

Foundation – Level 2

Levels 3 and 4

Levels 5 and 6

Science Understanding		
Science as a human endeavour		
People use science in their daily lives	Science knowledge helps people to understand the effects of their actions	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives
Biological sciences		
Living things have a variety of external features and live in different places where their basic needs, including food, water and shelter, are met	Living things can be grouped on the basis of observable features and can be distinguished from non-living things	Living things have structural features and adaptations that help them to survive in their environment
Living things grow, change and have offspring similar to themselves	Different living things have different life cycles and depend on each other and the environment to survive	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	A change of state between solid and liquid can be caused by adding or removing heat	Solids, liquids and gases behave in different ways and have observable properties that help to classify them
Everyday materials can be physically changed or combined with other materials in a variety of ways for particular purposes	Natural and processed materials have a range of physical properties; these properties can influence their use	Changes to materials can be reversible, including melting, freezing, evaporating, or irreversible, including burning and rusting
Earth and space sciences		
Observable changes occur in the sky and landscape; daily and seasonal changes affect everyday life	Earth's rotation on its axis causes regular changes, including night and day	Earth is part of a system of planets orbiting around a star (the Sun)
Earth's resources are used in a variety of ways	Earth's surface changes over time as a result of natural processes and human activity	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: 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; a change in the temperature of an object is related to the gain or loss of heat by the object	Light from a source forms shadows and can be absorbed, reflected and refracted
Light and sound are produced by a range of sources and can be sensed	Forces can be exerted by one object on another through direct contact or from a distance	Energy from a variety of sources can be used to generate electricity; electric circuits enable this energy to be transferred to another place and then to be transformed into another form of energy
Science Inquiry Skills		
Questioning and predicting		
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 based on previous experiences or general rules
Planning and conducting		
Participate in guided investigations, including making observations using the senses, to explore and answer questions	Suggest ways to plan and conduct investigations to find answers to questions including consideration of the elements of fair tests	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks
	Safely use appropriate materials, tools, equipment and technologies	Decide which variables should be changed, measured and controlled in fair tests and accurately observe, measure and record data
Recording and processing		
Use informal measurements in the collection and recording of observations	Use formal measurements in the collection and recording of observations	Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data
Use a range of methods, including drawings and provided tables, to sort information	Use a range of methods including tables and column graphs to represent data and to identify patterns and trends	
Analysing and evaluating		
Compare observations and predictions with those of others	Compare results with predictions, suggesting possible reasons for findings	Compare data with predictions and use as evidence in developing explanations
	Reflect on an investigation, including whether a test was fair or not	Suggest improvements to the methods used to investigate a question or solve a problem
Communicating		
Represent and communicate observations and ideas about changes in objects and events in a variety of ways	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language	Communicate ideas and processes using evidence to develop explanations of events and phenomena and to identify simple cause-and-effect relationships
Achievement Standard		
<p>By the end of Level 2, students describe examples of how people use science in their daily lives. They identify and describe examples of the external features and basic needs of living things. They describe how different places meet the needs of living things. They describe the properties, behaviour, uses and the effects of interacting with familiar materials and objects. They discuss how light and sound can be produced and sensed. They identify and describe the changes to objects, materials, resources, living things and things in their local environment. They suggest how the environment affects them and other living things.</p> <p>Students pose and respond to questions about familiar objects and events and predict outcomes of investigations. They use their senses to explore the world around them and record informal measurements to make and compare observations. They record, sort and represent their observations and communicate their ideas to others.</p>	<p>By the end of Level 4, students describe situations where science understanding can influence their own and others' actions. They explain the effects of Earth's rotation on its axis. They distinguish between temperature and heat and use examples to illustrate how heat is produced and transferred. They explain how heat is involved in changes of state between solid and liquid. They link the physical properties of materials to their use. They discuss how natural and human processes cause changes to Earth's surface. They use contact and non-contact forces to describe interactions between objects. They group living things based on observable features and distinguish them from non-living things. They describe relationships that assist the survival of living things. They compare the key stages in the life cycle of a plant and an animal and relate life cycles to growth and survival.</p> <p>Students describe how they use science investigations to identify patterns and relationships and to respond to questions. They follow instructions to identify questions that they can investigate about familiar contexts and make predictions based on prior knowledge. They discuss ways to conduct investigations and suggest why a test was fair or not. They safely use equipment to make and record formal measurements and observations. They use provided tables and column graphs to organise and identify patterns and trends in data. Students suggest explanations for observations and compare their findings with their predictions. They use formal and informal scientific language to communicate their observations, methods and findings.</p>	<p>By the end of Level 6, students explain how scientific knowledge is used in decision making and develops from many people's contributions. They discuss how scientific understandings, discoveries and inventions affect peoples' lives. They compare the properties and behaviours of solids, liquids and gases. They compare observable changes to materials and classify these changes as reversible or irreversible. They explain everyday phenomena associated with the absorption, reflection and refraction of light. They compare different ways in which energy can be transformed from one form to another to generate electricity and evaluate their suitability for particular purposes. They construct electric circuits and distinguish between open and closed circuits. They explain how natural events cause rapid change to Earth's surface and use models to describe the key features of our Solar System. They analyse how structural and behavioural adaptations of living things enhance their survival, and predict and describe the effect of environmental changes on individual living things.</p> <p>Students follow procedures to develop questions that they can investigate and design investigations into simple cause-and-effect relationships. When planning experimental methods, they identify and justify the variables they choose to change and measure in fair tests. They make predictions based on previous experiences or general rules. They identify and manage potential safety risks. They make and record accurate observations as tables, diagrams or descriptions. They organise data into tables and graphs to identify and analyse patterns and relationships. They compare patterns in data with their predictions when explaining their findings. They suggest where improvements to their experimental methods or research could improve the quality of their data. They refer to data when they report findings and use appropriate representations and simple reports to communicate their ideas, methods, findings and explanations.</p>