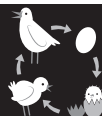


The growth and survival of living things are affected by physical conditions of their environment (ACSSU094) AC		Pages
Lesson 1 What are the world's major biomes and what are the physical conditions like in each?	Students investigate different biomes around the world and the types of plants and animals that live in each, using an interactive game on the computer. They then compare the amount of sunlight and precipitation to the plants and animals that live in each major land biome, to predict how the physical conditions of an environment affect the plants and animals that live in it.	4-7
Lesson 2 How does the temperature and precipitation of an environment affect the growth of plants in different biomes?	Students plan and conduct an experiment to test how the amount of sunlight and rainfall an environment receives, affects grass growth in that environment. Students identify which physical conditions will be controlled or changed, and decide how they will measure the grass growth. Students plant their grass seeds according to their experiment plan and monitor the results throughout Lessons 3-6.	8-11
Lesson 3 How do the physical conditions of an environment affect the growth of fungi, such as yeast?	Students explore different types of fungi, including mushrooms, yeasts and moulds. They plan and conduct an experiment to test yeast growth in water that is 10 °C, 30 °C and 50 °C, identifying the controlled, changed and measured variables before testing. Students analyse their results to determine why fungi thrives in tropical rainforests.	12-15
Lesson 4 How do the physical conditions in a rainforest affect plant and animal life?	In small groups, students identify the plants and animals that grow in each layer of a tropical rainforest and allocate a layer to each group member. Individually, students conduct online research about one plant and one animal that live in their allocated layer. Students then share their research with their group.	16-19
Lesson 5 How do the physical conditions in extremely cold environments such as the Arctic tundra, affect plant and animal life?	Students plan and conduct an experiment to test how blubber helps sea animals survive in extremely cold environments, such as the Arctic tundra. Students also learn about other adaptations of plants and animals that allow them to survive in the physical conditions experienced by polar biomes.	20-22
Lesson 6 How do the physical conditions in hot and dry environments such as deserts and grasslands, affect plant and animal life?	Students conduct online research to identify how meerkats have adapted to survive in the harsh conditions of the Kalahari Desert in Africa, which experiences both desert and savanna conditions. Students create a digital presentation to show how meerkats survive the fluctuating temperatures, limited rainfall/ water availability, wide open spaces and large amounts of sun exposure.	23-25
Summative assessment	Students apply their knowledge of how the physical conditions of an environment affect the survival of plants and animals in that environment.	26-28
STEM project Claymation	Students design and create a claymation for young children, telling a short story of a squirrel on its perilous journey through a coniferous forest in the harsh winter conditions, to find its stored acorns. The story must be set after an oak masting in which the squirrel has stored its food in several locations within one section of forest.	29-36



Curriculum scope and sequence

	Lesson							
	1	2	3	4	5	6	Assessment	STEM project
SCIENCE UNDERSTANDING								
The growth and survival of living things are affected by physical conditions of their environment (ACSSU094) AC	✓	✓	✓	✓	✓	✓	✓	✓
SCIENCE AS A HUMAN ENDEAVOUR								
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098) AC		✓	✓		✓	✓		
Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100) AC		✓	✓			✓		
SCIENCE INQUIRY SKILLS								
Questioning and predicting								
With guidance, pose clarifying questions and make predictions about scientific investigations (AC SIS232) AC	✓	✓	✓	✓	✓	✓		
Planning and conducting								
Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (AC SIS103) AC	✓	✓	✓	✓	✓	✓		✓
Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (AC SIS104) AC		✓	✓		✓	✓		
Processing and analysing data and information								
Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS107) AC	✓	✓	✓	✓	✓	✓	✓	✓
Compare data with predictions and use as evidence in developing explanations (AC SIS221) AC			✓		✓	✓		✓
Evaluating								
Reflect on and suggest improvements to scientific investigations (AC SIS108) AC			✓		✓	✓		✓
Communicating								
Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (AC SIS110) AC	✓	✓	✓	✓	✓	✓	✓	✓



Changes to materials can be reversible or irreversible (ACSSU095) AC		Pages
Lesson 1 What are reversible and irreversible changes?	Students compare and contrast simple examples of different changes to materials to predict the meaning of a reversible and irreversible change. After researching the correct meanings, students use pieces of crepe paper to demonstrate reversible and irreversible changes.	40-43
Lesson 2 What methods are used to change the state of water? Are these changes reversible or irreversible?	Students watch a video to revise changes to a substance's state of matter. They then plan and conduct an experiment that uses melting, heating, evaporating, condensing and cooling to move water from its solid state in one container to its liquid state in another container, using only heat from the sun. <i>Note: This lesson will need to be conducted in the morning to allow time for observations throughout the day.</i>	44-46
Lesson 3 What changes occur when a substance is dissolved to form a solution? Is this change reversible or irreversible?	Students watch a video about dissolving and solutions and then plan and conduct an experiment to test if sugar, sand, flour, salt and pepper dissolve in tap water. They predict which of the mixtures they think can be reversed and which they think are irreversible, and place each jar in a sunny position to evaporate. Students create a presentation to explain dissolving and evaporating as reversible changes.	47-49
Lesson 4 What changes occur when you bake biscuits? Are these changes reversible or irreversible?	In groups, students follow a recipe to bake a batch of biscuits to identify if cooking is a reversible or irreversible change. They record data and observations before, during and after the cooking process to determine if a chemical change has taken place. Students then watch a video to understand why cooking is an irreversible change.	50-54
Lesson 5 What is burning? Is it a reversible or irreversible change?	Students revise melting as a reversible change, to predict if burning is reversible or irreversible. They conduct a candle burning experiment to observe the changes made to the wax and the wick. Students use the signs of a chemical change from the previous lesson to determine if burning is a reversible or irreversible change.	55-56
Lesson 6 What is rusting? Is it a reversible or irreversible change?	Students plan and conduct an experiment to see how rust forms on steel wool and to identify the elements that are required for rusting to occur. Students use the signs of a chemical change to determine if rusting is a reversible or irreversible change.	57-59
Summative assessment	Students apply their knowledge of reversible and irreversible changes to answer questions about real-life situations.	60-62
STEM project A crystal castle	Students design and create a miniature model of a crystal castle for a movie set, that can withstand warm, dry environments without melting, while the movie is being filmed. They create and share a blog post giving visual, written and verbal step-by-step instructions of how to create a miniature crystal castle using only reversible changes.	63-70



Curriculum scope and sequence

	Lesson							
	1	2	3	4	5	6	Assessment	STEM project
SCIENCE UNDERSTANDING								
Changes to materials can be reversible or irreversible (ACSSU095) AC	✓	✓	✓	✓	✓	✓	✓	✓
SCIENCE AS A HUMAN ENDEAVOUR								
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098) AC		✓	✓			✓		✓
Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100) AC	✓	✓	✓	✓	✓	✓		✓
SCIENCE INQUIRY SKILLS								
Questioning and predicting								
With guidance, pose clarifying questions and make predictions about scientific investigations (AC SIS232) AC	✓	✓	✓	✓	✓	✓		✓
Planning and conducting								
Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (AC SIS103) AC	✓	✓	✓	✓	✓	✓		✓
Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (AC SIS104) AC			✓		✓			✓
Processing and analysing data and information								
Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS107) AC	✓	✓	✓	✓	✓	✓	✓	✓
Compare data with predictions and use as evidence in developing explanations (AC SIS221) AC	✓	✓	✓	✓	✓	✓		✓
Evaluating								
Reflect on and suggest improvements to scientific investigations (AC SIS108) AC				✓		✓		✓
Communicating								
Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (AC SIS110) AC	✓	✓	✓	✓	✓	✓	✓	✓




Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096) AC		Pages
Lesson 1 What are extreme weather events and sudden geological changes? Are these the same as natural disasters?	Students identify natural disasters caused by extreme weather events such as cyclones, floods and droughts, and those caused by sudden geological changes, such as volcanic eruptions, and why it is important for people to be prepared for these events.	74-76
Lesson 2 What are volcanoes and how do they change Earth's surface? Is it important for people in Australia to be prepared for a volcanic eruption?	Students learn what a volcano is and how it is formed. They then conduct online research about a specific volcano to determine the effects it had on Earth's surface and the living things in the area. Students also investigate how people can prepare for a volcanic eruption.	77-79
Lesson 3 What are earthquakes and how do they change Earth's surface? Is it important for people in Australia to be prepared for an earthquake?	Students conduct online research about what an earthquake is, how it occurs and how it affects Earth's surface and the living things in the area. They also look at an interactive map to find where earthquakes have occurred in Australia and why we should all be prepared for an earthquake.	80-82
Lesson 4 What are tsunamis and how do they form? Does the magnitude of an earthquake affect the size of a resulting tsunami?	Students identify what a tsunami is, how they are formed from earthquakes on the ocean floor and the effects they can have on a coastal city. They also plan and conduct an experiment to test how the magnitude of an earthquake affects the size of the tsunami.	83-85
Lesson 5 What are cyclones and how do they change Earth's surface? How do scientists monitor cyclones to minimise the effects of this natural disaster?	Students learn what a tropical cyclone is and how it is formed. They then conduct online research about a specific tropical cyclone that has occurred in Australia to determine the effects it had on Earth's surface and the living things in the area. Students also investigate how meteorologists track these storms to warn people of their approach.	86-87
Lesson 6 What is a drought and how does it affect the landscape? How does flash flooding occur after a drought?	Students conduct online research to learn about the effects of droughts and floods on Earth's surface and the living things in the area. They also investigate how heavy storms can cause flash flooding in drought-stricken areas.	88-89
Assessment	Students apply their knowledge of sudden geological changes and extreme weather events to describe how these natural disasters affect Earth's surface and the living things in the area.	90-92
STEM project <i>The three little pigs sequel</i>	Students design and create a landscape scene with the three little pigs' houses in three different natural-disaster zones, and an evacuation centre in a safe location. Create a movie sequel to the story of <i>The three little pigs</i> , that teaches the little pigs about the dangers of building a house in areas that are commonly affected by natural disasters.	93-100



Curriculum scope and sequence

	Lesson							
	1	2	3	4	5	6	Assessment	STEM project
SCIENCE UNDERSTANDING								
Sudden geological changes and extreme weather events can affect Earth's surface (ACSSU096) AC	✓	✓	✓	✓	✓	✓	✓	✓
SCIENCE AS A HUMAN ENDEAVOUR								
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098) AC		✓	✓	✓	✓	✓		✓
Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100) AC	✓	✓	✓	✓	✓	✓	✓	✓
SCIENCE INQUIRY SKILLS								
Questioning and predicting								
With guidance, pose clarifying questions and make predictions about scientific investigations (AC SIS232) AC	✓	✓	✓	✓	✓	✓		✓
Planning and conducting								
Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (AC SIS103) AC	✓	✓	✓	✓	✓	✓		✓
Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (AC SIS104) AC				✓				✓
Processing and analysing data and information								
Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS107) AC	✓	✓	✓	✓	✓	✓	✓	✓
Compare data with predictions and use as evidence in developing explanations (AC SIS221) AC		✓	✓	✓		✓		✓
Evaluating								
Reflect on and suggest improvements to scientific investigations (AC SIS108) AC				✓		✓		✓
Communicating								
Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (AC SIS110) AC	✓	✓	✓	✓	✓	✓	✓	✓



Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources (ACSSU097) 		Pages
Lesson 1 What non-renewable energy sources are used to generate electricity? How do fossil fuels generate electricity?	Students are introduced to various sources of energy used in the generation of electricity through an interactive game, and then focus on fossil fuels. Students create a flowchart to represent the process.	104-106
Lesson 2 What renewable energy sources are used to generate electricity? How do wind and water generate electricity?	The focus of this lesson is non-renewable sources of energy by way of wind and water energy. Students create flowcharts to represent the processes of turning wind and water energy into electricity, before creating a working water turbine.	107-109
Lesson 3 How does solar energy generate electricity? How can the flow of electricity be shown in a circuit diagram?	Students investigate solar energy and solar thermal energy as generators of electricity. Students then work out how to light up an LED using a mini solar panel and a simple electrical circuit. Students are also introduced to a basic circuit diagram.	110-113
Lesson 4 What materials can be used to make an electrical circuit? What materials are conductors and insulators of electricity?	Students predict and investigate different materials to determine if they are good electrical conductors or if they are electrical insulators. Students will create paper circuit designs and test five materials to see if they allow electricity to pass through and light up an LED.	114-116
Lesson 5 What is a switch and how does it work? How is it shown in a circuit diagram?	Students investigate how to create a switch using drawing pins and a paperclip, and how it works in an electrical circuit to turn a light on and off, by testing different connection combinations of the components. Students also learn how to draw a circuit diagram with a switch symbol.	117-120
Lesson 6 How does a light bulb work? What are the features of light globes?	Students explore the incandescent light globe and label its features. Particular attention is paid to the design of the filament and the tungsten it is made from. Students create their own light globe to demonstrate the electrical circuit and test three materials as the filament.	121-124
Summative assessment	Students use their science knowledge to answer questions and draw flowcharts and diagrams about the sources used to generate electricity, and about electrical circuits.	125-127
STEM project Buzz of electricity	Students apply their knowledge of circuits to design and create buzzers to be used in a quiz show, along with a set of quiz questions to be used digitally and displayed on the whiteboard.	128-134



Curriculum scope and sequence

	Lesson							
	1	2	3	4	5	6	Assessment	STEM project
SCIENCE UNDERSTANDING								
Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources (ACSSU097) AC	✓	✓	✓	✓	✓	✓	✓	✓
SCIENCE AS A HUMAN ENDEAVOUR								
Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions (ACSHE098) AC	✓	✓		✓	✓	✓		
Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100) AC	✓	✓	✓			✓		
SCIENCE INQUIRY SKILLS								
Questioning and predicting								
With guidance, pose clarifying questions and make predictions about scientific investigations (ACSI232) AC	✓	✓	✓	✓	✓	✓		
Planning and conducting								
Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks (ACSI103) AC	✓	✓	✓	✓	✓	✓		✓
Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate (ACSI104) AC			✓	✓		✓		
Processing and analysing data and information								
Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (ACSI107) AC	✓	✓	✓	✓	✓	✓	✓	✓
Compare data with predictions and use as evidence in developing explanations (ACSI221) AC	✓	✓	✓	✓	✓	✓		
Evaluating								
Reflect on and suggest improvements to scientific investigations (ACSI108) AC	✓	✓		✓	✓	✓		
Communicating								
Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSI110) AC	✓	✓	✓	✓	✓	✓	✓	✓