

The Australian Curriculum Science

Science understanding

Science as a human endeavour

Science inquiry skills

	Foundation Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Science Understanding	Biological sciences	Living things have basic needs, including food and water	Living things have a variety of external features Living things live in different places where their needs are met	Living things grow, change and have offspring similar to themselves	Living things can be grouped on the basis of observable features and can be distinguished from non-living things	Living things have life cycles Living things, including plants and animals, depend on each other and the environment to survive	Living things have structural features and adaptations that help them to survive in their environment	The growth and survival of living things are affected by the physical conditions of their environment
	Chemical sciences	Objects are made of materials that have observable properties	Everyday materials can be physically changed in a variety of ways	Different materials can be combined, including by mixing, for a particular purpose	A change of state between solid and liquid can be caused by adding or removing heat	Natural and processed materials have a range of physical properties; these properties can influence their use	Solids, liquids and gases have different observable properties and behave in different ways	Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting
	Earth and space sciences	Daily and seasonal changes in our environment, including the weather, affect everyday life	Observable changes occur in the sky and landscape	Earth's resources, including water, are used in a variety of ways	Earth's rotation on its axis causes regular changes, including night and day	Earth's surface changes over time as a result of natural processes and human activity	The Earth is part of a system of planets orbiting around a star (the sun)	Sudden geological changes or extreme weather conditions can affect Earth's surface
	Physical sciences	The way objects move depends on a variety of factors, including their size and shape	Light and sound are produced by a range of sources and can be sensed	A push or a pull affects how an object moves or changes shape	Heat can be produced in many ways and can move from one object to another	Forces can be exerted by one object on another through direct contact or from a distance	Light from a source forms shadows and can be absorbed, reflected and refracted	Electrical circuits provide a means of transferring and transforming electricity Energy from a variety of sources can be used to generate electricity

	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Science Understanding	<p>Biological sciences</p> <p>Living things have structural features and adaptations that help them to survive in their environment</p>	<p>The growth and survival of living things are affected by the physical conditions of their environment</p>	<p>There are differences within and between groups of organisms; classification helps organise this diversity</p> <p>Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions</p>	<p>Cells are the basic units of living things and have specialised structures and functions</p> <p>Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce</p>	<p>Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment</p> <p>Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems</p>	<p>The transmission of heritable characteristics from one generation to the next involves DNA and genes</p> <p>The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence</p>	
	<p>Chemical sciences</p> <p>Solids, liquids and gases have different observable properties and behave in different ways</p>	<p>Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting</p>	<p>Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques</p>	<p>The properties of the different states of matter can be explained in terms of the motion and arrangement of particles</p> <p>Differences between elements, compounds and mixtures can be described at a particle level</p> <p>Chemical change involves substances reacting to form new substances</p>	<p>All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms</p> <p>Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed</p> <p>Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer</p>	<p>The atomic structure and properties of elements are used to organise them in the Periodic Table</p> <p>Different types of chemical reactions are used to produce a range of products and can occur at different rates</p>	
	<p>Earth and space sciences</p>	<p>The Earth is part of a system of planets orbiting around a star (the sun)</p>	<p>Sudden geological changes or extreme weather conditions can affect Earth's surface</p>	<p>Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon</p> <p>Some of Earth's resources are renewable, but others are non-renewable</p> <p>Water is an important resource that cycles through the environment</p>	<p>Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales</p>	<p>The theory of plate tectonics explains global patterns of geological activity and continental movement</p>	<p>The universe contains features including galaxies, stars and solar systems and the Big Bang theory can be used to explain the origin of the universe</p> <p>Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere</p>
	<p>Physical sciences</p>	<p>Light from a source forms shadows and can be absorbed, reflected and refracted</p>	<p>Electrical circuits provide a means of transferring and transforming electricity</p> <p>Energy from a variety of sources can be used to generate electricity</p>	<p>Change to an object's motion is caused by unbalanced forces acting on the object</p> <p>Earth's gravity pulls objects towards the centre of the Earth</p>	<p>Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems</p>	<p>Energy transfer through different mediums can be explained using wave and particle models</p>	<p>Energy conservation in a system can be explained by describing energy transfers and transformations</p> <p>The motion of objects can be described and predicted using the laws of physics</p>

	Foundation Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Science as a Human Endeavour	Nature and development of science	Science involves exploring and observing the world using the senses	Science involves asking questions about, and describing changes in, objects and events	Science involves making predictions and describing patterns and relationships	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	Important contributions to the advancement of science have been made by people from a range of cultures	
	Use and influence of science		People use science in their daily lives, including when caring for their environment and living things	Science knowledge helps people to understand the effect of their actions	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives	Scientific knowledge is used to inform personal and community decisions	
Science Inquiry Skills	Questioning and predicting	Respond to questions about familiar objects and events	Respond to and pose questions, and make predictions about familiar objects and events	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be		
	Planning and conducting	Explore and make observations by using the senses	Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources Use informal measurements in the collection and recording of observations, with the assistance of digital technologies as appropriate	Suggest ways to plan and conduct investigations to find answers to questions Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	With guidance, plan appropriate investigation methods to answer questions or solve problems Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate Use equipment and materials safely, identifying potential risks		
	Processing and analysing data and information	Engage in discussions about observations and use methods such as drawing to represent ideas	Use a range of methods to sort information, including drawings and provided tables Through discussion, compare observations with predictions	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends Compare results with predictions, suggesting possible reasons for findings	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 Compare data with predictions and use as evidence in developing explanations		
	Evaluating		Compare observations with those of others	Reflect on the investigation, including whether a test was fair or not	Suggest improvements to the methods used to investigate a question or solve a problem		
	Communicating	Share observations and ideas	Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts		

	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Science as a Human Endeavour	Nature and development of science	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena Important contributions to the advancement of science have been made by people from a range of cultures	Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world Science knowledge can develop through collaboration and connecting ideas across the disciplines of science		Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries	
	Use and influence of science	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives Scientific knowledge is used to inform personal and community decisions	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management People use understanding and skills from across the disciplines of science in their occupations		People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities The values and needs of contemporary society can influence the focus of scientific research	
Science Inquiry Skills	Questioning and predicting	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge		Formulate questions or hypotheses that can be investigated scientifically	
	Planning and conducting	With guidance, select appropriate investigation methods to answer questions or solve problems Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate Use equipment and materials safely, identifying potential risks	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task		Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data	
	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 Compare data with predictions and use as evidence in developing explanations	Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions		Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies Use knowledge of scientific concepts to draw conclusions that are consistent with evidence	
	Evaluating	Suggest improvements to the methods used to investigate a question or solve a problem	Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method Use scientific knowledge and findings from investigations to evaluate claims		Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems	
	Communicating	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate		Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations	