

Comparison of AC v8.4 to v9.0

Year 8: Science

Key	same/refined	removed	new	moved
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Note that v8.4 content descriptions may have been reordered to align with v9.0 content descriptions.

Version 8.4			Version 9.0		
Achievement standard			Achievement standard		
<p>By the end of Year 8, 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.</p> <p>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.</p>			<p>By the end of Year 8 students explain the role of specialised cell structures and organelles in cellular function and analyse the relationship between structure and function at organ and body system levels. They apply an understanding of the theory of plate tectonics to explain patterns of change in the geosphere. They explain how the properties of rocks relate to their formation and influence their use. They compare different forms of energy and represent transfer and transformation of energy in simple systems. They classify and represent different types of matter and distinguish between physical and chemical change. Students analyse how different factors influence development of and lead to changes in scientific knowledge. They analyse the key considerations that inform scientific responses and how these responses impact society. They analyse the importance of science communication in shaping viewpoints, policies and regulations.</p> <p>Students plan and conduct safe, reproducible investigations to test relationships and explore models. They describe potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data. They select and use equipment to generate and record data with precision. They select and construct appropriate representations to organise and process data and information. They analyse data and information to describe patterns, trends and relationships and identify anomalies. They identify assumptions and sources of error in methods and analyse conclusions and claims with reference to conflicting evidence and unanswered questions. They construct evidence-based arguments to support conclusions and evaluate claims. They select and use language and text features appropriately for their purpose when communicating their ideas, findings and arguments to specific audiences.</p>		
Strands	Sub-strands	Content descriptions	Content descriptions	Sub-strands	Strands
Science understanding	Biological sciences	cells are the basic units of living things; they have specialised structures and functions ACSSU149 multi-cellular organisms contain systems of organs carrying out specialised functions that enable them to survive and reproduce ACSSU150	recognise cells as the basic units of living things, compare plant and animal cells , and describe the functions of specialised cell structures and organelles AC9S8U01 analyse the relationship between structure and function of cells, tissues and organs in a plant and an animal organ system and explain how these systems enable survival of the individual AC9S8U02	Biological sciences	Science understanding
	Earth and space sciences	sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales ACSSU153	investigate tectonic activity including the formation of geological features at divergent, convergent and transform plate boundaries and describe the scientific evidence for the theory of plate tectonics AC9S8U03 Moved from Year 9 describe the key processes of the rock cycle, including the timescales over which they occur, and examine how the properties of sedimentary, igneous and metamorphic rocks reflect their formation and influence their use AC9S8U04	Earth and space sciences	
	Physical sciences	energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems ACSSU155	classify different types of energy as kinetic or potential and investigate energy transfer and transformations in simple systems AC9S8U05	Physical sciences	
	Chemical sciences	properties of the different states of matter can be explained in terms of the motion and arrangement of particles ACSSU151 Moved to Year 7 differences between elements, compounds and mixtures can be described at a particle level ACSSU152 Moved to Year 7 chemical change involves substances reacting to form new substances ACSSU225	classify matter as elements, compounds or mixtures and compare different representations of these, including 2-dimensional and 3-dimensional models, symbols for elements and formulas for molecules and compounds AC9S8U06 compare physical and chemical changes and identify indicators of energy change in chemical reactions AC9S8U07 Moved from Year 9	Chemical sciences	
Science as a human endeavour	scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ACSHE134 Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures ACSHE226 Moved to Years 5–6		explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S8H01 investigate how cultural perspectives and world views influence the development of scientific knowledge AC9S8H02	Science as a human endeavour	
	solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations ACSHE135 people use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity ACSHE136		examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations AC9S8H03 Moved from Years 9–10 explore the role of science communication in informing individual viewpoints and community policies and regulations AC9S8H04		

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	Version 8.4	Version 9.0	
Science inquiry skills	identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ACSIS139	develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships AC9S8I01	Science inquiry
	collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ACSIS140 measure and control variables, select equipment appropriate to the task and collect data with accuracy ACSIS141	plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place AC9S8I02 select and use equipment to generate and record data with precision , using digital tools as appropriate AC9S8I03	
	construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ACSIS144 summarise data, from students' own investigations and secondary sources , and use scientific understanding to identify relationships and draw conclusions based on evidence ACSIS145	select and construct appropriate representations, including tables, graphs, models and mathematical relationships , to organise and process data and information AC9S8I04 analyse data and information to describe patterns, trends and relationships and identify anomalies AC9S8I05	
	reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ACSIS146 use scientific knowledge and findings from investigations to evaluate claims based on evidence ACSIS134	analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions AC9S8I06 construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information AC9S8I07	
	communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ACSIS148	write and create texts to communicate ideas, findings and arguments for specific purposes and audiences , including selection of appropriate language and text features , using digital tools as appropriate AC9S8I08	

Considerations for planning for Year 8, in the first year of implementation

Key	assumed prior knowledge	duplicated content
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In the initial year of implementing the Australian Curriculum v9.0: Science, teachers need to consider the implications of content changes as they transition from v8.4.

The table below:

- identifies changes between v8.4 and v9.0 that may influence the sequence of students' learning
- outlines considerations for planning teaching and learning programs for the first year of implementation
- recognises that content in both SHE and SI are taught in two-year bands from Year 1.

	Year 7 content in v8.4	Year 8 content in v9.0	Considerations
Science understanding	Year 7 change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction , acting on the object ACSSU117	Year 8 classify different types of energy as kinetic or potential and investigate energy transfer and transformations in simple systems AC9S8U05	Consider the context through which energy types are explored to minimise the focus gravitational potential energy .
	mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques ACSSU113	classify matter as elements, compounds or mixtures and compare different representations of these, including 2-dimensional and 3-dimensional models, symbols for elements and formulas for molecules and compounds AC9S8U06 compare physical and chemical changes and identify indicators of energy change in chemical reactions AC9S8U07	<ul style="list-style-type: none"> Students in Year 8 during the first year of implementation will miss content relating to using the particle theory and the particle model, as it appears in Year 7 in v9.0. Consider introducing the Chemical sciences Year 8 content with the following <ul style="list-style-type: none"> use particle theory to describe the arrangement of particles in a substance, including the motion of and attraction between particles, and relate this to the properties of the substance AC9S7U05. use a particle model to describe differences between pure substances and mixtures and apply understanding of properties of substances to separate mixtures AC9S7U06.
Science as a human endeavour	Years 7–8 Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions ACSHE098	Years 7–8 explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S8H01	<ul style="list-style-type: none"> Students in Year 8 during the first year of implementation will miss content focussing on collaboration of scientists, as it appears in Year 6 in v9.0 <ul style="list-style-type: none"> examine why advances are often the result of collaboration of build on the work of others AC9S6H01. <p>Therefore, consider providing opportunities for exploring examples of collaboration between scientists.</p>

	Year 7 content in v8.4	Year 8 content in v9.0	Considerations
Science inquiry	<p>Years 7–8 collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ACSIS140</p>	<p>Years 7–8 plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place AC9S8I02</p>	<ul style="list-style-type: none"> Students in Year 8 during the first year of implementation will miss content relating to repeatable investigations and identifying required permissions to conduct investigations on Country/Place as it appears in Year 6 v9.0 <ul style="list-style-type: none"> plan and conduct repeatable investigations to answer questions, including, as appropriate, deciding the variables to be changed, measured and controlled in fair tests; describing potential risks; planning for the safe use of equipment and materials; and identifying required permissions to conduct investigations on Country/Place AC9S6I02. <p>Therefore, opportunities need to be provided to</p> <ul style="list-style-type: none"> understand the difference between repeatable and reproducible investigations identify required permissions to conduct investigations on Country/Place.
	<p>construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ACSIS144</p>	<p>select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S8I04</p>	<ul style="list-style-type: none"> Students in Year 8 during the first year of implementation will miss content relating to constructing and using models as it appears in Year 6 v9.0 <ul style="list-style-type: none"> construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships AC9S6I04. <p>Therefore, consider providing opportunities to construct and use visual or physical models.</p>
	<p>reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ACSIS146</p>	<p>construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information AC9S8I07</p>	<ul style="list-style-type: none"> Students in Year 8 during the first year of implementation will miss content relating to posing questions, and selecting evidence to draw reasoned conclusions as it appears in Year 6 v9.0 <ul style="list-style-type: none"> compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions AC9S6I05. <p>Therefore, opportunities to pose questions for further investigation and select evidence to draw reasoned conclusions need to be provided.</p>
	<p>communicate ideas, findings and evidence-based solutions to problems using scientific language, and representations, using digital technologies as appropriate ACSIS148</p>	<p>write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate AC9S8I08</p>	<ul style="list-style-type: none"> Students in Year 8 during implementation need to be introduced to the language of communication including purpose, audience and text features as they appear in Year 6 in v9.0 <ul style="list-style-type: none"> write and create texts to communicate ideas and findings for specific purposes and audiences, including selection of language features, using digital tools as appropriate AC9S6I08. <p>Therefore, opportunities to write and create texts for specific purposes and audiences including selecting language features need to be provided.</p>

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