Beech Hill Primary School Knowledge Organiser

Topic: Science	Year group	Term
Earth, Sun and moon.	Year 5	Autumn (7 weeks)

Background knowledge

This is a new topic for the children although the children have looked at seasonal changes in year 1 and shadow formation as part of their light topic in year 3. The children should know not to look directly at the sun.

Some of the sessions in this topic will include activities that need to be completed during the course of the day e.g. mapping the sun's movement across the sky and shadow formation.

There are some excellent teaching ideas in the Reach out CPD earth and space; unit 4 in particular.

Useful websites; http://www.esa.int/kids/en/home
https://www.nasa.gov/kidsclub/index.html
https://www.planetsforkids.org/

The sun is a star. It is at the centre of our solar system. There are 8 planets that travel round the sun in fixed orbit. Earth takes 365 $\frac{1}{4}$ days to complete its orbit around the sun. The earth rotates and spins on its axis every 24 hours. As the earth rotates half faces the sun (day) and half is facing away from the sun (night). As the earth rotates, the sun appears to move across the sky. The moon orbits the earth. It takes 28 days to complete its orbit. The sun, earth and moon are approximately spherical.

Common misconceptions

- The earth is flat.
- The sun is a planet
- The sun rotates around the earth.
- The sun moves across the sky during the day.
- The sun rises in the morning and sets in the evening.
- The moon appears only at night.
- Night is caused by the moon getting in the way of the sun or the sun moving further away from the earth.

What should I already know?

I can observe and comment on the changes in the seasons including day length.
I can name the seasons and suggest the type of weather in each season.
I know it is not safe to look directly at the sun.

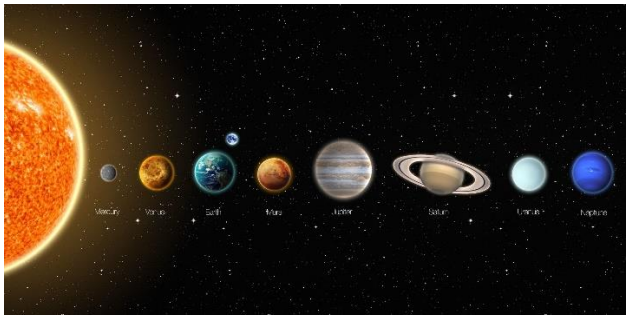
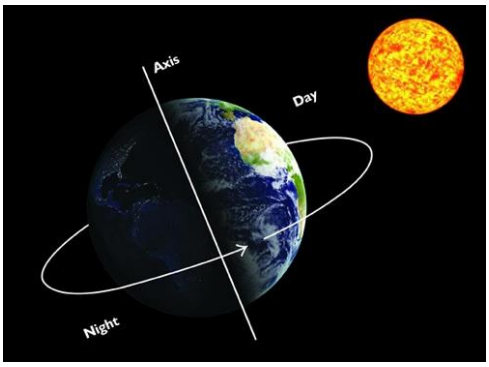
National Curriculum Objectives / Key Skills	The Journey

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. I can describe and explain the movement of the earth and other planets relative to the sun. I can describe and explain the movement of the moon relative to the earth. I can explain and demonstrate how night and day are created. I can describe the earth, sun and moon (using the term spherical). Science Enquiry identifying scientific evidence that has been used to support or refute ideas or arguments planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. taking measurements, using a range of scientific equipment, with increasing accuracy and precision. reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	1. Introduce introductory scientific vocabulary for the topic. Establish that the earth, sun and moon are approximately spherical bodies and look at the contrasting flat earth theory. 2. Review the fact that the moon is not a light source. Describe and explain the movement of the moon relative to the earth. Consider the phases of the moon. 3. To explain and demonstrate how night and day are created and how the earth moves around the sun. Draw labelled diagrams to explain ideas. 4. Observe the apparent movement of the sun across the sky and explain why this happens. Investigate how shadows change during the day explaining why this occurs. 5. To know the names of the planets in the solar system and make a model showing their relative size and position. Describe their movement relative to the sun. 6. To research a planet and present their information to others. 7. Research the life of a famous scientist connected with space travel e.g. Katherine Johnson/ Caroline Herschel

I can independently ask scientific questions about how craters are formed. I can recognise variables and start to control them when investigating crater. I can select appropriate practical resources from a selection to answer my question. I can select measuring equipment to give the most precise results. I can report findings from enquiries in a range of ways. I can explain my findings using my subject knowledge. I can record data and results using scientific diagrams and labels, tables, bar and line graphs. I can use the outcome of my crater investigation to make predictions about how craters are different sizes. I can say how my scientific ideas have changed using the new evidence I have gathered following my crater investigation.	

Outcomes
An overview of what children will know / can do Working towards: I can describe the movement of earth and other planets relative to the sun. I can describe the movement of the sun relative to the earth. I can demonstrate how night and day are created and start to explain why. I know the shape of the earth, sun and moon. I know how theories about the shape of the earth have changed over time with support Expected: I can describe and explain the movement of the earth and other planets relative to the sun. I can describe and explain the movement of the moon relative to the earth. I can explain and demonstrate how night and day are created. I know the earth, sun and moon are approximately spherical. I know how theories about the shape of the earth have changed over time and present my ideas.

Exceeding I can confidently describe and explain the movement of the earth and other planets relative to the sun. I can confidently describe and explain the movement of the moon relative to the earth. I can explain and set up my own demonstration to show how night and day are created. I know how theories about the shape of the earth have changed over time and can explain the role scientists have contributed in this.

Key Vocabulary	Timeline / Diagrams
Orbit- the path of a celestial body. Solar system- a star and everything that travels round it. Planet – a body of land and/or water that revolves around the sun. Galaxy – a system of millions or billions of stars together, with gas or dust. Sun- the star at the centre of a solar system. Spherical – shaped like a sphere. Celestial body- an object in space. Lunar- relating to the moon. Moon- the natural satellite of the earth.	 

Key people / places
"The eagle has landed." "That's one small step for man, one giant leap for mankind". Famous astronauts; Yuri Gagarin (first man in space) Valentina Tereshkova (first woman in space) Neil Armstrong (first man on moon)

Helen Sharman (first British astronaut)
Tim Peake (most recent Britain in space)
Katherine Johnson (black woman mathematician involved in NASA project)

STEM careers – astronomer, astrophysicist, astronaut

Assessment questions / outcomes
How do we know the earth is spherical? Can you describe the movement of the earth, sun and moon in relation to each other? Can you demonstrate how night and day are created? Can you draw how your shadow changes during the day showing the position of the sun? Can you draw the solar system naming the planets and showing their size? Can you explain 4 key facts about the planet you researched.