

Science

Reception to year 10

Version 1.0



Copyright

© Department for Education, the Government of South Australia 2026.

Note this document may be subject to change. To view the latest version, visit <https://www.sacurriculum.sa.edu.au/>

Attribution

The SA Curriculum for public education is adapted from the Australian Curriculum, © Australian Curriculum, Assessment and Reporting Authority (**ACARA**) 2010 to present, unless otherwise indicated. This material was downloaded from the Australian Curriculum website (<http://www.australiancurriculum.edu.au/>) (**Website**) (accessed 2024) and was modified. The material is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0) (<https://creativecommons.org/licenses/by/4.0>). Version updates are tracked in the ‘Curriculum version history’ section on the ‘About the Australian Curriculum’ page (<https://www.australiancurriculum.edu.au/help/f-10-curriculum-overview/version-history>) of the Australian Curriculum website.

ACARA does not endorse any product that uses the Australian Curriculum or make any representations as to the quality of such products. Any product that uses material published on this website should not be taken to be affiliated with ACARA or have the sponsorship or approval of ACARA. It is up to each person to make their own assessment of the product, taking into account matters including, but not limited to, the version number and the degree to which the materials align with the content descriptions and achievement standards (where relevant). Where there is a claim of alignment, it is important to check that the materials align with the content descriptions and achievement standards (endorsed by all education Ministers), not the elaborations (examples provided by ACARA).

Terminology

The South Australian Department for Education uses the term ‘Aboriginal’ to refer to people who identify as Aboriginal, Torres Strait Islander, or both Aboriginal and Torres Strait Islander. This term is preferred by Aboriginal South Australians and the department.

SA Curriculum Framework: Essential Learning summary

Why Science

Scientific thinking and practices empower us to notice, explore and understand how our world works, fostering an appreciation of the dynamic interconnectedness of complex systems. By investigating phenomena and continually seeking answers to questions, science unites curiosity with creativity and enables us to critically engage with evidence, equipping us to contribute as informed citizens to a sustainable future.

Dispositions

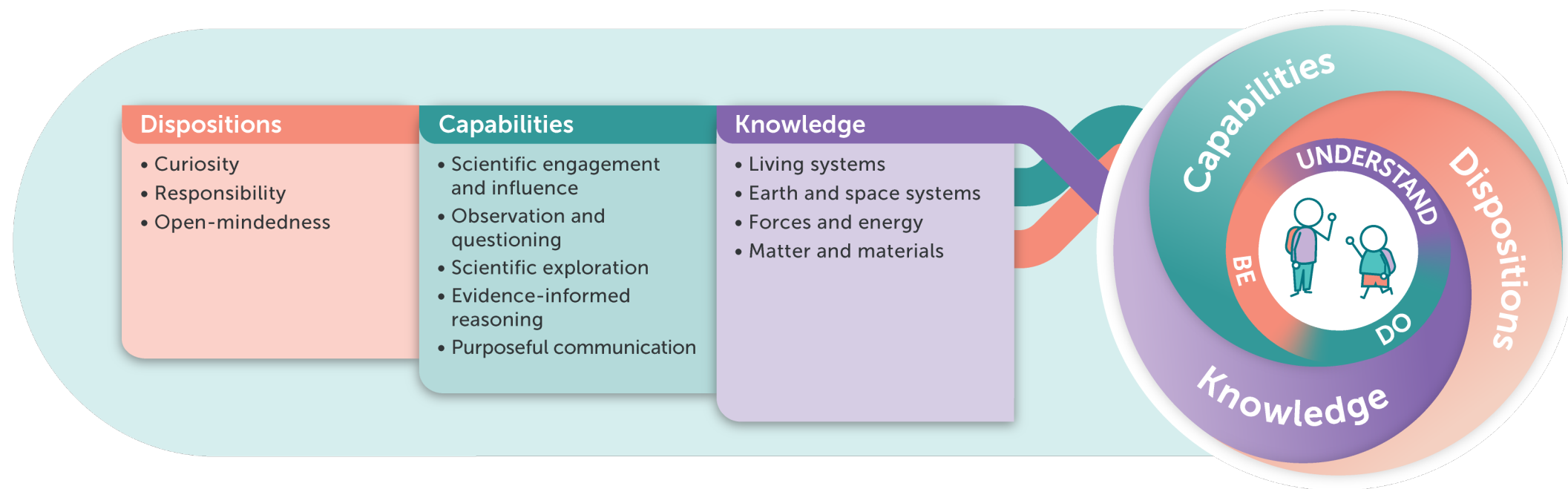
Curiosity	Responsibility	Open-mindedness
What it is: Being eager to explore, ask questions and understand the things you wonder about. Why it matters: Being curious sparks an eagerness to notice and question, laying the foundation for testing and verifying accepted knowledge and exploring emerging ideas driving ongoing discovery.	What it is: Being accountable for your actions, fulfilling your commitments and considering how your choices affect yourself, others and the environment. Why it matters: Being responsible ensures that scientific knowledge is created and used with integrity, enabling us to weigh evidence carefully, be honest about uncertainty, and recognise the impacts that decisions have on people, communities and the environment. It guides us to develop and apply science in ways that uphold fairness and equity, support wellbeing, and contribute to sustainability for current and future generations.	What it is: Willing to consider diverse ideas and perspectives and to question one’s own beliefs and biases. Why it matters: Being open-minded fosters critical reasoning, adaptability, and the confidence to take calculated risks in the face of uncertainty. Considering evidence fairly, questioning assumptions, and valuing diverse perspectives fosters collaboration and respectful dialogue, essential for addressing problems and making informed decisions.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
What it is: Exploring how science evolves, inspired by curiosity, creativity and collaboration across diverse, interdisciplinary contexts. This includes building knowledge about the natural world and recognising how scientific ideas both influence and are influenced by social, cultural and ethical factors. Why it matters: Considering how evidence, ethics and context shape discovery, innovation and decision making fosters responsible application of science. It strengthens learners’ capacity to respond thoughtfully and collaboratively to contemporary and future challenges.	What it is: Observing the world to identify patterns, relationships and anomalies and formulating questions that interrogate knowledge and ideas. Why it matters: Driven by curiosity, learners notice what is familiar and what is unexpected, prompting ‘why’ and ‘how’ questions. It stimulates the ongoing review of ideas and understandings.	What it is: Actively and ethically investigating phenomena through a dynamic process of observation, research, modelling and experimentation to collect, analyse and interpret data, refining methods as new insights emerge. Why it matters: The development of critical thinking and inquiry skills prepares learners to navigate and interpret the world through a scientific lens. It emphasises the importance of ethical considerations and methodological rigour in research.	What it is: Using evidence to draw informed conclusions and create reasoned arguments to support explanations. This includes evaluating the fairness of investigations, judging quality and relevance of evidence and recognising uncertainty, to support or refute claims. Why it matters: Applying these practices builds the capacity to make informed judgements and apply scientific reasoning to complex, real-world problems. It encourages a deeper understanding of scientific principles and surfaces further research questions.	What it is: Articulating scientific concepts and findings with clarity and precision, tailoring communication to effectively engage and inform diverse audiences. It includes using models, various delivery modes, and scientific vocabulary to represent and explain ideas accurately. Why it matters: Effective communication is crucial for sharing and advancing scientific knowledge. It supports collaboration and raises public awareness about scientific issues, enabling informed participation in community and global discussions.

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
What it is: Developing an understanding of the life and interdependence of living organisms, investigating their structures, functions, behaviours and interactions with the environment. It explores evolution, adaptation, biodiversity and underlying principles of life’s origins and continuity. Why it matters: A strong understanding and appreciation of the complexity of nature is crucial for determining the impact of changes to systems. These understandings enable us to make informed decisions about caring for ourselves, others and the environment, fostering responsibility for the world around us.	What it is: Developing an understanding of the universe’s evolution, the interactions of celestial bodies within the solar system and Earth’s geological history, resources and the interdependencies of its systems. Why it matters: A strong understanding and appreciation of Earth’s unique systems and their interactions allows us to understand the impact of human activity on sustainability. Identifying important resources and exploring beyond Earth drives technological progress and enhances our comprehension of the universe.	What it is: Developing an understanding of the fundamental principles necessary for the transfer and transformation of energy, the impact of forces on objects and the interrelationships between forces and energy. Why it matters: A strong understanding and appreciation of the nature of forces and energy enables us to improve our daily lives by simplifying physical tasks and driving technological advancements.	What it is: Developing an understanding of the composition, structure and properties of substances and utilising explanatory models to represent matter at the micro and macro level. It investigates the behaviour and interactions of subatomic particles, atoms, molecules and compounds. Why it matters: A strong understanding and appreciation of why matter behaves in specific ways plays a crucial role in developing new substances, materials and processes to improve the quality of life and to make informed decisions to address complex challenges.



The dispositions, capabilities and knowledge embedded in the SA Curriculum: Science

Science – Reception

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: - notice, observe and explore scientific phenomena to satisfy an interest - notice and explore something unfamiliar or of interest to them to find out more about a scientific phenomenon - ask questions about changes they notice to resolve uncertainty about the environment around them.	This disposition may be evident when learners, for example: - use materials thoughtfully to minimise waste during scientific exploration - consider possible impacts on living things and places to make choices when exploring scientifically - modify their choices in response to possible effects on themselves or others during shared science activities.	This disposition may be evident when learners, for example: - consider different scientific ideas or explanations in response to patterns and changes they observe - reconsider their ideas in response to new scientific observations - consider more than one possible explanation to make sense of what they observe scientifically.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: explore the ways people make and use observations and questions to learn about the natural world. AC9SFH01	Learners develop this capability when they: pose questions and make predictions based on experiences. AC9SFI01	Learners develop this capability when they: - engage in investigations safely and make observations using their senses AC9SFI02 - represent observations in provided templates and identify patterns with guidance. AC9SFI03	Learners develop this capability when they: compare observations with predictions with guidance. AC9SFI04	Learners develop this capability when they: share questions, predictions, observations and ideas with others. AC9SFI05

Knowledge

Living systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions		
Plants and animals can be grouped based on their external features. Learners: observe external features of plants and animals and describe ways they can be grouped based on these features. AC9SFU01	The motion of an object is influenced by its properties. Learners: describe how objects move and how factors including their size, shape or material influence their movement. AC9SFU02	There are many different materials, and each material has its own distinct observable properties. Learners: recognise that objects can be composed of different materials and describe the observable properties of those materials. AC9SFU03

Science – Year 1

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: - notice, observe and explore scientific phenomena to satisfy an interest - notice and explore something unfamiliar or of interest to them to find out more about a scientific phenomenon - ask questions about changes they notice to resolve uncertainty about the environment around them.	This disposition may be evident when learners, for example: - use materials thoughtfully to minimise waste during scientific exploration - consider possible impacts on living things and places to make choices when exploring scientifically - modify their choices in response to possible effects on themselves or others during shared science activities.	This disposition may be evident when learners, for example: - consider different scientific ideas or explanations in response to patterns and changes they observe - reconsider their ideas in response to new scientific observations - consider more than one possible explanation to make sense of what they observe scientifically.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: describe how people use science in their daily lives, including using patterns to make scientific predictions. AC9S1H01	Learners develop this capability when they: pose questions to explore observed simple patterns and relationships and make predictions based on experiences. AC9S1I01	Learners develop this capability when they: - suggest and follow safe procedures to investigate questions and test predictions AC9S1I02 - make and record observations, including informal measurements, using digital tools as appropriate AC9S1I03 - sort and order data and information and represent patterns, including with provided tables and visual or physical models. AC9S1I04	Learners develop this capability when they: compare observations with predictions and others’ observations, consider if investigations are fair and identify further questions with guidance. AC9S1I05	Learners develop this capability when they: write and create texts to communicate observations, findings and ideas, using everyday and scientific vocabulary. AC9S1I06

Knowledge

Knowledge		
Living systems	Earth and space systems	Forces and energy
Conceptual understandings and supporting content descriptions		
Plants and animals depend on their surroundings to meet their basic needs. Learners: • identify the basic needs of plants and animals, including air, water, food or shelter, and describe how the places they live meet those needs. AC9S1U01	Daily and seasonal changes in the environment affect plants and animals. Learners: • describe daily and seasonal changes in the environment and explore how these changes affect everyday life. AC9S1U02	Pushes and pulls can change the motion and shape of an object. Learners: • describe pushes and pulls in terms of strength and direction and predict the effect of these forces on objects’ motion and shape. AC9S1U03

Science – Year 2

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: - notice, observe and explore scientific phenomena to satisfy an interest - notice and explore something unfamiliar or of interest to them to find out more about a scientific phenomenon - ask questions about changes they notice to resolve uncertainty about the environment around them.	This disposition may be evident when learners, for example: - use materials thoughtfully to minimise waste during scientific exploration - consider possible impacts on living things and places to make choices when exploring scientifically - modify their choices in response to possible effects on themselves or others during shared science activities.	This disposition may be evident when learners, for example: - consider different scientific ideas or explanations in response to patterns and changes they observe - reconsider their ideas in response to new scientific observations - consider more than one possible explanation to make sense of what they observe scientifically.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: describe how people use science in their daily lives, including using patterns to make scientific predictions. AC9S2H01	Learners develop this capability when they: pose questions to explore observed simple patterns and relationships and make predictions based on experiences. AC9S2I01	Learners develop this capability when they: - suggest and follow safe procedures to investigate questions and test predictions AC9S2I02 - make and record observations, including informal measurements, using digital tools as appropriate AC9S2I03 - sort and order data and information and represent patterns, including with provided tables and visual or physical models. AC9S2I04	Learners develop this capability when they: compare observations with predictions and others' observations, consider if investigations are fair and identify further questions with guidance. AC9S2I05	Learners develop this capability when they: write and create texts to communicate observations, findings and ideas, using everyday and scientific vocabulary. AC9S2I06

Knowledge

Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions		
The changing position of the Sun, Moon, planets and stars in the sky produce observable patterns on Earth. Learners: recognise Earth is a planet in the solar system and identify patterns in the changing position of the sun, moon, planets and stars in the sky. AC9S2U01	Sounds are caused by something vibrating and can be produced in a variety of ways. Learners: explore different actions to make sounds and how to make a variety of sounds, and recognise that sound energy causes objects to vibrate. AC9S2U02	Materials can be physically changed in a variety of ways without changing their composition. Learners: recognise that materials can be changed physically without changing their material composition and explore the effect of different actions on materials including bending, twisting, stretching and breaking into smaller pieces. AC9S2U03

Science – Year 3

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • express uncertainty about scientific ideas, models or theories and identify what they need to find out to begin an inquiry process • seek out scientific information to investigate uncertainty in, test or build on their predictions • pursue scientific inquiry into something unexpected or unresolved in their observations about forces and energy.	This disposition may be evident when learners, for example: • record and share observations accurately to represent scientific findings truthfully • adjust their scientific exploration in response to possible impacts on people, living things or places • question how scientific information is generated or used to avoid possible harmful consequences for others or the environment.	This disposition may be evident when learners, for example: • revise their ideas or understanding in response to new scientific observations, research or discoveries • consider alternative explanations to make sense of scientific observations or data • revise a scientific method or explanation in response to different findings or reasoning.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • examine how people use data to develop scientific explanations AC9S3H01 • consider how people use scientific explanations to meet a need or solve a problem. AC9S3H02	Learners develop this capability when they: • pose questions to explore observed patterns and relationships and make predictions based on observations. AC9S3I01	Learners develop this capability when they: • use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment AC9S3I02 • follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate AC9S3I03	Learners develop this capability when they: • compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions. AC9S3I05	Learners develop this capability when they: • write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate. AC9S3I06

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
		construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns. AC9S3I04		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
Living things have unique life cycles and can be distinguished from non-living things based on their characteristics. Learners: compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals. AC9S3U01	Earth’s resources, including soil, rocks and minerals, have specific properties and uses. Learners: compare the observable properties of soils, rocks and minerals and investigate why they are important Earth resources. AC9S3U02	When heat energy transfers from one object to another it can result in temperature changes. Learners: identify sources of heat energy and examine how temperature changes when heat energy is transferred from one object to another. AC9S3U03	Solids and liquids have observable properties; a change of state between solid and liquid can be caused by heat transfer. Learners: investigate the observable properties of solids and liquids and how adding or removing heat energy leads to a change of state. AC9S3U04

Science – Year 4

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • express uncertainty about scientific ideas, models or theories and identify what they need to find out to begin an inquiry process • seek out scientific information to investigate uncertainty in, test or build on their predictions • pursue scientific inquiry into something unexpected or unresolved in their observations about forces and energy.	This disposition may be evident when learners, for example: • record and share observations accurately to represent scientific findings truthfully • adjust their scientific exploration in response to possible impacts on people, living things or places • question how scientific information is generated or used to avoid possible harmful consequences for others or the environment.	This disposition may be evident when learners, for example: • revise their ideas or understanding in response to new scientific observations, research or discoveries • consider alternative explanations to make sense of scientific observations or data • revise a scientific method or explanation in response to different findings or reasoning.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • examine how people use data to develop scientific explanations AC9S4H01 • consider how people use scientific explanations to meet a need or solve a problem. AC9S4H02	Learners develop this capability when they: • pose questions to explore observed patterns and relationships and make predictions based on observations. AC9S4I01	Learners develop this capability when they: • use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment AC9S4I02 • follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate AC9S4I03	Learners develop this capability when they: • compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions. AC9S4I05	Learners develop this capability when they: • write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate. AC9S4I06

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
		construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns. AC9S4I04		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
Organisms obtain food and energy in different ways and are interdependent on one another within a habitat. Learners: explain the roles and interactions of consumers, producers and decomposers within a habitat and how food chains represent feeding relationships. AC9S4U01	Water cycles and moves through the environment. Learners: identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and ocean; precipitation; evaporation; and condensation. AC9S4U02	Forces can be exerted by one object on another, influencing the motion of objects. Learners: identify how forces can be exerted by one object on another and investigate the effect of frictional, gravitational and magnetic forces on the motion of objects. AC9S4U03	Properties of materials determine their use. Learners: examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use. AC9S4U04

Science – Year 5

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: - notice patterns they find interesting and question their occurrence to deepen their understanding of a scientific phenomenon or concept - seek alternative explanations or perspectives for natural phenomena to explore what they might not yet have considered - return to puzzling scientific observations or results to build an explanation that satisfies their questions.	This disposition may be evident when learners, for example: - modify a scientific investigation in response to possible impacts on people, living things or the environment - consider possible consequences of human actions to inform decisions about scientific or environmental issues - consider perspectives that are represented or missing, and how different groups may be impacted by this to make more informed judgements about a scientific issue.	This disposition may be evident when learners, for example: - consider alternative perspectives in response to scientific evidence that challenges their existing ideas or understanding - revise their scientific questions in response to what they observe or learn - consider multiple explanations to avoid settling too quickly on one interpretation of scientific observations.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: - examine why advances in science are often the result of collaboration or build on the work of others AC9S5H01 - investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions. AC9S5H02	Learners develop this capability when they: pose investigable questions to identify patterns and test relationships and make reasoned predictions. AC9S5I01	Learners develop this capability when they: - plan and conduct repeatable investigations to answer questions, including, as appropriate, deciding the variables to be changed, measured and controlled in fair tests; describing potential risks; planning for the safe use of equipment and materials; and identifying required permissions to conduct investigations on Country/Place AC9S5I02 - use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate AC9S5I03	Learners develop this capability when they: compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions. AC9S5I05	Learners develop this capability when they: write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate. AC9S5I06

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
		construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships. AC9S5I04		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
The form and behaviour of living things enables their survival in specific habitats. Learners: examine how particular structural features and behaviours of living things enable their survival in specific habitats. AC9S5U01	Earth’s surface is undergoing constant change through natural and human induced processes. Learners: describe how weathering, erosion, transportation and deposition cause slow or rapid change to Earth’s surface. AC9S5U02	Light can be produced by a variety of sources, it travels in straight lines and can be reflected, refracted and absorbed. Learners: identify sources of light, recognise that light travels in a straight path and describe how shadows are formed and light can be reflected and refracted. AC9S5U03	All substances are made of particles. The movement and arrangement of particles in solids, liquids and gases influences their properties. Learners: explain observable properties of solids, liquids and gases by modelling the motion and arrangement of particles. AC9S5U04

Science – Year 6

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: - notice patterns they find interesting and question their occurrence to deepen their understanding of a scientific phenomenon or concept - seek alternative explanations or perspectives for natural phenomena to explore what they might not yet have considered - return to puzzling scientific observations or results to build an explanation that satisfies their questions.	This disposition may be evident when learners, for example: - modify a scientific investigation in response to possible impacts on people, living things or the environment - consider possible consequences of human actions to inform decisions about scientific or environmental issues - consider perspectives that are represented or missing, and how different groups may be impacted by this to make more informed judgements about a scientific issue.	This disposition may be evident when learners, for example: - consider alternative perspectives in response to scientific evidence that challenges their existing ideas or understanding - revise their scientific questions in response to what they observe or learn - consider multiple explanations to avoid settling too quickly on one interpretation of scientific observations.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: - examine why advances in science are often the result of collaboration or build on the work of others AC9S6H01 - investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions. AC9S6H02	Learners develop this capability when they: pose investigable questions to identify patterns and test relationships and make reasoned predictions. AC9S6I01	Learners develop this capability when they: - plan and conduct repeatable investigations to answer questions including, as appropriate, deciding the variables to be changed, measured and controlled in fair tests; describing potential risks; planning for the safe use of equipment and materials; and identifying required permissions to conduct investigations on Country/Place AC9S6I02 - use equipment to observe, measure and record data with reasonable precision, using digital tools as appropriate AC9S6I03	Learners develop this capability when they: compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions. AC9S6I05	Learners develop this capability when they: write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate. AC9S6I06

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
		construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships. AC9S6I04		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
Physical conditions of a habitat influence the growth and survival of living things. Learners: investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions. AC9S6U01	Earth’s tilt, rotation and revolution around the Sun produce observable patterns on Earth. Learners: describe the movement of Earth and other planets relative to the sun and model how Earth’s tilt, rotation on its axis and revolution around the sun relate to cyclic observable phenomena, including variable day and night length. AC9S6U02	Electric circuits use a variety of components to direct, transfer and transform energy. Learners: investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors. AC9S6U03	Changes to materials can be reversible or irreversible. Learners: compare reversible changes, including dissolving and changes of state, and irreversible changes, including cooking and rusting that produce new substances. AC9S6U04

Science – Year 7

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • pursue an unexpected or interesting observation to deepen their understanding of a scientific phenomenon or concept • notice similarities and differences between scientific information and theories to discover possible connections that build their conceptual understanding • question patterns or anomalies they do not yet understand to open up the possibility for scientific exploration.	This disposition may be evident when learners, for example: • acknowledge uncertainty or limitations in evidence to communicate scientific findings with integrity • evaluate scientific claims in response to possible consequences of inaccurate or misleading information • monitor the accuracy and certainty of scientific explanations to avoid negative impacts on people, communities and the environment.	This disposition may be evident when learners, for example: • consider evidence or ideas that challenge their existing thinking to test or extend their scientific understanding • withhold or revise a scientific conclusion in response to insufficient, conflicting or new evidence • recognise assumptions or limitations in scientific models to remain open to alternative explanations.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S7H01 • investigate how cultural perspectives and world views influence the development of scientific knowledge AC9S7H02 • examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations AC9S7H03	Learners develop this capability when they: • develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships. AC9S7I01	Learners develop this capability when they: • plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place AC9S7I02 • select and use equipment to generate and record data with precision, using digital tools as appropriate AC9S7I03	Learners develop this capability when they: • analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions AC9S7I06 • construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information. AC9S7I07	Learners develop this capability when they: • write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate. AC9S7I08

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
explore the role of science communication in informing individual viewpoints and community policies and regulations. AC9S7H04		- select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S7I04 - analyse data and information to describe patterns, trends and relationships and identify anomalies. AC9S7I05		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
Classifying organisms based on similarities and patterns reveals their diversity and evolutionary connections. Learners: - investigate the role of classification in ordering and organising the diversity of life on Earth and use and develop classification tools including dichotomous keys. AC9S7U01 Energy and matter transfers and transforms within ecosystems, influencing each other. Learners: - use models, including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and biotic factors on populations. AC9S7U02	The interactions and movements of the Earth, Moon and Sun cause predictable phenomena. Learners: model cyclic changes in the relative positions of the Earth, sun and moon and explain how these cycles cause eclipses and influence predictable phenomena on Earth, including seasons and tides. AC9S7U03	Balanced forces will result in a moving object continuing its state of motion, or an object at rest staying at rest. Learners: investigate and represent balanced and unbalanced forces, including gravitational force, acting on objects, and relate changes in an object's motion to its mass and the magnitude and direction of forces acting on it. AC9S7U04	The physical properties and behaviours of matter can be explained by particle arrangement and movement. Learners: - use particle theory to describe the arrangement of particles in a substance, including the motion of and attraction between particles, and relate this to the properties of the substance. AC9S7U05 The properties of substances in a mixture determine the methods for their separation. Learners: - use a particle model to describe differences between pure substances and mixtures and apply understanding of properties of substances to separate mixtures. AC9S7U06

Science – Year 8

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • pursue an unexpected or interesting observation to deepen their understanding of a scientific phenomenon or concept • notice similarities and differences between scientific information and theories to discover possible connections that build their conceptual understanding • question patterns or anomalies they do not yet understand to open up the possibility for scientific exploration.	This disposition may be evident when learners, for example: • acknowledge uncertainty or limitations in evidence to communicate scientific findings with integrity • evaluate scientific claims in response to possible consequences of inaccurate or misleading information • monitor the accuracy and certainty of scientific explanations to avoid negative impacts on people, communities and the environment.	This disposition may be evident when learners, for example: • consider evidence or ideas that challenge their existing thinking to test or extend their scientific understanding • withhold or revise a scientific conclusion in response to insufficient, conflicting or new evidence • recognise assumptions or limitations in scientific models to remain open to alternative explanations.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S8H01 • investigate how cultural perspectives and world views influence the development of scientific knowledge AC9S8H02 • examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations AC9S8H03	Learners develop this capability when they: • develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships. AC9S8I01	Learners develop this capability when they: • plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place AC9S8I02	Learners develop this capability when they: • analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions AC9S8I06 • construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information. AC9S8I07	Learners develop this capability when they: • write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate. AC9S8I08

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
explore the role of science communication in informing individual viewpoints and community policies and regulations. AC9S8H04		- select and use equipment to generate and record data with precision, using digital tools as appropriate AC9S8I03 - select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S8I04 - analyse data and information to describe patterns, trends and relationships and identify anomalies. AC9S8I05		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
Cells are the basic unit of life, with specialised structures that determine their function. Learners: - recognise cells as the basic units of living things, compare plant and animal cells, and describe the functions of specialised cell structures and organelles. AC9S8U01 In multicellular organisms, specialised tissues and organs work together in systems that sustain life. Learners: - analyse the relationship between structure and function of cells, tissues and organs in a plant and an animal organ system and explain how these systems enable survival of the individual. AC9S8U02	Tectonic plate movements cause geological events that shape Earth's surface. Learners: - investigate tectonic activity including the formation of geological features at divergent, convergent and transform plate boundaries and describe the scientific evidence for the theory of plate tectonics. AC9S8U03 Rock properties are affected by formation processes and influence their use. Learners: - describe the key processes of the rock cycle, including the timescales over which they occur, and examine how the properties of sedimentary, igneous and metamorphic rocks reflect their formation and influence their use. AC9S8U04	Energy can be transferred and transformed between kinetic and potential forms. Learners: classify different types of energy as kinetic or potential and investigate energy transfer and transformations in simple systems. AC9S8U05	Matter consists of atoms and can be classified as elements, molecules, compounds or mixtures. Learners: - classify matter as elements, compounds or mixtures and compare different representations of these, including 2-dimensional and 3-dimensional models, symbols for elements and formulas for molecules and compounds. AC9S8U06 Energy changes occur during chemical reactions and new substances are formed. Learners: - compare physical and chemical changes and identify indicators of energy change in chemical reactions. AC9S8U07

Science – Year 9

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • pursue questions about a scientific phenomenon they find puzzling or interesting, drawing on models and theories to explore possible explanations • return to an unresolved question to deepen their understanding of a scientific phenomenon, concept or idea • pursue a relationship between ideas they do not yet understand to make connections between scientific concepts or ideas.	This disposition may be evident when learners, for example: • seek and generate scientific knowledge in ways that take account of potential harm, fairness and ethical obligations • query the accuracy, certainty, limitations or intent of their scientific claims to prevent potential harmful consequences • weigh benefits, risks and potential impacts to inform decisions about scientific issues affecting people, communities or environments.	This disposition may be evident when learners, for example: • adapt an inquiry process or investigation in response to emerging questions, alternative ideas or new evidence • compare competing scientific explanations to consider what the available evidence might support • withhold judgement and remain open to alternative explanations while seeking sufficient data or evidence when more investigation is needed.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • explain how scientific knowledge is validated and refined, including the role of publication and peer review AC9S9H01 • investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering AC9S9H02 • analyse the key factors that contribute to science knowledge and practices being adopted more broadly by society AC9S9H03	Learners develop this capability when they: • develop investigable questions, reasoned predictions and hypotheses to test relationships and develop explanatory models. AC9S9I01	Learners develop this capability when they: • plan and conduct valid, reproducible investigations to answer questions and test hypotheses, including identifying and controlling for possible sources of error and, as appropriate, developing and following risk assessments, considering ethical issues, and addressing key considerations regarding heritage sites and artefacts on Country/Place AC9S9I02	Learners develop this capability when they: • assess the validity and reproducibility of methods and evaluate the validity of conclusions and claims, including by identifying assumptions, conflicting evidence and areas of uncertainty AC9S9I06 • construct arguments based on analysis of a variety of evidence to support conclusions or evaluate claims, and consider any ethical issues and cultural protocols associated with accessing, using or citing secondary data or information. AC9S9I07	Learners develop this capability when they: • write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate. AC9S9I08

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
examine how the values and needs of society influence the focus of scientific research. AC9S9H04		- select and use equipment to generate and record data with precision to obtain useful sample sizes and replicable data, using digital tools as appropriate AC9S9I03 - select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information AC9S9I04 - analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies. AC9S9I05		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
To survive, organisms regulate and coordinate system functions to maintain stability and respond to changing conditions. Learners: - compare the role of body systems in regulating and coordinating the body’s response to a stimulus, and describe the operation of a negative feedback mechanism. AC9S9U01 Reproductive structures and processes influence reproductive success and species survival. Learners: - describe the form and function of reproductive cells and organs in animals and plants, and analyse how the processes of sexual and asexual reproduction enable survival of the species. AC9S9U02	Carbon cycles through Earth’s interconnected spheres, influencing life and climate. Learners: represent the carbon cycle and examine how key processes including combustion, photosynthesis and respiration rely on interactions between Earth’s spheres (the geosphere, biosphere, hydrosphere and atmosphere). AC9S9U03	Energy can be transferred and transformed, however total energy in a system is conserved. Learners: - apply the law of conservation of energy to analyse system efficiency in terms of energy inputs, outputs, transfers and transformations. AC9S9U05 Energy transfer through different mediums can be explained using wave and particle models. Learners: - use wave and particle models to describe energy transfer through different mediums and examine the usefulness of each model for explaining phenomena. AC9S9U04	Radioactive decay involves the nuclei of unstable atoms emitting subatomic particles and radiation to become stable. Learners: - explain how the model of the atom changed following the discovery of electrons, protons and neutrons and describe how natural radioactive decay results in stable atoms. AC9S9U06 Chemical reactions rearrange atoms, conserving mass. Learners: - model the rearrangement of atoms in chemical reactions using a range of representations, including word and simple balanced chemical equations, and use these to demonstrate the law of conservation of mass. AC9S9U07

Science – Year 10

Essential Learning

Dispositions

Curiosity	Responsibility	Open-mindedness
This disposition may be evident when learners, for example: • pursue questions about a scientific phenomenon they find puzzling or interesting, drawing on models and theories to explore possible explanations • return to an unresolved question to deepen their understanding of a scientific phenomenon, concept or idea • pursue a relationship between ideas they do not yet understand to make connections between scientific concepts or ideas.	This disposition may be evident when learners, for example: • seek and generate scientific knowledge in ways that take account of potential harm, fairness and ethical obligations • query the accuracy, certainty, limitations or intent of their scientific claims to prevent potential harmful consequences • weigh benefits, risks and potential impacts to inform decisions about scientific issues affecting people, communities or environments.	This disposition may be evident when learners, for example: • adapt an inquiry process or investigation in response to emerging questions, alternative ideas or new evidence • compare competing scientific explanations to consider what the available evidence might support • withhold judgement and remain open to alternative explanations while seeking sufficient data or evidence when more investigation is needed.

Capabilities

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
Learners develop this capability when they: • explain how scientific knowledge is validated and refined, including the role of publication and peer review AC9S10H01 • investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering AC9S10H02 • analyse the key factors that contribute to science knowledge and practices being adopted more broadly by society AC9S10H03	Learners develop this capability when they: • develop investigable questions, reasoned predictions and hypotheses to test relationships and develop explanatory models. AC9S10I01	Learners develop this capability when they: • plan and conduct valid, reproducible investigations to answer questions and test hypotheses, including identifying and controlling for possible sources of error and, as appropriate, developing and following risk assessments, considering ethical issues, and addressing key considerations regarding heritage sites and artefacts on Country/Place AC9S10I02	Learners develop this capability when they: • assess the validity and reproducibility of methods and evaluate the validity of conclusions and claims, including by identifying assumptions, conflicting evidence and areas of uncertainty AC9S10I06 • construct arguments based on analysis of a variety of evidence to support conclusions or evaluate claims, and consider any ethical issues and cultural protocols associated with accessing, using or citing secondary data or information. AC9S10I07	Learners develop this capability when they: • write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate. AC9S10I08

Scientific engagement and influence	Observation and questioning	Scientific exploration	Evidence-informed reasoning	Purposeful communication
examine how the values and needs of society influence the focus of scientific research. AC9S10H04		- select and use equipment to generate and record data with precision to obtain useful sample sizes and replicable data, using digital tools as appropriate AC9S10I03 - select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information AC9S10I04 - analyse and connect a variety of data and information to identify and explain patterns, trends, relationships and anomalies. AC9S10I05		

Knowledge

Living systems	Earth and space systems	Forces and energy	Matter and materials
Conceptual understandings and supporting content descriptions			
DNA, organised into genes and chromosomes, encodes instructions that influence hereditary traits and inheritance patterns. Learners: - explain the role of meiosis and mitosis and the function of chromosomes, DNA and genes in heredity and predict patterns of Mendelian inheritance. AC9S10U01 The theory of evolution by natural selection can be used to explain biodiversity. Learners: - use the theory of evolution by natural selection to explain past and present diversity and analyse the scientific evidence supporting the theory. AC9S10U02	The universe has evolved over time through expansion and the formation of matter and structures. Learners: - describe how the big bang theory models the origin and evolution of the universe and analyse the supporting evidence for the theory. AC9S10U03 Energy flows between the Earth's interconnected spheres and influences global climate patterns. Learners: - use models of energy flow between the geosphere, biosphere, hydrosphere and atmosphere to explain patterns of global climate change. AC9S10U04	Newton's laws of motion relate an object's motion to the forces acting on it. Learners: investigate Newton's laws of motion and quantitatively analyse the relationship between force, mass and acceleration of objects. AC9S10U05	Atomic structure determines element properties and reactivity. Learners: - explain how the structure and properties of atoms relate to the organisation of the elements in the periodic table. AC9S10U06 Reaction rates depend on the frequency, orientation and energy of particle collisions. Learners: - identify patterns in synthesis, decomposition and displacement reactions and investigate the factors that affect reaction rates. AC9S10U07