

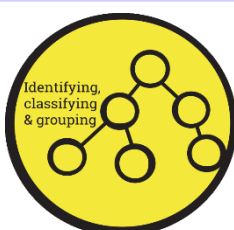
Do planets, stars and moons in our solar system move?

Working Scientifically Skills

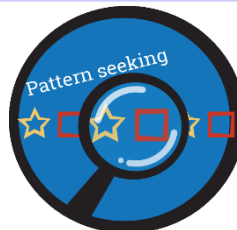


WHO?

Galileo Galilei



Working scientifically skills



Physics

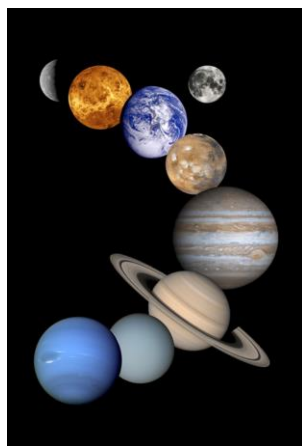


Vocabulary

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



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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**.

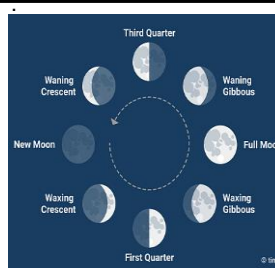
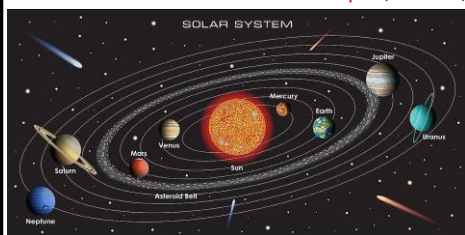


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The prefix '**geo**' means to do with **Earth**, so '**geocentric**' means **Earth** is at the **centre**. The prefix '**heli**' means to do with the **Sun**, so '**heliocentric**' means the **Sun** is at the **centre**. An **orbit** is a **repeating 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.



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