

Australian Curriculum: Science — Year 8

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Unit 1	Unit 2	Unit 3	Unit 4
Unit name	Physical and Chemical Changes	Energy and Lifestyle	Cells and Reproduction	Dynamic Rock formation
Unit description	<p>In this unit, students extend their application of the particle model of matter to represent and explain differences between elements, compounds and mixtures, and differences between physical and chemical change. They are introduced to the periodic table of elements, including symbolic representation of elements. Students continue to investigate the physical and chemical properties of materials and explain how these relate to material use. They plan and conduct fair tests, ensuring safety guidelines are followed. Students record observations and collect, summarise and analyse data. They evaluate the quality of the data collected during fair tests and suggest ways the quality of the data could be improved. Students use their data to draw evidence-based conclusions about the suitability of a material for a specific use and make recommendations of the most appropriate material for an identified purpose. In this unit students are introduced to the particle model of matter and use it to explain properties. They investigate the physical and chemical properties of materials and identify signs of chemical change. Students relate the properties of materials to their use in everyday applications and evaluate the effectiveness of the material for its identified purpose. They examine traditional uses of natural material by Aboriginal peoples and Torres Strait Islander peoples. Students plan and conduct investigations of the properties of materials identifying risk and applying safety guidelines. They use data to identify relationships, draw conclusions, evaluate the quality of data collected and suggest improvements to experimental methods.</p>	<p>In this unit students will classify energy forms. They will investigate different forms of potential energy, making predictions, conducting fair tests and ensuring safety guidelines are followed. Students will process and analyse experimental data and evaluate experimental methods used in investigations. They will use models and representations to examine kinetic energy and its relationship with potential energy and heat energy. Students will communicate how energy is transferred and transformed through systems and use diagrams to represent energy flow. They will recognise that energy can be transformed into usable and unusable forms, and consider how this can affect the efficiency of a system. Students will discuss the use and influence of science on the use of energy resources and consider how the efficiency of the production of energy could influence the use of these resources by society. In this unit students will identify the different forms of energy that they observe in order to explain and represent how energy transfers and transformations cause change in simple systems. They will plan and conduct investigations into factors affecting energy transfers and transformations. They will identify variables, and construct representations of patterns and trends in their data in order to draw conclusions. They will evaluate the effectiveness of their investigations. Students will also examine Australia's use of renewable and non-renewable energy resources. They will consider the impact of photovoltaic technology becoming available to Australia's First Peoples living in remote Australian communities. Students will evaluate the impacts of transitioning to renewable resources compared with the continued use of fossil fuels, and will examine how science and technology are contributing to making the transition socially, economically and environmentally sustainable.</p>	<p>In this unit students will identify cells as the basic units of living things. They will use microscopes and images to distinguish between multicellular and unicellular organisms and identify specialised cellular structures. Students will understand how to prepare wet mount slides and correctly construct biological drawings from microscopic observations. They will compare similarities and differences between plant and animal cell structure. Students will examine the relationship between the structure and function of specialised plant and animal cells, including reproductive cells, and understand the advantages of cell specialisation. They will analyse the development of cell theory as a result of historical scientific work and use the findings to validate the tenets of the theory. Students will identify and construct scientifically investigable questions and problems related to the relationship between cell structure and function. In this unit, students will analyse the relationships between structure and function of organs in the major systems of the human body, including the reproductive system. They will examine and compare organs and systems in other animals and plants. Students will research the structure of a system and its component organs and describe how the structure supports the functions of the system within the body. They will examine different reproductive strategies and discuss how these contribute to the survival of multi-cellular organisms, and analyse data and trends in reproductive cycles. Students will investigate the relationship between structure and function in the systems of vascular plants. They will explore the concepts of ethical guidelines to consider the impact of animal welfare frameworks when planning investigations in science education.</p>	<p>In this unit students will explore different types of rocks and the minerals of which they are composed. They will compare the different processes and timescales involved in the formation and breakdown of igneous, sedimentary and metamorphic rocks as part of the rock cycle. Students will investigate the properties of minerals and analyse data to identify patterns and relationships between mineral composition, location and the type of rock formed. They will identify rock specimens and model processes of rock formation. They will use a variety of representations, including geologic cross-sections, to analyse relationships between and draw conclusions about rock types, rock cycle processes and the geological history of an area. In this unit, students will apply their understanding of rocks and minerals to describe the properties of soil formed from the weathering of rocks, and the impact of soil degradation on the environment and agriculture. They will research an issue that has led to soil degradation and consider how collaboration across different fields of science and technological advancements are helping to address this issue. Students will learn how mineral-based resources are sourced, extracted, processed and used, including how Aboriginal peoples and Torres Strait Islander peoples quarry and use rocks and minerals. They will summarise information from secondary sources to draw conclusions about how knowledge from different fields of science is used in locating, extracting and processing a particular mineral-based resource, and how science and technology contribute to the development and advancement of sustainable mining processes. Students will use representations and scientific understanding to analyse relationships and draw conclusions about rock- and mineral-based resources</p>

ASSESSMENT		SEMESTER 1		SEMESTER 2	
		Summative assessment task 1	Summative assessment task 2	Summative assessment task 3	Summative assessment task 4
Range and balance of summative assessment conventions	Technique	Chemistry Exam	Bottle Rocket Launch Investigation	Cell Model and Function	Rock Cycle-Tectonic Plate Exam
	Type of text	Short and extended Responses	Scientific Report	Multi Modal including mini scientific report	Short and extended responses
	Mode	Student Response to In class Exam	Student Investigation and Scientific Written Report	Model/Poster/Video with Scientific Report	Student Response to In class Exam
	Conditions	1 x 70 min lesson	4 weeks	4 weeks	1 x 70 min Lesson
Aspects of the achievement standard					
Students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances.					
They identify different forms of energy and describe how energy transfers and transformations cause change in simple					



systems								
They compare processes of rock formation, including the timescales involved								
They analyse the relationship between structure and function at cell, organ and body system levels								
Students examine the different science knowledge used in occupations								
They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems								
They reflect on implications of these solutions for different groups in society								
Students identify and construct questions and problems that they can investigate scientifically								
They consider safety and ethics when planning investigations, including designing field or experimental methods.								
They identify variables to be changed, measured and controlled								
Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions								
They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others								
They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types								

Shaded cells indicate opportunities that summative assessments provide for students to demonstrate evidence against all aspects of the achievement standard

