

Science – Y4 Sp2 - Space

Subject Knowledge Notes:

- This lesson briefly reviews some of the core knowledge about space that students should have some idea about already (orbits of Earth and Moon) and applies to related knowledge (such as why the moon looks different on different nights)
- The lesson moves on to the idea of the solar and lunar eclipses. Students should have an idea of what they are, what they look like to experience and what causes them

For this lesson you will need:

- A model of the Sun (a lamp), the earth (a globe) and the moon (a white ball of some kind) if possible
- If you do not have a globe, print/draw a large picture of the earth on A3 paper (or larger). A ball of paper could be used to represent the moon if it had to be

Lesson One: What are solar and lunar eclipses?

 10 minutes	<ul style="list-style-type: none"> • Students complete retrieval practice questions. Provide keywords or hints on the board for students that may require support • Teacher to model correct answers on the board – students should tick or correct their answers according to the models provided by the teacher
 5 minutes	<ul style="list-style-type: none"> • Ask students to decide which of the three objects in the picture are the Sun, the Moon and the Earth and give a reason for their choice. • Label the pictures together
 15 minutes	<ul style="list-style-type: none"> • Introduce the key learning and then read the text as a class. • Begin reading aloud and ask children to follow under each word with their finger. • Switch readers every so often. • Emphasise any words in bold as key words/phrases. • After each section of text, pause the reading, read the question(s) to be answered and ask students to discuss with a partner what they think the answer will be to that question • Give students the required time (1-2 mins depending on writing speed) to complete an answer to the question independently • If any student is waiting, they can read the next part of the text in preparation for reading it together as a class
 10 minutes	<ul style="list-style-type: none"> • (if possible, use a model of the Earth, Moon and Sun to demonstrate the phenomenon shown in the picture i.e. that the moon orbits the earth and the earth orbits the sun. • Hold the moon at different points in its orbit around the Earth and show that a person looking at the moon from the Earth at each stage would see a different kind of moon) • On the diagram, draw a stick figure 'standing' on the earth and ask the students to consider what the moon would look like from the Earth at each point in its orbit. MISCONCEPTION WATCH - Emphasise that there are not 4 moons but this is a picture of the moon in four difference locations that it COULD be in so that we can see how the same moon might look different at 4 different times • Draw what the moon looks like during the first quarter (left hand half shaded in) to model what the students have to do. Emphasise that the first quarter means the first quarter of the moon's orbit which actually = a half moon.
 10 minutes	<ul style="list-style-type: none"> • Introduce the idea that we are doing to look at something called 'an eclipse' which means an even where light is blocked by the Earth or the moon

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	<ul style="list-style-type: none"> • “The first eclipse we will look at is called a ‘Solar eclipse’. Solar is another word for Sun so a Solar eclipse is when the moon blocks light from the Sun. We are going to watch a video which shows what it will look like when there is a Solar eclipse. • “Watch the video and think about how it would feel if you were there during a solar eclipse” • Watch the video (https://www.youtube.com/watch?v=eOvWioz4PoQ&t=2s) get students to suggest what happens during a solar eclipse <p>Model what happens in a solar eclipse using a lamp, a globe/picture of the earth and a ball of some kind for the moon. Show that the moon passes between the Earth and the Sun which creates a shadow on the Earth. For people on the Earth where the shadow lies, they are in darkness for a short time as experienced by the people on the video</p>
 10 minutes	<ul style="list-style-type: none"> • “The second eclipse we will look at is called a ‘lunar eclipse’. Lunar is another word for moon so a Lunar eclipse is when the Earth blocks light from the Sun and stops it from hitting the moon. We are going to watch a video which shows what it will look like when there is a lunar eclipse. • “The video shows the moon at sunset but time had been sped up. Watch the video and carefully observe the moon to see how it changes across the video” • Watch the video (https://www.youtube.com/watch?v=CtOWKIduGKo&ab_channel=StoryfulRightsManagement) get students to suggest what happens during a lunar eclipse • Model what happens in a lunar eclipse again using a lamp, a globe/picture of the earth and a ball of some kind for the moon. Show that the moon passes behind the Earth and therefore the Earth creates a shadow across the Moon. From the Earth, it looks like the moon goes partly or completely dark for a short time.
 10 minutes	<ul style="list-style-type: none"> • Begin reading aloud and ask children to follow under each word with their finger. • Switch readers every so often. • Emphasise any words in bold as key words/phrases. • Give students the required time (1-2 mins depending on writing speed) to complete an answer to the questions independently • If any student is waiting, they can read the question underneath and think about an answer to the question (and write a note in response underneath the question)
 10 minutes	<ul style="list-style-type: none"> • Ask children to think carefully about why people should be very careful when watching a solar eclipse and what might happen if you watch it with your bare eyes • After 5 mins, ask children to raise their hands to share ideas. Encourage children to use the sentence stem: <i>“I think you have to be careful when watching a solar eclipse because_____ . To watch it safely, people could _____”</i>
 5 minutes	<ul style="list-style-type: none"> • Return to page 3 and explain what solar and lunar eclipses are.