

Earth, Space & Light

The solar system, day/night & how we see



1. What order are the planets in our solar system?

Eight planets orbit the sun: **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.**

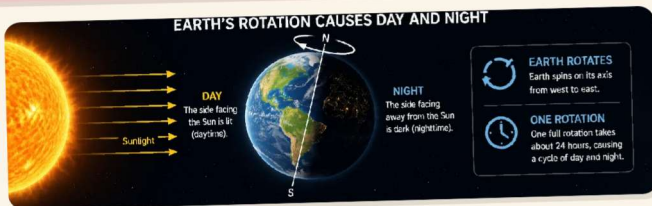
- The sun is a star at the centre; planets orbit it in roughly circular paths.
- Planets closer to the sun are generally hotter than those further away.



3. Why do the sun, moon and stars appear to move across our sky?

Because the Earth is spinning, the sun, moon and stars only **appear** to move across the sky.

- This is why the sun seems to rise in the east and set in the west.
- It's the same idea as looking out of a moving car window — the scenery seems to move.



2. Why do we have day and night?

The Earth **rotates** on its axis once every 24 hours, giving us day and night.

- The side facing the sun has day; the side facing away has night.
- The sun does not move around the Earth — the Earth spins.

4. Why do we see light and how does it let us see objects and colour?

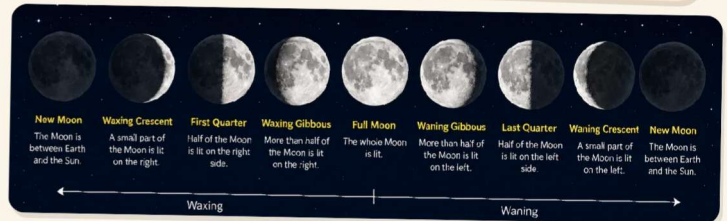
We see objects because light reflects off them and travels to our eyes.

- An object's colour depends on which colours of light it reflects.
- Light travels in straight lines, which is why we can't see around corners.

5. How does the moon orbit the Earth, and why does its shape seem to change?

The moon **orbits** the Earth roughly every 28 days, and we see different amounts of its lit side.

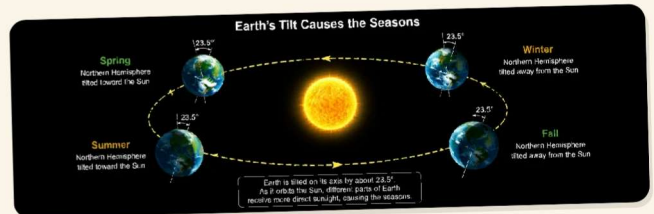
- The moon doesn't make its own light — it reflects light from the sun.
- These changing views are called the phases of the moon.



6. Greater Depth: why do we have seasons, and why is the Earth's tilt the reason?

The Earth's **tilted axis**, not its distance from the sun, causes the seasons as it orbits.

- When your hemisphere tilts towards the sun, you get summer; tilted away, you get winter.
- This is a common misconception — Earth is not closer to the sun in summer.



7. TAPS: How do we write up our shadow-length-over-a-day investigation?

OBSERVE OVER TIME

Our TAPS task: **how does a shadow's length change over the course of a day?** This is **observation over time** — we measure the same shadow repeatedly, at set intervals.

- Question → **prediction** → what we'll measure & when.
- Materials → **method** → take repeated measurements → **results** → **conclusion**.

Shadow Tracking Results (KS2 Experiment)

Time	9:00	10:00	11:00	12:00	13:00	14:00	15:00
Shadow Position							

KEY VOCABULARY

solar system planet rotate orbit axis tilt phases of the moon reflect shadow predict conclusion

SKILLS I'LL USE

- Observe & measure over time
- Sequence the solar system
- Record results in a table
- Explain day/night using a model
- GD: challenge misconceptions with evidence