

Science – Earth and Space

Targets to be covered:

- 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.

Learning Ladders:

I can name all of the planets.

I can describe the Sun, Earth and Moon as approximately spherical bodies.

I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.

I can describe the movement of the Moon relative to the Earth.

I can identify and describe that a moon orbits a planet.

I can explain day and night, using the Earth's rotation and the movement of the Sun across the sky.

Working Scientifically

I can use a range of scientific equipment to take measures and repeated readings.

I can identify scientific evidence that has been used to support or refute ideas or arguments.

Week	Order of Study – Main plots and Subplots
1	LI- I can understand that the Sun is a star at the centre of our solar system and can name its eight planets. What is in our Solar System? What is a solar system? What is the largest object in our solar system? What are the names of the eight planets? How can we remember the correct order? Complete first two columns of KWL grid. Can the children name all 8 planets? Do they know their order? Stick in knowledge organiser. Children to create their own mnemonic for remembering the names/order e.g. My Very Easy Method Just Speeds Up Names. Split children into groups to research one planet- make notes on flipchart paper and display around the room. Children to then magpie notes from around room. Using what they've learnt, what fruit would they use to represent each planet to scale? NB: the planets are spherical in shape and not all are solids- some are gas. Create a class scaled fruit model in the hall or on the playground using scaled distances. Teacher mark. Extension/marking task: How could you organise all the objects in the solar system into groups? Carroll/Venn diagram? Resources needed: KWL grid, Space knowledge organiser, planet facts template, fruit (peppercorn, cherry, tomato x2, blueberry, watermelon, grapefruit, apple, orange), metre stick, 30cm ruler, trundle wheel Key terminology - Planets, solar system, Sun, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, spherical bodies
2	LI- I can describe the movement of the Earth, Sun, Moon and planets, in relation to each other. Research enquiry- How have our ideas about the solar system changed over time? <u>Write up each section of their explanation as they learn about it.</u> Chn to make notes using videos, ppt and ipads. Watch these 2 clips: Earth is spherical: https://www.bbc.co.uk/bitesize/clips/zd3fb9g Heliocentric model: https://www.bbc.co.uk/teach/class-clips-video/science-ks2-the-work-of-nicolaus-copernicus/z64skmn https://www.bbc.com/bitesize/clips/z6shfg8 Look at Geocentric/heliocentric ppt and Earth's movement ppt. Show chn how day and night occurs, using a torch and globe. (Various video links in resources if needed) Look at movement of the moon ppt. Chn to complete moon phases diagram. Teacher mark. Resources needed: ipads, video links (https://www.bbc.co.uk/bitesize/topics/zwccwmn/resources/1), geocentric/heliocentric ppt, Earth's movement ppt, torch, globe, diagrams of orbit and phases of moon, movement of moon ppt. Key terminology - Earth, Sun, Moon, planets, rotate, orbit, star, axis, day, night, satellite, lunar month, phases of the Moon, year, geocentric, heliocentric, seasons, tilt
3	LI- I can use a range of scientific equipment to take measures and repeated readings.

	Observation over time enquiry- How does the position of the Sun and shadows change during the day? Recap what chn learnt about the orbit of the Earth around the Sun. https://www.hamilton-trust.org.uk/science/unit/543-day-and-night-changing-shadows/ Explain that chn are going to design and implement a shadow investigation that will demonstrate the spinning of the Earth to their audience and hence why we have day & night. How can shadows show that the Earth is rotating? Possible recap to learning in Year 3 (shadow investigation with rounders posts: https://www.youtube.com/watch?v=MFM8PFio6k). Although a shadow clock can tell you the time, using the rounders pole doesn't make for a year round accurate clock as it doesn't allow for the changing 'angles' of the sun's shadows throughout the year. So, how can we measure the time of day using the apparent movement of the Sun (consolidate understanding that it is the Earth that is moving) and shadows? Explain that a sundial has a thing called a gnomon which points to Polaris (the North Star) and which has its top edge parallel to the rotation axis of the Earth. A dial plate 'collects' the shadow. The key to accuracy is that the angle of the gnomon means the direction of the shadow is not influenced by the changing Sun's position in the sky throughout the year. As a result of this, a sundial provides roughly the correct time of day across the year. Create a class sun dial and ensure it's pointing North. Chn to record the shadow every hour. Chn to explain how a sun dial works using key vocabulary. Once the sundials are complete and working ask chn if the sundial will tell them the time in different places in the world? Introduce time zones (next lesson). <u>Self assessment/Learning journey.</u> Resources needed: day and night ppt, clock/watch, cardboard, sundial instructions, ruler, compass, protractor, scissors, glue, questions Key Vocabulary – Earth, spherical bodies, Sun, Moon, rotates, orbit, star, axis, day, night, sun dial, shadow
4	Assessment time – Complete the final column of their KWL grid.