

Year 5/6 Science - Earth and Space National Curriculum links: • Describe the Sun, Earth and Moon as approximately spherical bodies • Describe the movement of the Earth and other planets relative to the Sun in the solar system • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky • Describe the movement of the Moon relative to the Earth		Working Scientifically • Identifying scientific evidence that has been used to support or refute ideas or arguments • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
Prior Knowledge • Observe changes across the four seasons. (Y1 - Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes) • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. (Y3 – light) • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (y5 – forces will depend on cycle) •	Key Vocabulary • terrestrial planet • gas giant planets • spherical • Solar System • orbit • geocentric • heliocentric • axis • hemisphere • season • shadow • time zone (geography) • phases • waxing • waning • solar eclipse • full moon • new moon	Assessment Children will: • Name key characteristics of planets a) Mercury, Venus, Earth, Mars are terrestrial planets (inner rocky planets) b) Jupiter, Saturn, Uranus and Neptune are gas giants (outer planets) c) Jupiter is the largest d) All the gas giants have rings but Saturn's has the brightest and most visible. • Name and know the order of planets from the sun • Know that Sun, Earth, Moon and other celestial bodies are spherical. • Know that the sun is at the centre of the solar system and the planets orbit around it which is known as the heliocentric model. • Know that historically there was a geocentric model of the solar system where the Earth was at the centre. • Know that it was the work of scientists such as Copernicus and Galileo (link back to forces work) that evidenced the supporting a heliocentric model. • Know that the Earth sits on an axis (a tilt). • Know that the Earth rotates once every 24 hours • Understand that night and day occur due to the Earth's rotation • Know that the earth revolves around the sun once every approx 365 days. • Understand that due to the Earth being on an axis and its revolutions around the sun, this is what creates seasons. • Understand that time can be different in various parts of the world due to the rotation of the Earth, • Know the moon rotates around the Earth due to its gravitational pull. • Know that the moon looks differently in the sky due to its position in relation to the Earth and Sun.

Expectations of learning	National Curriculum Link (s)	Learning Journey
<i>By the end of the lesson / session children should be able to:</i> • Name key characteristics of planets a) Mercury, Venus, Earth, Mars are terrestrial planets (inner rocky planets)	• Describe the Sun, Earth and Moon as approximately spherical bodies	Refer to developing experts EARTH AND SPACE lesson 1 Starter – What do they know about the solar system and planet Earth? What shape is our planet. Refer back to work on gravity. Discuss that this forces is not singular to planet Earth and keeps the planets orbiting around the sun.

b) Jupiter, Saturn, Uranus and Neptune are gas giants (outer planets) c) Jupiter is the largest d) All the gas giants have rings but Saturn's has the brightest and most visible. - Name and know the order of planets from the sun - Know that Sun, Earth, Moon and other celestial bodies are spherical.		Discuss what makes Earth special – the idea that it's a goldilocks planet that can sustain life. It has water and breathable air. Explain that historically the earth was thought to be flat. How can we now prove that it is not? (Exploration into space, you can't 'fall off' the Earth). Explore the planets, start with the sun (ensure no misconceptions about the sun being a planet). Work through, in order, the different planets of the solar system. Set up representation of solar system – could use different size balls but try to use some sort of logical scale (developing experts has good handouts for this activity). Children to use this to draw their own ordered solar system. Children to use a3 paper to create a scale (could scale down the handout??? Do the folding fraction activity). Lower ability children to just place in order. SEND given images and names to order. Extend – could be given handout or iPad to find out a key fact for each planet.
Expectations of learning	National Curriculum Link (s)	Learning Journey
<i>By the end of the lesson / session children should be able to:</i> - Know that the sun is at the centre of the solar system and the planets orbit around it which is known as the heliocentric model. - Know that historically there was a geocentric model of the solar system where the Earth was at the centre. - Know that it was the work of scientists such as Copernicus and Galileo (link back to forces work) that evidenced the supporting a heliocentric model.	Identifying scientific evidence that has been used to support or refute ideas or arguments Describe the movement of the Earth and other planets relative to the Sun in the solar system	Refer to developing experts lesson 2 Starter – can they remember the mnemonic/order of the planets from the last session. Signatures to remember key facts. Explore the fact that today's understanding of the solar system is not the same as it has been in the past i.e. the Earth was previously thought to be flat. Discuss the geocentric model of the solar system – the idea that the Earth is at the centre of everything. Why do the children think this might have been the case? Refer to the idea that sun appears to move through the sky – like it is travelling around us. Explain that Copernicus' theory was the heliocentric model – the idea that we had night and day because we 'turned our back' by rotation, and that we rotated around the sun. This was later backed up by Galileo (who we know from his gravity experimentation on the leaning tower of Pisa).

		Look at the orbiting times of the planets around the sun – what do they notice happens as the planets get further away. What could cause this? Gravity. A stronger gravitational pull the closer the planet is to the sun. Task – explanation of the two models and their differences. Label key astronomers to those models. B – cloze activity.
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