Suggested teaching program

**Chapter 9: Earth, sun and moon**

Time allocation: 2 weeks

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| **Context and overview** |
| In year 7, students investigate relationships in the Earth, sun, moon system and use model to predict and explain events. Students make accurate measurements and control variables to analyse relationships between system components and explore and explain these relationships through increasingly complex representations. |
| **Syllabus outcomes addressed** |
| • Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon ACSSU115  • Scientific knowledge has changed peoples’ understanding of the world and is refined as new evidence becomes available ACSHE119  • Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures ACSHE223  • Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ACSIS124  • Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ACSIS129  • Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ACSIS131  • Use scientific knowledge and findings from investigations to evaluate claims based on evidence ACSIS132  • Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ACSIS133 |
| **Achievement standards** |
| Students explain how the relative positions of the Earth, sun and moon affect phenomena on Earth. Students describe situations where scientific knowledge from different science disciplines has been used to solve a real-world problem. Students identify questions that can be investigated scientifically. They plan fair experimental methods, identifying variables to be changed and measured. They select equipment that improves fairness and accuracy and describe how they considered safety. Students draw on evidence to support their conclusions. They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods. They communicate their ideas, methods and findings using scientific language and appropriate representations. |

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| **Student book section** | **WA Syllabus links** | **Suggested indicators of learning and understanding** | **Suggested teaching and learning activities** | **Resources** |
| **9.1 The Earth, sun and moon interact with each other**  **(pages 156–157)** | *Science Understanding*  ACSSU115  *Science Inquiry Skills*  ACSIS124  ACSIS129  ACSIS131  ACSIS132  ACSIS133 | By the end of this unit, students should be able to:  • define solar energy, solar system, asteroids, axis, leap year and solar eclipse  • describe the differences between a total and partial solar eclipse  • relate a year to the movement of the Earth. | **Challenge 9.1**  *Modelling how the Earth moves in space*  Students model the movement of the Earth around the Sun and demonstrate night and day using a light globe and a ball.  **Day and night**  Students can find out a little more about how day and night occur on Earth at the BBC Bitesize website. | **Oxford Science 7 WA resources**  • Check your learning, page 157  • Challenge 9.1, page 211 |
| **Additional resources**  BBC Bitesize Science overview of day and night can be found:  <http://www.bbc.co.uk/bitesize/ks3/science/environment_earth_universe/astronomy_space/revision/4/> |
| **9.2 The moon reflects the sun’s light**  **(pages 158–159)** | *Science Understanding*  ACSSU115  *Science as a Human Endeavour*  ACSHE119  ACSHE223  *Science Inquiry Skills*  ACSIS124  ACSIS129  ACSIS131  ACSIS132  ACSIS133 | By the end of this unit, students should be able to:  • define phases of the moon and lunar eclipse  • name and describe the different phases of the moon  • explain the difference between a solar and lunar eclipse  • relate the phase of the moon with the relative positions of the Earth and the Sun. | **Challenge 9.2**  *Modelling the phases of the moon*  Students use a light globe, basketball and tennis ball to model the phases of the moon.  **Moon phases**  Students can extend their understanding of the movement of the moon with a range of short interactive quizzes and worksheets found at the University of Nebraska-Lincoln website. | **Oxford Science 7 WA resources**  • Check your learning, page 159  • Challenge 9.2, page 212 |
| **Additional resources**  The University of Nebraska-Lincoln website has a number of interactives and worksheets involving the phases of the moon.  <http://astro.unl.edu/interactives/> |

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| **9.3 Seasons are caused by the tilt of the Earth**  **(pages 160–161)** | *Science Understanding*  ACSSU115  *Science as a Human Endeavour*  ACSHE119  *Science Inquiry Skills*  ACSIS129  ACSIS131  ACSIS132  ACSIS133 | By the end of this unit, students should be able to:  • define solstice and equinox  • relate the different seasons to the relative positions of the Sun and Earth. | **Challenge 9.3**  *Modelling the seasons*  Students model the seasons on Earth using a light globe and a basketball.  **Understanding seasons**  Students can find out more about the different conditions of the seasons, including the angle of sunlight, at the University of Nebraska-Lincoln website. | **Oxford Science 7 WA resources**  • Check your learning, page 161  • Challenge 9.3, page 212 |
| **Additional resources**  The University of Nebraska-Lincoln website has a stimulator of the seasons on Earth at:  <http://astro.unl.edu/naap/motion1/animations/seasons_ecliptic.html> |
| **9.4 Astronomers explore space**  **(pages 162–163)** | *Science Understanding*  ACSSU115  *Science as a Human Endeavour*  ACSHE119  ACSHE223  *Science Inquiry Skills*  ACSIS133 | By the end of this unit, students should be able to:  • define telescope, astronomer and astronomy  • provide examples of some information that was learnt about the solar system through the use of telescopes and other technology  • relate developments in scientific understanding to developments in technology. | **Hubble Space Telescope**  Students can investigate the history and importance of the Hubble Space Telescope.  **Mars Exploration Rovers**  Student can investigate the Mars Exploration Rover mission at the NASA website. | **Oxford Science 7 WA resources**  • Extend your understanding, page 163 |
| **Additional resources**  The HubbleSite has lots of information about the space telescope including a gallery of some of the images taken:  <http://hubblesite.org/>  This NASA website has information about Mars Exploration Rovers:  <http://mars.nasa.gov/mer/home/> |
| **9 Review**  **(pages 164–166)** | *Science Understanding*  ACSSU115  *Science as a Human Endeavour*  ACSHE119  *Science Inquiry Skills*  ACSIS133 | By the end of this unit, students should be able to:  • define all Key Words listed on page 166  • explain that phenomena like seasons on Earth and eclipses are caused by the relative positions of the sun, Earth and moon  • identify areas of personal strengths and weaknesses in their knowledge and understanding of the topic. | **Revision activities**  • Students could play celebrity heads with the Key Words list.  • Students can make dominoes with Key Words on one end and definitions/diagrams/examples on the other end.  • Students can create mind maps, Venn diagrams or other graphic organisers to summarise the key concepts of this chapter.  • Peer teaching: students can work in groups to reteach the content of the unit to the class for the purpose of revision. Each group could be allocated a double-page spread to summarise. | **Oxford Science 7 WA resources**  • Review questions, pages 164–165  • Research topics, page 165  • Key Words list, page 166 |