

Key Stage: KS2
Year: 5

Earth and Space

Prior learning:

Pupils should be taught to:
(Yr 1)

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

Science NC strand

Statutory requirements:

Pupils should be taught to:

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system
- describe the movement of the Moon relative to the Earth
- describe the Sun, Earth and Moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Science PoS

Non statutory requirements:

- Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).
- **Note:** Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.
- Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.

Teacher assessment criteria

- Describe the shapes and relative movements of the Sun, Moon, Earth and other planets in the solar system
- Explain the apparent movement of the sun across the sky in terms of the Earth's rotation and that this results in day and night

Subject Knowledge:

- The Sun is a source of light, the Moon reflects light from the Sun. Darkness is the absence of light.
- The brighter the Sun the sharper the shadow.
- The Sun appears to move across the sky during the day, shadows are shorter at mid-day.
- The Earth rotates from West to East in an anticlockwise direction, making the Sun appear to rise in the East and set in the West at 1000miles/1600km an hour
- The Sun is higher in the sky at mid-day in summer than it is at the same time in winter.
- The Earth is tilted on its axis, as we move around the Sun (a year) the angle at which the Sun's light hits us at gives us the seasons
- The northern hemispheres winter is the southern hemispheres summer
- In winter, the hemisphere is angled away from the Sun therefore the Sun's energy is spread out over a larger area
- In summer the sun rises earlier in the day and sets later in the evening than it does in the winter.
- We have more hours of daylight in the summer than in the winter.
- Countries on the equator have the same hours of sunlight throughout the year and therefore no seasons
- The Moon appears to change shape- It follows a monthly cycle. The change in shape is due to how much of the illuminated half of the moon we can see depending where the moon is in its monthly cycle
- The Sun, Earth and Moon are approximately round or spherical.
- Moons – A moon is a celestial body that orbits a planet
- The Sun is over a million times bigger than the Earth.
- The Earth is six times bigger than the Moon.
- The Sun is 150 million km from the Earth.
- The Moon is quite close - only 400,000 km away!
- We don't feel as if we are on a roundabout because the "park" or atmosphere is spinning at the same rate.
- Galaxies – Stars exist together in places called galaxies. These are so vast that it takes starlight hundreds of thousands of years to travel from one side to the other. Our star, the Sun, exists in a spiral-shaped galaxy called the Milky Way. There are probably at least 100,000 galaxies.
- Solar system – Millions of years ago, a group of balls of matter were created; the planets in our Solar System. The Sun accounts for 99% of the mass of the Solar System. Order of the planets, starting with the one closest to the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus then Neptune. The Solar System is disc-like in shape.
- The Sun is at the centre and the planets follow individual paths called orbits around it.
- Constellations – Thousands of years ago, early astronomers divided the stars into groups and drew imaginary pictures around them so that they were easy to remember. The stars in a constellation are actually unrelated