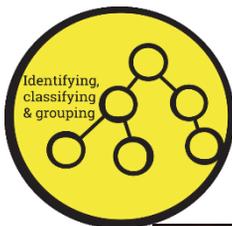


Working Scientifically Skills



WHO?

Galileo Galilei



Working scientifically skills

Physics



Vocabulary

<b>orbit</b>	To move in a regular, repeating curved path around another object.	<b>rotate</b>	To spin e.g. Earth rotates on its own axis.
<b>axis</b>	An imaginary line that a body rotates around e.g. Earth's axis runs from the North Pole to the South Pole.	<b>geocentric model</b>	A belief people used to have that other planets and the Sun orbited around Earth.
<b>heliocentric model</b>	The structure of the Solar System where the planets orbit around the Sun.	<b>astronomer</b>	The structure of the Solar System where the planets orbit around the Sun.
<b>Sun</b>	A large star that Earth and other planets in our solar system orbit around.	<b>sphere</b>	A round 3D shape in the shape of a ball.
<b>star</b>	A giant ball of gas held together by its own gravity.	<b>spherical bodies</b>	Astronomical objects shaped like spheres.

WHAT?

The **Sun**, **Earth** and **Moon** are approximately **spherical** bodies. A **scale** model is either a **zoomed in representation** of something that is very **small**, or **zoomed out** version of something that is very **large**. To make a scale model you either **shrink** or **enlarge** all of the objects by the same amount (or ratio). **Average diameter of the Sun: 864,000 miles**, about **109 times** the size of the **Earth**. **Earth** is approximately **150 million km** away from the **sun**. **Size of Earth = 12 742km**. The **Moon** is an average of **238,855 miles** away from **Earth**, which is about **30 Earths** away. The **mean diameter of the Moon** is **3,475 kilometres** (roughly a **1/4** of **Earth**).

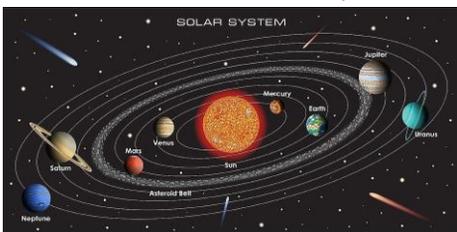


The Earth rotates **one complete turn** every **24** hours to give us **day** and **night**. Earth rotates or spins toward the **east**, and that's why the **Sun**, **Moon**, **planets**, and **stars** all appear to rise in the **east** and appear to make their way **westward** across the sky.

**Shadows** change in **length** and **direction** because Earth **rotates** on its **axis**. Shadows are formed when **light** is **blocked** by an **opaque** object. In the **Northern Hemisphere**, sunlight usually **shines** on objects from the **south**. At **sunrise**, the shadow is **long** and appears in the **west**. As we approach **12pm** the shadow becomes **shorter** and is still in the **west**. After **12pm** the shadow begins to **lengthen** again and appears in the **east**. At **sunset**, the shadow is **long** again and appears in the **east**. Shadows will be in the **opposite direction** to the **sun**. When the sun is **low** in the sky, shadows are **long**. When the sun is **high** in the sky, shadows are **short**.



The prefix '**geo**' means to do with **Earth**, so '**geocentric**' means **Earth** is at the **centre**. The prefix '**helio**' means to do with the **Sun**, so '**heliocentric**' means the **Sun** is at the **centre**. An **orbit** is a **repeating path** that one object in space takes **around** another. All orbits are **elliptical** in **shape**, meaning they're **egg-shaped**, or **oval**, rather than circular.



Orbit speeds:  
**Mercury: 88 days**  
**Venus: 225 days**  
**Earth: 365 days**  
**Mars: 687 days**  
**Jupiter: 12 years**  
**Saturn: 29.5 years**  
**Uranus: 84 years**  
**Neptune: 165 years**



There are **eight** main phases of the **Moon**: **new moon**, **waxing crescent**, **first quarter**, **waxing gibbous**, **full Moon**, **waning gibbous**, **last quarter**, **waning crescent**.

The moon is **illuminated** because it **reflects** the light from the sun. The part of the moon **facing** the **sun** is **lit up**. The part facing **away** from the sun is in **darkness**. The term "**quarter moon**" does not refer to the amount of the moon's disk that is **illuminated** by the sun, but rather to how far along the moon has progressed through its cycle of phases.

