

# Comparison of AC v8.4 to v9.0

## Year 7: Science

| Key | same/refined | removed | new | moved |
|-----|--------------|---------|-----|-------|
|-----|--------------|---------|-----|-------|

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 7, students describe techniques to separate pure substances from mixtures. They represent and predict the effects of unbalanced forces, including Earth's gravity, on motion. They explain how the relative positions of Earth, the sun and moon affect phenomena on Earth. They analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth systems. They predict the effect of human and environmental changes on interactions between organisms and classify and organise diverse organisms based on observable differences. Students describe situations where scientific knowledge from different science disciplines and diverse cultures has been used to solve a real-world problem. They explain possible implications of the solution for different groups in society.</p> <p>Students identify questions that can be investigated scientifically. They plan fair experimental methods, identifying variables to be changed and measured. They select equipment that improves fairness and accuracy and describe how they considered safety. Students draw on evidence to support their conclusions. They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods. They communicate their ideas, methods and findings using scientific language and appropriate representations.</p> |  |   | <p>By the end of Year 7 students explain how biological diversity is ordered and organised. They represent flows of matter and energy in ecosystems and predict the effects of environmental changes. They model cycles in the Earth-sun-moon system and explain the effects of these cycles on Earth phenomena. They represent and explain the effects of forces acting on objects. They use particle theory to explain the physical properties of substances and develop processes that separate mixtures. Students identify the factors that can influence development of and lead to changes in scientific knowledge. They explain how scientific responses are developed and can impact society. They explain the role of science communication in shaping viewpoints, policies and regulations.</p> <p>Students plan and conduct safe, reproducible investigations to test relationships and aspects of scientific models. They identify potential ethical issues and intercultural considerations required for field locations or use of secondary data. They use equipment to generate and record data with precision. They select and construct appropriate representations to organise data and information. They process data and information and analyse it to describe patterns, trends and relationships. They identify possible sources of error in methods and identify unanswered questions in conclusions and claims. They identify evidence to support their conclusions and construct arguments to support or dispute claims. They select and use language and text features appropriately for their purpose and audience when communicating their ideas and findings.</p> |                              |                       |
| Strands  | Sub-strands  | Content descriptions  | Content descriptions   | Sub-strands                  | Strands               |
| Science understanding  | Biological sciences  | classification helps organise the diverse group of organisms ACSSU111<br>Interactions between organisms, including the effects of human activities can be represented by food chains and food webs ACSSU112 <b>Moved to Year 4</b>  | investigate the role of classification in ordering and organising the diversity of life on Earth and <b>use and develop classification tools including dichotomous keys</b> AC9S7U01<br><b>use models</b> , including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and <b>biotic factors</b> on populations AC9S7U02 <b>Moved from Year 9</b>   | Biological sciences          | Science understanding |
|  | Earth and space sciences   | predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon ACSSU115<br><b>some of Earth's resources are renewable</b> , including water that cycles through the environment, but others are <b>non-renewable</b> ACSSU116 <b>Moved to Year 4</b> | model cyclic changes in the relative positions of the Earth, sun and moon and explain how these cycles cause eclipses and influence predictable phenomena on Earth, including seasons and <b>tides</b> AC9S7U03  | Earth and space sciences     |                       |
|  | Physical sciences  | change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object ACSSU117  | investigate and <b>represent balanced</b> and unbalanced forces, including gravitational force, acting on objects, and <b>relate changes in an object's motion to its mass and the magnitude and direction of forces acting on it</b> AC9S7U04   | Physical sciences            |                       |
|  | Chemical sciences  | mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques ACSSU113  | <b>use particle theory</b> 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 <b>Moved from Year 8</b><br><b>use a particle model</b> to describe differences between pure substances and mixtures and apply understanding of properties of substances to separate mixtures AC9S7U06 <b>Moved from Year 8</b>  | Chemical sciences            |                       |
| Science as a human endeavour   | scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ACSHE119<br>science knowledge can <b>develop through collaboration across the disciplines of science</b> and the contributions of people from a range of cultures ACSHE223 <b>Moved to Years 5–6</b>               |   | explain how new evidence or <b>different perspectives</b> can lead to changes in scientific knowledge AC9S7H01<br>investigate how cultural perspectives and world views influence the development of scientific knowledge AC9S7H02   | 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 ACSHE120<br><b>people use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity</b> ACSHE121 |   | <b>examine how proposed scientific responses to contemporary issues may impact on society</b> and explore ethical, <b>environmental, social and economic considerations</b> AC9S7H03 <b>Moved from Years 9–10</b><br><b>explore the role of science communication in informing individual viewpoints and community policies and regulations</b> AC9S7H04   |                              |                       |
| Science inquiry skills   | identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ACSIS124  |   | develop investigable questions, <b>reasoned</b> predictions and <b>hypotheses to explore scientific models, identify patterns and test relationships</b> AC9S7I01  | Science inquiry              |                       |
|  | <b>collaboratively</b> and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ACSIS125<br>measure and control variables, select equipment appropriate to the task and collect data with <b>accuracy</b> ACSIS126                     |   | plan and conduct <b>reproducible</b> investigations to answer questions and test hypotheses, including identifying variables and <b>assumptions</b> and, as appropriate, recognising and managing risks, considering ethical issues and <b>recognising key considerations regarding heritage sites and artefacts on Country/Place</b> AC9S7I02   |                              |                       |

|     |              |         |     |       |
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| Version 8.4   | Version 9.0  |
|---|--|
|   | select and use equipment to generate and record data with <b>precision</b> , using digital tools as appropriate AC9S7I03   |
| construct and use a range of representations, including graphs, <b>keys</b> and models to represent and analyse patterns or relationships in data using digital technologies as appropriate ACSIS129<br>summarise data, from students' own investigations and <b>secondary sources</b> , and use scientific understanding to identify relationships and draw conclusions based on evidence ACSIS130 | select and construct appropriate representations, including tables, graphs, models and <b>mathematical relationships</b> , to organise and process data and information AC9S7I04<br>analyse data and information to <b>describe patterns, trends</b> and relationships and <b>identify anomalies</b> AC9S7I05  |
| reflect on scientific investigations <b>including evaluating the quality of the data collected, and identifying improvements</b> ACSIS131<br>use scientific knowledge and findings from investigations to evaluate claims based on evidence CSIS132   | analyse methods, conclusions and claims for <b>assumptions, possible sources of error, conflicting evidence and unanswered questions</b> AC9S7I06<br>construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and <b>cultural protocols associated with using or citing secondary data or information</b> AC9S7I07 |
| communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ACSIS133   | write and create texts to communicate ideas, findings and <b>arguments for specific purposes and audiences</b> , including selection of appropriate language and <b>text features</b> , using digital tools as appropriate AC9S7I08  |

## Considerations for planning Year 7, in the first year of implementation

|     |                                |                           |
|-----|--------------------------------|---------------------------|
| Key | <b>assumed prior knowledge</b> | <b>duplicated content</b> |
|-----|--------------------------------|---------------------------|

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 6 content in v8.4  | Year 7 content in v9.0   | Considerations  |
|------------------------------|---|--|---|
| Science understanding        | <b>Year 6</b><br>changes to materials can be reversible or irreversible ACSSU095  | <b>Year 7</b><br>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<br><br>use a particle model to describe differences between pure substances and mixtures and apply understanding of properties of substances to separate mixtures AC9S7U06 | <ul style="list-style-type: none"> <li>• Students in Year 7 during the first year of implementation will miss content relating to the particle theory as used to explain changes of state, as it appears in Year 8 in v8.4 and Year 5 in v9.0 <ul style="list-style-type: none"> <li>- <b>explain observable properties of solids, liquids and gases by modelling the motion and arrangement of particles</b> AC9S5U04.</li> </ul> Therefore, consider modelling the motion and arrangement of particles in changes of state as an introduction to Chemical sciences. </li> <li>• Students in Year 7 during implementation will miss content relating to the water cycle, as it appears in Year 7 in v8.4 and Year 4 in v9.0 <ul style="list-style-type: none"> <li>- <b>identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and oceans: precipitation, evaporation and condensation</b> AC9S4U02.</li> </ul> Therefore, consider using the water cycle as an example to model the motion and arrangement of particles in changes of state. </li> </ul> |
| Science as a human endeavour | <b>Years 5–6</b><br>Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions ACSHE098   | <b>Years 7–8</b><br>explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S7H01  | <ul style="list-style-type: none"> <li>• Students in Year 7 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"> <li>- <b>examine why advances are often the result of collaboration of build on the work of others</b> AC9S5H01.</li> </ul> Therefore, consider providing opportunities for exploring examples of collaboration between scientists. </li> </ul>  |
| Science inquiry              | <b>Years 5–6</b><br>identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks ACSIS103 | <b>Years 7–8</b><br>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 AC9S7I02  | <ul style="list-style-type: none"> <li>• Students in Year 7 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"> <li>- plan and conduct <b>repeatable</b> 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; <b>and identifying required permissions to conduct investigations on Country/Place</b> AC9S6I02.</li> </ul> Therefore, opportunities need to be provided to <ul style="list-style-type: none"> <li>▪ understand the difference between repeatable and reproducible investigations</li> <li>▪ identify required permissions to conduct investigations on Country/Place.</li> </ul> </li> </ul>  |

|  | Year 6 content in v8.4  | Year 7 content in v9.0   | Considerations  |
|--|---|--|---|
|  | 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 ACSIS107 | select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S7I04   | <ul style="list-style-type: none"> <li>Students in Year 7 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"> <li>construct and use appropriate representations, including tables, graphs and <u>visual or physical models</u>, to organise and process data and information and describe patterns, trends and relationships AC9S6I04.</li> </ul> </li> </ul> <p>Therefore, opportunities need to be provided to construct and use visual or physical models.</p>   |
|  | reflect on and suggest improvements to scientific investigations ACSIS108   | <u>construct evidence-based arguments</u> to support conclusions or evaluate claims and consider any ethical issues and <u>cultural protocols associated with using or citing secondary data or information</u> AC9S7I07 | <ul style="list-style-type: none"> <li>Students in Year 7 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"> <li>compare methods and findings with those of others, recognise possible sources of error, <u>pose questions for further investigation and select evidence to draw reasoned conclusions</u> AC9S6I05.</li> </ul> </li> </ul> <p>Therefore, opportunities to pose questions for further investigation and select evidence to draw reasoned conclusions need to be provided.</p>         |
|  | communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts ACSIS110   | 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 AC9S7I08      | <ul style="list-style-type: none"> <li>Students in Year 7 during the first year of implementation need to be introduced to the language of communication including purpose, audience and text features as they appear in Years 5–6 in v9.0 <ul style="list-style-type: none"> <li>write and create texts to communicate ideas and findings for <u>specific purposes and audiences, including selection of language features</u>, using digital tools as appropriate AC9S6I08.</li> </ul> </li> </ul> <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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