

## Alignment with the Australian Curriculum: Science

This *Melting moments* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 3. This unit is designed to be taught in conjunction with other Year 3 units to cover the full range of the Australian Curriculum: Science content for Year 3.

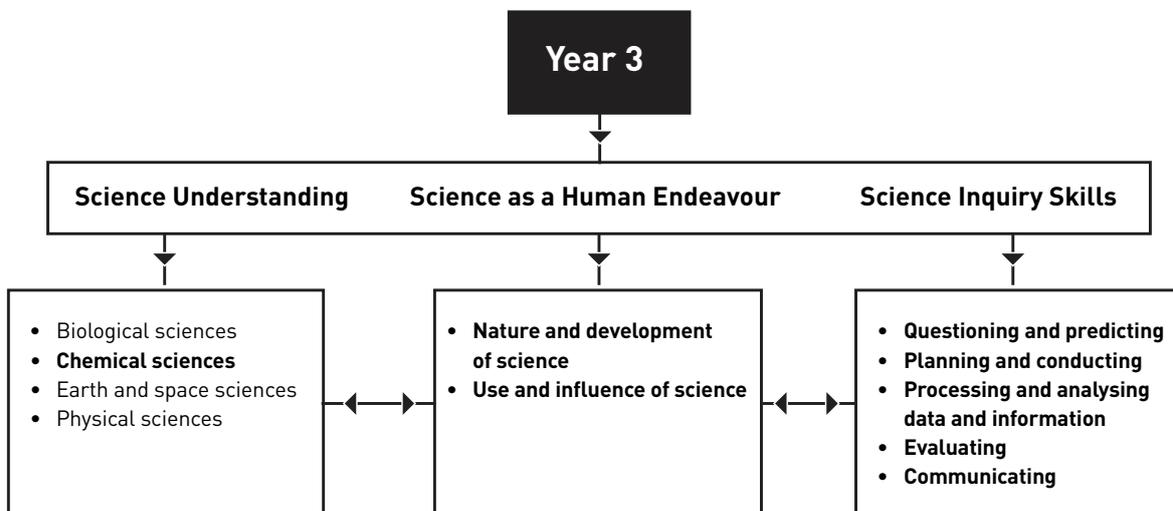
For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 3 content descriptions	Lessons
<b>Science Understanding (SU)</b>	<b>Chemical sciences</b>	ACSSU046	A change of state between solid and liquid can be caused by adding or removing heat	1–7
<b>Science as a Human Endeavour (SHE)</b>	<b>Nature and development of science</b>	ACSHE050	Science involves making predictions and describing patterns and relationships	1, 2, 3, 4, 5
	<b>Use and influence of science</b>	ACSHE051	Science knowledge helps people to understand the effect of their actions	7
<b>Science Inquiry Skills (SIS)</b>	<b>Questioning and predicting</b>	ACSIS053	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge	1, 2, 3, 4, 6
	<b>Planning and conducting</b>	ACSIS054	Suggest ways to plan and conduct investigations to find answers to questions	6
		ACSIS055	Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate	2, 3, 4, 6
	<b>Processing and analysing data and information</b>	ACSIS057	Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends	5, 6, 7
		ACSIS215	Compare results with predictions, suggesting possible reasons for findings	2, 3, 4, 6
	<b>Evaluating</b>	ACSIS058	Reflect on the investigation, including whether a test was fair or not	6
	<b>Communicating</b>	ACSIS060	Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports	3, 4, 5, 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.



**AC** 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 *Melting moments* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Melting moments</i>
<b>Patterns, order and organisation</b>	Students describe solids and liquids by identifying similarities and differences in a range of materials. They identify patterns in the rates of melting and freezing of substances.
<b>Form and function</b>	Students observe that liquids and solids have different properties which determine their use. They explore the way a solid can be changed to a liquid and then be moulded by cooling to have different uses.
<b>Stability and change</b>	Students explore the way materials can change from solid to liquid or vice-versa depending on the temperature. They observe that the freezing point of a substance under the same conditions is always the same.
<b>Scale and measurement</b>	Students are introduced to a simple measurement scale of melting points. They explore how the rate of change of state can be influenced by the size of the surface area.
<b>Matter and energy</b>	Students investigate the effect of adding or removing heat on the change of state of materials.
<b>Systems</b>	Students discuss simple systems of materials changing state with a change of external temperature.

## 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>Melting moments</i>
<b>Recognising questions that can be investigated scientifically and investigating them</b>	Students generate inquiry questions about changing solids to liquids and visa-versa by adding or removing heat. They discuss and formulate plans of action to answer these questions, including completing scientific investigations and generating new claims to answer their questions.

## 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 the 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 3 achievement standard. Rubrics to help teachers make these judgements are available on the PrimaryConnections 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 unit specific information see the next page. 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.

## Melting moments—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	Melting moments examples
<b>Literacy</b>	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>Primary <b>Connections</b> 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>Melting moments</i> the literacy focuses are:</p> <ul style="list-style-type: none"> <li>• science journals</li> <li>• word walls</li> <li>• line drawings</li> <li>• storyboards</li> <li>• role-plays</li> <li>• tables</li> <li>• procedural texts</li> <li>• graphs.</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> </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>• use interactive resource technology to view, record and analyse information</li> <li>• use ICT to create multimedia presentations.</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>• develop evidence-based claims.</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 PrimaryConnections 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)

*Melting moments* focuses on the Western science way of making evidence-based claims about the way materials might change state by adding or removing heat.

Aboriginal and Torres Strait Islander Peoples might have other explanations for the observed phenomenon of materials changing from liquids to solids or vice versa.

PrimaryConnections recommends working with Aboriginal and Torres Strait Islander Peoples community members to access Aboriginal and Torres Strait Islander Peoples 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 PrimaryConnections website.

### Sustainability

The *Melting moments* 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 3 content descriptions	Lessons
English– Language	Language variation and change	ACELA1475	Understand that languages have different written and visual communication systems, different oral traditions and different ways of constructing meaning	2
	Language for interaction	ACELA1476	Understand that successful cooperation with others depends on shared use of social conventions, including turn-taking patterns, and forms of address that vary according to the degree of formality in social situations	2, 3, 4, 6
	Text structure and organisation	ACELA1478	Understand how different types of texts vary in use of language choices, depending on their purpose and context (for example, tense, mood, and types of sentences)	1, 3, 4, 5, 6, 7
	Expressing and developing ideas	ACELA1484	Learn extended and technical vocabulary and ways of expressing opinion including modal verbs and adverbs	7
English– Literature	Responding to literature	ACELT1596	Draw connections between personal experiences and the worlds of texts, and share responses with others	5, 7
	Creating literature	ACELT1791	Create texts that adapt language features and patterns encountered in literacy texts, for example, characterisation, rhyme, rhythm, mood, music sound effects and dialogue	7
English– Literacy	Interacting with others	ACELY1676	Listen to and contribute to conversations and discussions to share information and ideas and negotiate in collaborative situations	1, 3, 4, 6, 7
		ACELY1792	Use interaction skills, including active listening behaviours and communicate in a clear, coherent manner using a variety of everyday and learned vocabulary and appropriate tone, pace, pitch and volume	1–7
	Interpreting, analysing, evaluating	ACELY1679	Read an increasing range of different types of texts by combining contextual, semantic, grammatical and phonic knowledge, using text processing strategies, for example, monitoring, predicting, confirming, rereading reading on and self-correcting	2, 3, 4
Mathematics– Measurement and Geometry	Using units of measurement	ACMMG061	Measure, order and compare objects using familiar metric units of length, mass and capacity	6
Mathematics– Statistics and Probability	Data representation and interpretation	ACMSP069	Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies	3, 4, 5
		ACMSP070	Interpret and compare data displays	2, 3, 4, 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)).