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| Year 8 standard elaborations —  Australian Curriculum v9.0: Science |

## Purpose

The standards elaborations (SEs) support teachers to connect curriculum to evidence in assessment so that students are assessed on what they have had the opportunity to learn. The SEs can be used to:

* make consistent and comparable judgments, on a five-point scale, about the evidence of learning in a folio of student work across a year/band
* develop task-specific standards (or marking guides) for individual assessment tasks
* quality assure planning documents to ensure coverage of the achievement standard across a year/band.

## Structure

The SEs have been developed using the Australian Curriculum achievement standard. The achievement standard for Science describes what students are expected to know and be able to do at the end of each year. Teachers use the SEs during and at the end of a teaching period to make on-balance judgments about the qualities in student work that demonstrate the depth and breadth of their learning.

In Queensland, the achievement standard represents the C standard — a sound level of knowledge and understanding of the content, and application of skills. The SEs are presented in a matrix where the discernible differences and/or degrees of quality between each performance level are highlighted. Teachers match these discernible differences and/or degrees of quality to characteristics of student work to make judgments across a five-point scale.

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| **Year 8 Australian Curriculum: Science achievement standard** |
| 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.  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. |
| Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum Version 9.0 Science for Foundation–10* <https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/science/year-8> |

## Year 8 Science standard elaborations

|  | | A | B | C | D | E |
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|  | | The folio of student work contains evidence of the following: | | | | |
| Science understanding | Biological sciences | * thorough explanation of the role of specialised cell structures and organelles in cellular function * purposeful analysis of the relationship between structure and function at organ and body system levels | * detailed explanation of the role of specialised cell structures and organelles in cellular function * informed analysis of the relationship between structure and function at organ and body system levels | * explanation of the role of specialised cell structures and organelles in cellular function * analysis of the relationship between structure and function at organ and body system levels | * description of specialised cell structures and organelles * description of the relationship between structure and function at organ and body system levels | * identification of specialised cell structures and/or organelles * statement/s about the structure and function at organ or body system levels |
| Earth and space sciences | reasoned explanation of patterns of change in the geosphere through application of an understanding of the theory of plate tectonics | informed explanation of patterns of change in the geosphere through application of an understanding of the theory of plate tectonics | explanation of patterns of change in the geosphere through application of an understanding of the theory of plate tectonics | description of patterns of change in the geosphere through guided application of an understanding of the theory of plate tectonics | statement/s about the theory of plate tectonics |
| considered explanation of how the properties of rocks relate to their formation and influence their use | informed explanation of how the properties of rocks relate to their formation and influence their use | explanation of how the properties of rocks relate to their formation and influence their use | description of the properties of sedimentary, igneous and metamorphic rocks | identification of properties of rocks |
| Physical sciences | * thorough comparison of different forms of energy * purposeful representation of transfer and transformation of energy in simple systems | * detailed comparison of different forms of energy * effective representation of transfer and transformation of energy in simple systems | * comparison of different forms of energy * representation of transfer and transformation of energy in simple systems | * description of different forms of energy * partial representation of transfer and transformation of energy in simple systems | * identification of forms of energy * directed representation of transfer and transformation of energy in simple systems |
| Chemical sciences | * considered classification of different types of matter * purposeful representation of different types of matter * reasoned distinction between physical and chemical changes | * informed classification of different types of matter * informed representation of different types of matter * informed distinction between physical and chemical changes | * classification of different types of matter * representation of different types of matter * distinction between chemical and physical changes | * description of different types of matter * partial representation of different types of matter * description of physical and chemical changes | * identification of types of matter * directed representation of different types of matter * identification of physical or chemical changes |
| Science as a human endeavour | Nature and development of science | thorough analysis of how different factors influence development of and lead to changes in scientific knowledge | detailed analysis of how different factors influence development of and lead to changes in scientific knowledge | analysis of how different factors influence development of and lead to changes in scientific knowledge | description of factors that influence the development of and lead to changes in scientific knowledge | identification of factors that influence the development of scientific knowledge |
| Use and influence of science | * thorough analysis of the key considerations that inform scientific responses and how these responses impact society * thorough analysis of the importance of science communication in shaping viewpoints, policies and regulations | * detailed analysis of the key considerations that inform scientific responses and how these responses impact society * detailed analysis of the importance of science communication in shaping viewpoints, policies and regulations | * analysis of the key considerations that inform scientific responses and how these responses impact society * analysis of the importance of science communication in shaping viewpoints, policies and regulations | * description of considerations that inform scientific responses * description of the importance of science communication in shaping viewpoints, policies and regulations | * statement/s about considerations that inform scientific responses * statement/s about the importance of science communication |
| Science inquiry | Questioning and predicting | purposeful planning of investigations to:   * test relationships * explore models | plausible planning of investigations to:   * test relationships * explore models | planning of investigations to:   * test relationships * explore models | guided planning of investigations to:   * test relationships * explore models | directed planning of investigations to:   * test relationships * explore models |
| **Planning and conducting** | thorough planning and conducting of safe, reproducible investigations | detailed planning and conducting of safe, reproducible investigations | planning and conducting of safe, reproducible investigations | planning and conducting of safe investigations | conducting of safe investigations |
| considered description of potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data | informed description of potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data | description of potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data | identification of potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data | directed identification of potential ethical issues and intercultural considerations needed for specific field locations or use of secondary data |
| **Processing, modelling and analysing** | selection and use of equipment for the purposeful generation and recording of data with precision | selection and use of equipment for the effective generation and recording of data with precision | selection and use of equipment to generate and record data with precision | selection and use of equipment to generate and record data | use of equipment to generate and record data |
| selection and construction of appropriate representations for the purposeful organisation and processing of data and information | selection and construction of appropriate representations for the effective organisation and processing of data and information | selection and construction of appropriate representations for the organisation and processing of data and information | selection and construction of representations for the organisation and processing of data and information | use of provided representations for the organisation and processing of data and information |
| * thorough analysis of data and information to describe patterns, trends and relationships * thorough analysis of data and information to identify anomalies | * detailed analysis of data and information to describe patterns, trends and relationships * detailed analysis of data and information to identify anomalies | * analysis of data and information to describe patterns, trends and relationships * analysis of data and information to identify anomalies | * use of data and information to identify patterns, trends and relationships * use of data and information to identify anomalies | statement/s about patterns, trends, relationships or anomalies |
| **Evaluating** | * considered identification of assumptions and sources of error in methods * purposeful analysis of conclusions and claims with reference to conflicting evidence and unanswered questions | * informed identification of assumptions and sources of error in methods * informed analysis of conclusions and claims with reference to conflicting evidence and unanswered questions | * identification of assumptions and sources of error in methods * analysis of conclusions and claims with reference to conflicting evidence and unanswered questions | * guided identification of assumptions or sources of error in methods * identification of conflicting evidence and unanswered questions in conclusions and claims | * statement/s about assumptions or errors * identification of conflicting evidence or unanswered questions in conclusions and claims, with direction |
| purposeful construction of evidence-based arguments to support conclusions and evaluate claims | informed construction of evidence-based arguments to support conclusions and evaluate claims | construction of evidence-based arguments to support conclusions and evaluate claims | guided construction of evidence-based arguments to support conclusions and evaluate claims | directed construction of evidence-based arguments to support conclusions and evaluate claims |
| **Communicating** | appropriate selection and use of language and text features for their purpose for considered communication of their ideas, findings and arguments to specific audiences. | appropriate selection and use of language and text features for their purpose for informed communication of their ideas, findings and arguments to specific audiences. | appropriate selection and use of language and text features for their purpose when communicating their ideas, findings and arguments to specific audiences. | use of language and text features for their purpose when communicating their ideas, findings and arguments. | use of language and text features when communicating their ideas and findings. |

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| Key | shading emphasises the qualities that discriminate between the A–E descriptors |

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