Brough Primary School – Curriculum Intention Plan 2024 - 2025

Subject: Science **Year Group:** Year 3/4		**Area of learning: Earth and Space** (Year A)
Links to previous work/Remember when	Learning in Years 1 and 2 relating to the seasonal changes that take place in England. This included knowledge of how the length of the day changes over a year and knowing that it is not safe to look directly at the Sun. <u>Working Scientifically</u> • asking simple questions and recognising that they can be answered in different ways. • observing closely, using simple equipment. • performing simple tests. • identifying and classifying. • using their observations and ideas to suggest answers to questions. • gathering and recording data to help in answering questions.	
Term	**Year 3/4**	**Key Skills to be taught**
Summer 1 2025 What the children should know at the end of this series of lessons		• Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night, including the apparent movement of the Sun across the sky. • Pupils should learn that a star is 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 the moon is a celestial body that orbits a planet. (earth has one moon, Jupiter has four large moons and numerous smaller ones). <u>Working Scientifically</u> • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

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Vocabulary
Celestial body, Earth, moon, orbit, planet, satellite, Solar System, space, spherical, star, Sun, light, shadow, atmosphere, rotation, phase, satellite, gravitational pull, day, night, Mercury, Venus, earth, Mars, Jupiter, Saturn, Uranus, Neptune.

Sequence of learning	**Learning objectives/outcomes**	**Suggested lesson outline**
1 Use Explorify 'Far, far away' to stimulate discussion.	**Learning Objective:** Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. **Key knowledge:** The planets in our solar system are constantly moving. As the Sun is the heaviest object in our solar system, all the other planets orbit around it. The Sun's gravitational force keeps all the planets in orbit. In addition, each planet is also rotating on its axis. **Working scientifically** 1. Ask relevant questions and use different types of scientific enquiries to answer them. 2. Set up simple practical enquiries and comparative and fair tests.	**Recap –** What do you know about the seasonal changes that happen in the four seasons? What can you remember about the length of daylight in summer compared to winter? **How the planets move around the sun** Start by matching celestial bodies to its definition. For example – What is a planet? What is a comet? Etc. Patterns in the sky 'Constellations' were seen in the sky by our ancestors. They grouped them to make animals and objects that could be seen in the night sky. Introduce how Copernicus and Galileo first showed the Earth wasn't flat. Discuss how the Solar System is now viewed, using https://www.youtube.com/watch?v=j5ueashD6w4 *Children carry out an activity to identify what constellations can be seen in the night sky. Move on to record in simple sentences with or without diagrams how the Earth moves in relation to the Sun.*

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2 Use Explorify 'Have you ever' looking at the moon as a start to discussion.	**Learning Objective:** To describe the movement of the moon relative to the Earth. **Key knowledge:** The Moon is a natural satellite made of rock and metal. It is roughly spherical, with a diameter of about a quarter that of Earth. It would fit inside Earth approximately 50 times. The Moon moves in an orbit round a celestial body and also rotates on its own axis. Many other planets also have moons, kept in orbit around their planet by gravitational pull. **Working scientifically** **1. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units.** **2. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.** **(These will be a lunar homework…)**	**Recap –** Last lesson we learnt about stellar constellations. Which ones can you remember? How long does it take the Earth to orbit the Sun? What is the name of the force which keeps the Earth and other celestial bodies orbiting the Sun? **The movement of our Moon** The Moon is on average 384,400km away from Earth. It took Apollo 11 just over 3 days to travel this distance in 1969. The moon orbits the Earth (taking about 27 days to do so) and also orbits round the Sun alongside Earth. It also takes the Moon about 27 days to rotate once on its axis. Because these are the same time, we always see the same side of the Moon when we look at it. **Shaped by shadow** Every 27 days the moon follows a pattern of changes in how it appears. It doesn't really change shape, because these are caused by Earth's shadow. They are called the phases of the moon. Look at and discuss the different phases of the Moon. *Children answer questions to describe the movement of the Moon relative to Earth.* Children complete a diagram representation of the Lunar Phases.
3 Chromebooks required for second part.	**Learning Objective:** To describe the Sun, Earth and Moon as approximately spherical. To know that our Sun has eight planets – Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.	**Recap –** What can you remember about the Moon from last week? How long does it take to orbit the earth? How long to spin on its own axis? What can you remember about the phases of the Moon – use your diagrams from last week to help you.

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	Key knowledge: When we use the term sphere, that is an exact mathematical shape. The Earth and all other planets and natural satellites are certainly not spherical. We know for example, that the earth has high mountains and deep ocean trenches which means the surface of the Earth is anything but a perfect sphere. Other planets and the Moon are the same. The Sun has eight planets orbiting it, some of which are terrestrial and some are gas and ice giants. **Working scientifically** 1. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. 2. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**Approximately Spherical Planets** Start by looking at the BBC Class Clip below. https://www.bbc.co.uk/teach/class-clips-video/articles/z4jssk7 (How do we know the Earth is spherical?) **The Solar System** In order for a celestial body to be classed as a planet, it must have the strongest gravitational pull (mostly by having the greatest mass) of any object in its orbital path. There are eight such planets. Mnemonic - (My Very Easy Method Just Speeds Up Nothing). Examine difference between terrestrial and the gas and ice giants. *Children complete a short paragraph based on the science clip to explain how Aristotle first observed that the surface of the Earth was curved not flat. (horizon and moon)* *Children fill in a fact file which answers a given set of questions to help them describe their chosen planet. Chromebooks will be needed to provide a learning resource for this activity.*
4 Investigation lesson – will require a number of observation times (9:15am, 10:15pm, 11:15am, 1:15pm,	**Learning Objective:** Use the ideas of the earth's rotation to explain day and night and the apparent movement of the Sun across the sky. **Key knowledge:** Day and night are caused by the rotation of Earth on its axis, which causes different sides of the Earth to face the Sun at different times.	**Recap –** How did Aristotle first discover the Earth is not flat? Which of the planets are terrestrial? Can you name a gas and ice giant? **Day and Night** What do you notice about the Sun over the course of the day? Does it move? The Sun rises in the east, marking the beginning of the day, and sets in the west,

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2:15pm, 3:00pm before gates are opened) **TEACH LESSON ON MONDAY SO MATHS GROUPS ARE NOT AFFECTED**	**Working scientifically** 1. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. **2.** Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	marking the beginning of the night. While it looks like the Sun is moving, it is really the Earth's rotation that makes it look like this. Look at the BBC Class Clip below. https://www.bbc.co.uk/teach/class-clips-video/articles/z4jssk7 (Sun, shadows and time of day). Children should be warned that it is not safe to look directly at the Sun. *Children carry out an investigation – How does the length of shadows change over the course of the day? Children record their findings using a line graph to show the change in length of shadows.*
5	**Learning Objective:** To demonstrate what has been learnt about Earth and Space.	**ASSESSMENT LESSON** Children will complete an assessment task, which could be summative, or it could be a quiz style assessment or written task which draws on the knowledge learnt.

Learning Outcome/product
With support, children will be able to identify the celestial bodies of the Solar System and describe the Sun, Earth and Moon as approximately spherical bodies. They understand how Aristotle arrived at the conclusion that earth was not flat. Children are beginning to explain how Earth's rotation causes day and night and the apparent movement of the Sun across the sky, following their investigation of the length of shadows over the course of a day. With scaffolding and support, children will be able to describe the movement of the Moon relative to Earth and are beginning to describe some of its phases. They can distinguish between natural and artificial satellites. The children will know that the Sun is a star and there are eight planets which orbit it. They will be able to name many of the eight planets.

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Assessment records	**List only those children who have not achieved the expected outcomes.**
	Assessment records should now be uploaded to Insight in line with the assessment calendar.