

## Alignment with the Australian Curriculum: Science

This *What's the matter?* unit embeds all three strands of the Australian Curriculum: Science.

The table below lists sub-strands and their content for Year 5. This unit is designed to be taught in conjunction with other Year 5 units to cover the full range of the Australian Curriculum: Science content for Year 5.

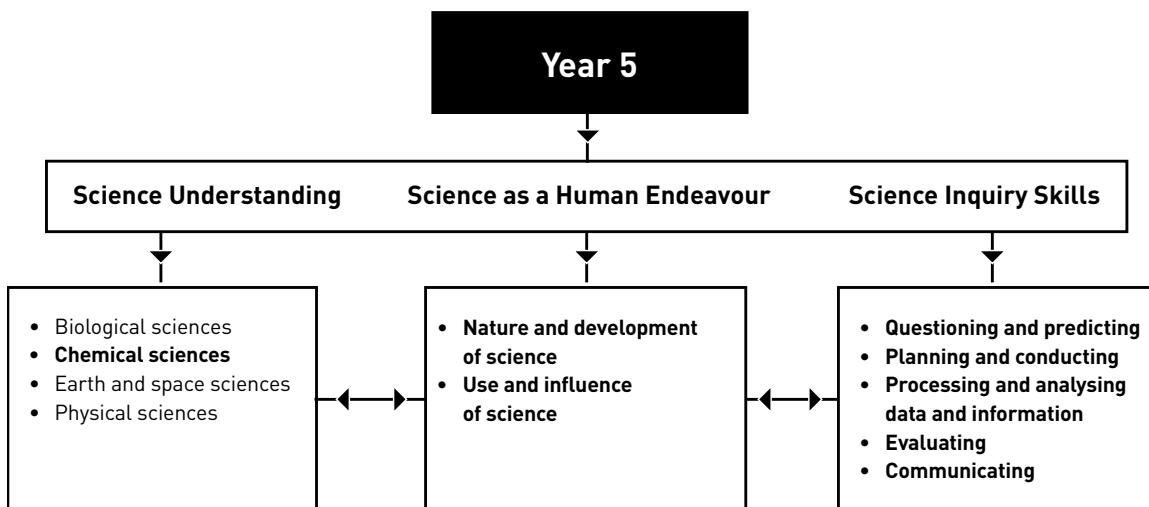
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
<b>Science Understanding (SU)</b>	<b>Chemical sciences</b>	ACSSU077	Solids, liquids and gases have different observable properties and behave in different ways	1–7
<b>Science as a Human Endeavour (SHE)</b>	<b>Nature and development of science</b>	ACSHE081	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	1–7
	<b>Use and influence of science</b>	ACSHE083	Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives	7
<b>Science Inquiry Skills (SIS)</b>	<b>Questioning and predicting</b>	ACESIS231	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	1–6
	<b>Planning and conducting</b>	ACESIS086	With guidance, plan appropriate investigation methods to answer questions or solve problems	4, 6
		ACESIS087	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate	4, 6
		ACESIS088	Use equipment and materials safely, identifying potential risks	2–6
	<b>Processing and analysing data and information</b>	ACESIS090	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	2, 3
		ACESIS218	Compare data with predictions and use as evidence in developing explanations	3–7
	<b>Evaluating</b>	ACESIS091	Suggest improvements to the methods used to investigate a question or solve a problem	6, 7
	<b>Communicating</b>	ACESIS093	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	3–7

 All the material in the first four columns of this table is sourced from the Australian Curriculum.

## Interrelationship of the science strands

The interrelationship between the three strands—Science Understanding, Science as a Human Endeavour and Science Inquiry Skills—and their sub-strands is shown below. Sub-strands covered in this unit are in bold.



All the terms in this diagram are sourced from the Australian Curriculum.

## Relationship to overarching ideas

In the Australian Curriculum: Science, six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels. In *What's the matter?* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>What's the matter?</i>
<b>Patterns, order and organisation</b>	Students develop criteria for identifying and classifying materials as solids, liquids or gases based on their observable properties.
<b>Form and function</b>	Students explore properties of materials and relate them to their use or function.
<b>Stability and change</b>	Students investigate whether properties of materials change at different times and review how materials change state.
<b>Scale and measurement</b>	Students use formal measurement to quantify properties such as density.
<b>Matter and energy</b>	Students investigate how increasing thermal energy (temperature) of materials affects their properties and what state they are in.
<b>Systems</b>	Students explore how materials interact to form composite materials and objects with particular properties.

## Curriculum focus

The Australian Curriculum: Science is described by year level, but provides advice across four year groupings on the nature of learners. Each year grouping has a relevant curriculum focus.

Curriculum focus Years 3–6	Incorporation in <i>What's the matter?</i>
<b>Recognising questions that can be investigated scientifically and investigating them</b>	Students discuss properties of materials that can be investigated scientifically and pose questions for investigation. They use science inquiry skills to conduct fair tests of how properties of materials can vary.

## Achievement standards

The achievement standards of the Australian Curriculum: Science indicate the quality of learning that students typically demonstrate by a particular point in their schooling, for example, at the end of a year level. These standards will be reviewed regularly by ACARA and are available from the ACARA website.

By the end of this unit, teachers will be able to make evidence-based judgments on whether the students are achieving below, at or above the Australian Curriculum: Science Year 5 achievement standard. Rubrics to help teachers make these judgements are available on the Primary**Connections** website ([www.primaryconnections.org.au](http://www.primaryconnections.org.au)).

## General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the 21st century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities and they are embedded throughout the units. For further information see: [www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)

For examples of our unit-specific general capabilities information see the next page.

## What's the matter?—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	What's the matter? examples
<b>Literacy</b>	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>PrimaryConnections learning activities explicitly introduce literacy focuses and provide students with the opportunity to use them as they think about, reason and represent their understanding of science.</p>	<p>In <i>What's the matter?</i> the literacy focuses are:</p> <ul style="list-style-type: none"> <li>science chat-boards</li> <li>word walls</li> <li>science journals</li> <li>tables</li> <li>annotated drawings</li> <li>factual texts.</li> </ul>
 <b>Numeracy</b>	<p>Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>collect, interpret and represent data through tables and graphs</li> <li>use measurement in their fair tests.</li> </ul>
<b>Information and communication technology (ICT) competence</b>	<p>ICT competence is particularly evident in Science Inquiry Skills. Students use digital technologies to investigate, create, communicate, and share ideas and results.</p>	<p>Students are given optional opportunities to:</p> <ul style="list-style-type: none"> <li>create tables using software</li> <li>design and produce cards for team games using software.</li> </ul>
 <b>Critical and creative thinking</b>	<p>Students develop critical and creative thinking as they speculate and solve problems through investigations, make evidence-based decisions, and analyse and evaluate information sources to draw conclusions. They develop creative questions and suggest novel solutions.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>use reasoning to develop questions for inquiry</li> <li>formulate, pose and respond to questions</li> <li>consider different ways of thinking about solids, liquids and gases</li> <li>develop evidence-based claims about how the properties of materials can differ.</li> </ul>
<b>Ethical behaviour</b>	<p>Students develop ethical behaviour as they explore principles and guidelines in gathering evidence and consider the implications of their investigations on others and the environment.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>ask questions of others respecting each other's point of view.</li> </ul>
 <b>Personal and social competence</b>	<p>Students develop personal and social competence as they learn to work effectively in teams, develop collaborative methods of inquiry, work safely, and use their scientific knowledge to make informed choices.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>work collaboratively in teams</li> <li>follow a procedural text for working safely</li> <li>participate in discussions.</li> </ul>
 <b>Intercultural understanding</b>	<p>Intercultural understanding is particularly evident in Science as a Human Endeavour. Students learn about the influence of people from a variety of cultures on the development of scientific understanding.</p>	<ul style="list-style-type: none"> <li>Cultural perspectives opportunities are highlighted where relevant.</li> <li>Important contributions made to science by people from a range of cultures are highlighted where relevant.</li> </ul>

 All the material in the first two columns of this table is sourced from the Australian Curriculum.

## Cross-curriculum priorities

There are three cross-curriculum priorities identified by the Australian Curriculum:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability.

For further information see: [www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)



## Aboriginal and Torres Strait Islander histories and cultures

The Primary**Connections** Indigenous perspectives framework supports teachers' implementation of Aboriginal and Torres Strait Islander histories and cultures in science. The framework can be accessed at: [www.primaryconnections.org.au](http://www.primaryconnections.org.au)

*What's the matter?* focuses on the Western science way of distinguishing different states for the same material, for example, water can be a solid (ice), a liquid or a gas (water vapour). Scientists recognise each state by properties that define it, such as fluidity and compressibility.

Aboriginal and Torres Strait Islander Peoples might have other ways of understanding the world around them and the relationships between things. They might order the world according to holistic principles from the Dreamtime.

Primary**Connections** recommends working with Aboriginal and Torres Strait Islander community members to access local and relevant cultural perspectives. Protocols for engaging with Aboriginal and Torres Strait Islander community members are provided in state and territory education guidelines. Links to these are provided on the Primary**Connections** website.

## Sustainability

The *What's the matter?* unit provides opportunities for students to understand that some common materials are heated at high temperatures to become liquids that are more easily moulded. This has direct applications in understanding the ways materials such as plastic are recycled and the amount of energy necessary to change their shape.

# Alignment with the Australian Curriculum:

## English and Mathematics

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
<b>English-Language</b>	<b>Language variation and change</b>	ACELA1500	Understand that the pronunciation, spelling and meaning of words have histories and change over time	1
	<b>Language for interaction</b>	ACELA1502	Understand how to move beyond making bare assertions and take account of differing perspectives and points of view	3, 4, 5, 6, 7
	<b>Text structure and organisation</b>	ACELA1504	Understand how texts vary in purpose, structure and topic as well as the degree of formality	1, 2, 3, 4, 5, 6, 7
	<b>Expressing and developing ideas</b>	ACELA1512	Understand the use of vocabulary to express greater precision of meaning, and know that words can have different meanings in different contexts	1, 7
<b>English-Literacy</b>	<b>Interacting with others</b>	ACELY1699	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view	1, 3, 4, 5, 6
		ACELY1796	Use interaction skills, for example paraphrasing, questioning and interpreting non-verbal cues and choose vocabulary and vocal effects appropriate for different audiences and purposes	1, 3, 4, 5, 6, 7
	<b>Interpreting, analysing, evaluating</b>	ACELY1703	Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources	1, 2, 3, 4, 5, 6
	<b>Creating texts</b>	ACELY1704	Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience	7
		ACELY1707	Use a range of software including word processing programs with fluency to construct, edit and publish written text, and select, edit and place visual, print and audio elements	7
<b>Mathematics-Number and Algebra</b>	<b>Number and place value</b>	ACMNA291	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems	1, 2, 3, 5, 6
<b>Mathematics-Measurement and Geometry</b>	<b>Using units of measurement</b>	ACMMG108	Choose appropriate units of measurement for length, area, volume, capacity and mass	2, 3, 5, 6
<b>Mathematics-Statistics and Probability</b>	<b>Data representation and interpretation</b>	ACMSP118	Pose questions and collect categorical or numerical data by observation or survey	1, 6
		ACMSP119	Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies	2, 3, 5, 6
		ACMSP120	Describe and interpret different data sets in context	3, 5, 6

 All the material in the first four columns of this table is sourced from the Australian Curriculum.

Other links are highlighted at the end of lessons where possible. These links will be revised and updated on the website ([www.primaryconnections.org.au](http://www.primaryconnections.org.au)).