The Australian Curriculum

<table>
<thead>
<tr>
<th>Learning areas</th>
<th>English, History, Mathematics and Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year levels</td>
<td>Foundation Year</td>
</tr>
<tr>
<td>Curriculum version</td>
<td>Version 1.2</td>
</tr>
<tr>
<td>Dated</td>
<td>Tuesday, 8 March 2011</td>
</tr>
</tbody>
</table>
Mathematics

Rationale and Aims 1
  Rationale 1
  Aims 1

Organisation 2
  Content structure 2
  Mathematics across Foundation to Year 12 4
  Achievement standards 6
  Diversity of learners 6
  General capabilities 8
  Cross-curriculum priorities 10
  Links to the other learning areas 11
  Implications for teaching, assessment and reporting 12

Curriculum Foundation–10 14
  Foundation Year 14

Glossary 15
Rationale and Aims

Rationale

Learning mathematics creates opportunities for and enriches the lives of all Australians. The Australian Curriculum: Mathematics provides students with essential mathematical skills and knowledge in Number and Algebra, Measurement and Geometry, and Statistics and Probability. It develops the numeracy capabilities that all students need in their personal, work and civic life, and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built.

Mathematics has its own value and beauty and the Australian Curriculum: Mathematics aims to instil in students an appreciation of the elegance and power of mathematical reasoning. Mathematical ideas have evolved across all cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and providing access to new tools for continuing mathematical exploration and invention. The curriculum focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills. These capabilities enable students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.

The Australian Curriculum: Mathematics ensures that the links between the various components of mathematics, as well as the relationship between mathematics and other disciplines, are made clear. Mathematics is composed of multiple but interrelated and interdependent concepts and systems which students apply beyond the mathematics classroom. In science, for example, understanding sources of error and their impact on the confidence of conclusions is vital, as is the use of mathematical models in other disciplines. In geography, interpretation of data underpins the study of human populations and their physical environments; in history, students need to be able to imagine timelines and time frames to reconcile related events; and in English, deriving quantitative and spatial information is an important aspect of making meaning of texts.

The curriculum anticipates that schools will ensure all students benefit from access to the power of mathematical reasoning and learn to apply their mathematical understanding creatively and efficiently. The mathematics curriculum provides students with carefully paced, in-depth study of critical skills and concepts. It encourages teachers to help students become self-motivated, confident learners through inquiry and active participation in challenging and engaging experiences.

Aims

The Australian Curriculum: Mathematics aims to ensure that students:

- are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives and as active citizens
- develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes, and are able to pose and solve problems and reason in Number and Algebra, Measurement and Geometry, and Statistics and Probability
- recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.
Content structure

The Australian Curriculum: Mathematics is organised around the interaction of three content strands and four proficiency strands.

The content strands are Number and Algebra, Measurement and Geometry, and Statistics and Probability. They describe what is to be taught and learnt.

The proficiency strands are Understanding, Fluency, Problem Solving, and Reasoning. They describe how content is explored or developed, that is, the thinking and doing of mathematics. They provide the language to build in the developmental aspects of the learning of mathematics and have been incorporated into the content descriptions of the three content strands described above. This approach has been adopted to ensure students’ proficiency in mathematical skills develops throughout the curriculum and becomes increasingly sophisticated over the years of schooling.

Content strands

Number and Algebra

Number and Algebra are developed together, as each enriches the study of the other. Students apply number sense and strategies for counting and representing numbers. They explore the magnitude and properties of numbers. They apply a range of strategies for computation and understand the connections between operations. They recognise patterns and understand the concepts of variable and function. They build on their understanding of the number system to describe relationships and formulate generalisations. They recognise equivalence and solve equations and inequalities. They apply their number and algebra skills to conduct investigations, solve problems and communicate their reasoning.

Measurement and Geometry

Measurement and Geometry are presented together to emphasise their relationship to each other, enhancing their practical relevance. Students develop an increasingly sophisticated understanding of size, shape, relative position and movement of two-dimensional figures in the plane and three-dimensional objects in space. They investigate properties and apply their understanding of them to define, compare and construct figures and objects. They learn to develop geometric arguments. They make meaningful measurements of quantities, choosing appropriate metric units of measurement. They build an understanding of the connections between units and calculate derived measures such as area, speed and density.

Statistics and Probability

Statistics and Probability initially develop in parallel and the curriculum then progressively builds the links between them. Students recognise and analyse data and draw inferences. They represent, summarise and interpret data and undertake purposeful investigations involving the collection and interpretation of data. They assess likelihood and assign probabilities using experimental and theoretical approaches. They develop an increasingly sophisticated ability to critically evaluate chance and data concepts and make reasoned judgments and decisions, as well as building skills to critically evaluate statistical information and develop intuitions about data.

Proficiency strands

The proficiency strands describe the actions in which students can engage when learning and using the content. While not all proficiency strands apply to every content description, they indicate the breadth of mathematical actions that teachers can emphasise.
Understanding

Students build a robust knowledge of adaptable and transferable mathematical concepts. They make connections between related concepts and progressively apply the familiar to develop new ideas. They develop an understanding of the relationship between the ‘why’ and the ‘how’ of mathematics. Students build understanding when they connect related ideas, when they represent concepts in different ways, when they identify commonalities and differences between aspects of content, when they describe their thinking mathematically and when they interpret mathematical information.

Fluency

Students develop skills in choosing appropriate procedures, carrying out procedures flexibly, accurately, efficiently and appropriately, and recalling factual knowledge and concepts readily. Students are fluent when they calculate answers efficiently, when they recognise robust ways of answering questions, when they choose appropriate methods and approximations, when they recall definitions and regularly use facts, and when they can manipulate expressions and equations to find solutions.

Problem Solving

Students develop the ability to make choices, interpret, formulate, model and investigate problem situations, and communicate solutions effectively. Students formulate and solve problems when they use mathematics to represent unfamiliar or meaningful situations, when they design investigations and plan their approaches, when they apply their existing strategies to seek solutions, and when they verify that their answers are reasonable.

Reasoning

Students develop an increasingly sophisticated capacity for logical thought and actions, such as analysing, proving, evaluating, explaining, inferring, justifying and generalising. Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and conclusions reached, when they adapt the known to the unknown, when they transfer learning from one context to another, when they prove that something is true or false and when they compare and contrast related ideas and explain their choices.

Content descriptions

The mathematics curriculum includes content descriptions at each year level. These describe the knowledge, concepts, skills and processes that teachers are expected to teach and students are expected to learn. However, they do not prescribe approaches to teaching. The content descriptions are intended to ensure that learning is appropriately ordered and that unnecessary repetition is avoided. However, a concept or skill introduced at one year level may be revisited, strengthened and extended at later year levels as needed.

Sub-strands

Content descriptions are grouped into sub-strands to illustrate the clarity and sequence of development of concepts through and across the year levels. They support the ability to see the connections across strands and the sequential development of concepts from Foundation to Year 10.
Number and place value (F-8) | Using units of measurement (F-10) | Chance (1-10)

Fractions and decimals (1-6) | Shape (F-7) | Data representation and interpretation (F-10)

Real numbers (7-10) | Geometric reasoning (3-10)

Money and financial mathematics (1-10) | Location and transformation (F-7)

Patterns and algebra (F-10) | Pythagoras and trigonometry (9-10)

Linear and non-linear relationships (8-10)

### Year level descriptions

Year level descriptions emphasise the importance of working mathematically within the content. They provide an overview of the relationship between the proficiencies (Understanding, Fluency, Problem Solving and Reasoning) and the content for each year level.

### Content elaborations

Content elaborations are provided for Foundation to Year 10 to illustrate and exemplify content and assist teachers to develop a common understanding of the content descriptions. They are not intended to be comprehensive content points that all students need to be taught.

### Glossary

A glossary is provided to support the common understanding of key terms in the content descriptions. This support document contains additional information to support the glossary.

### Mathematics across Foundation to Year 12

Although the curriculum is described year by year, this document provides advice across four year groupings on the nature of learners and the relevant curriculum:
• Foundation – Year 2: typically students from 5 to 8 years of age
• Years 3–6: typically students from 8 to 12 years of age
• Years 7–10: typically students from 12 to 15 years of age
• Senior secondary years: typically students from 15 to 18 years of age.

Foundation – Year 2

The early years (5–8 years of age) lay the foundation for learning mathematics. Students at this level can access powerful mathematical ideas relevant to their current lives and learn the language of mathematics, which is vital to future progression.

Children have the opportunity to access mathematical ideas by developing a sense of number, order, sequence and pattern; by understanding quantities and their representations; by learning about attributes of objects and collections, position, movement and direction, and by developing an awareness of the collection, presentation and variation of data and a capacity to make predictions about chance events.

Understanding and experiencing these concepts in the early years provides a foundation for algebraic, statistical and multiplicative thinking, that will develop in subsequent years. These foundations also enable children to pose basic mathematical questions about their world, to identify simple strategies to investigate solutions, and to strengthen their reasoning to solve personally meaningful problems.

Years 3–6

These years emphasise the importance of students studying coherent, meaningful and purposeful mathematics that is relevant to their lives. Students still require active experiences that allow them to construct key mathematical ideas, but also gradually move to using models, pictures and symbols to represent these ideas.

The curriculum develops key understandings by extending the number, measurement, geometric and statistical learning from the early years; by building foundations for future studies through an emphasis on patterns that lead to generalisations; by describing relationships from data collected and represented; by making predictions; and by introducing topics that represent a key challenge in these years, such as fractions and decimals.

In these years of schooling, it is particularly important for students to develop a deep understanding of whole numbers to build reasoning in fractions and decimals and to develop a conceptual understanding of place value. These concepts allow students to develop proportional reasoning and flexibility with number through mental computation skills, and to extend their number sense and statistical fluency.

Years 7–10

These years of school mark a shift in mathematics learning to more abstract ideas. Through key activities such as the exploration, recognition and application of patterns, the capacity for abstract thought can be developed and the ways of thinking associated with abstract ideas can be illustrated.

The foundations built in previous years prepare students for this change. Previously established mathematical ideas can be drawn upon in unfamiliar sequences and combinations to solve non-routine problems and to consequently develop more complex mathematical ideas. However, students of this age also need an understanding of the connections between mathematical concepts and their application in their world as a motivation to learn. This means using contexts directly related to topics of relevance and interest to this age group.

During these years, students need to be able to represent numbers in a variety of ways; to develop an understanding of the benefits of algebra, through building algebraic models and applications and the various applications of geometry; to estimate and select appropriate units of measure; to explore ways of working with data to allow a variety of representations; and to make predictions about events based on their observations.
The intent of the curriculum is to encourage the development of important ideas in more depth, and to promote the interconnectedness of mathematical concepts. An obvious concern is the preparation of students intending to continue studying mathematics in the senior secondary years. Teachers will, in implementing the curriculum, extend the more mathematically able students by using appropriate challenges and extensions within available topics. A deeper understanding of mathematics in the curriculum enhances a student’s potential to use this knowledge to solve non-routine problems, both at this level of study and at later stages.

The 10A content is optional and is intended for students who require more content to enrich their mathematical study whilst completing the common Year 10 content. It is NOT anticipated that all students will attempt the 10A content, but doing so would be advantageous for students intending to pursue Mathematical Methods (Course C) or Specialist Mathematics (Course D) in the senior secondary years. A selection of topics from the 10A curriculum can be completed according to the needs of the students.

It is anticipated that all students will study the Australian Curriculum: Mathematics up to the end of Year 10. From Year 10, the curriculum should provide pathway options suitable for students of differing abilities and interests, and with a range of future career and study plans.

Senior secondary years

Four mathematics courses have been designed for the senior secondary years. They have been designed to allow flexibility for students, taking into account a range of future pathways and the reality that some students reassess their choice of mathematics program part way through the senior secondary years.

The elements of the content strands from Foundation to Year 10 are evident in the senior secondary curriculum, but are not used as the major organisers. The proficiency strands of Understanding, Fluency, Reasoning and Problem Solving are integrated into the content descriptions as in the Foundation to Year 10 curriculum.

Achievement Standards

Across Foundation to Year 10, achievement standards indicate the quality of learning that students should typically demonstrate by a particular point in their schooling. Achievement standards comprise a written description and student work samples.

An achievement standard describes the quality of learning (the extent of knowledge, the depth of understanding, and the sophistication of skills) that would indicate the student is well placed to commence the learning required at the next level of achievement.

The sequence of achievement standards across Foundation to Year 10 describes progress in the learning area. This sequence provides teachers with a framework of growth and development in the learning area.

Student work samples play a key role in communicating expectations described in the achievement standards. Each work sample includes the relevant assessment task, the student’s response, and annotations identifying the quality of learning evident in the student’s response in relation to relevant parts of the achievement standard.

Together, the description of the achievement standard and the accompanying set of annotated work samples help teachers to make judgments about whether students have achieved the standard.

Diversity of Learners
The Australian Curriculum has been developed to ensure that curriculum content and achievement standards establish high expectations for all students. Every student is entitled to enriching learning experiences across all areas of the curriculum. Students in Australian classrooms have multiple, diverse and changing needs that are shaped by individual learning histories and abilities as well as cultural language backgrounds and socio-economic factors.

**Special education needs**

The objectives of the Australian Curriculum are the same for all students. The curriculum offers flexibility for teachers to tailor their teaching in ways that provide rigorous, relevant and engaging learning and assessment opportunities for students with special education needs.

Most students with special education needs can engage with the curriculum provided the necessary adjustments are made to the complexity of the curriculum content and to the means through which students demonstrate their knowledge, skills and understanding.

For some learners, making adjustments to instructional processes and to assessment strategies enables students to achieve educational standards commensurate with their peers.

For other students, teachers will need to make appropriate adjustments to the complexity of the curriculum content, focusing instruction on content different to that taught to others in their age group. It follows that adjustments will also need to be made to how the student’s progress is monitored, assessed and reported.

For a small percentage of students, the Foundation to Year 10 curriculum content and achievement standards may not be appropriate nor meaningful, even with adjustments. Most of these students have a significant intellectual disability. During 2011, ACARA will develop additional curriculum content and achievement standards for this group of students in order to provide an Australian Curriculum that is inclusive of every learner.

Further advice and guidance are available about how to use each learning area and the curriculum generally for these students.

**English as an additional language or dialect**

Many students in Australian schools are learners of English as an additional language or dialect (EAL/D). Learners of EAL/D are students whose first language is a language other than Standard Australian English and who require additional support to assist them to develop English language proficiency. While many EAL/D learners do well in school, there is a significant group of these learners who leave school without achieving their potential.

EAL/D students come from diverse backgrounds and may include:

- overseas- and Australian-born children whose first language is a language other than English
- Aboriginal and Torres Strait Islander students whose first language is an Indigenous language, including traditional languages, creoles and related varieties, or Aboriginal English.

EAL/D learners enter Australian schools at different ages and at different stages of English language learning and have various educational backgrounds in their first languages. For some, school is the only place they use English.

The aims of the Australian Curriculum: Mathematics are ultimately the same for all students. However, EAL/D learners are simultaneously learning a new language and the knowledge, understanding and skills of the mathematics curriculum through that new language. They require additional time and support, along with informed teaching that explicitly addresses their language needs, and assessments that take into account their developing language proficiency.
A national EAL/D document is being produced that will support the Australian Curriculum. It will provide a description of how language proficiency develops, and will be a valuable reference for all teachers. It will allow mathematics teachers to identify the language levels of the EAL/D learners in their classrooms and to address their specific learning requirements when teaching, ensuring equity of access to the mathematics learning area for all.

General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the twenty-first century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities:

- literacy
- numeracy
- competence in information and communication technology (ICT)
- critical and creative thinking
- ethical behaviour
- personal and social competence
- intercultural understanding.

Over the course of their schooling, students develop and use these general capabilities within and across learning areas and in their lives outside school. General capabilities and learning areas have a reciprocal relationship. Learning areas provide opportunities for students to develop and use general capabilities. Similarly, wherever general capabilities are made explicit in learning areas, they can enrich and deepen learning. In the Australian Curriculum: Mathematics, each of the seven general capabilities is embedded (where appropriate) in the content descriptions or elaborations. There are further opportunities to develop the general capabilities through appropriate teaching activities.

Literacy

Students become literate as they develop the skills to learn and communicate confidently at school and to become effective individuals, community members, workers and citizens. These skills include listening, reading and viewing, writing, speaking and creating print, visual and digital materials accurately and purposefully within and across all learning areas.

Literacy is an important aspect of mathematics. Students need to understand written problems and instructions; ellipsis (for example, ‘convert your age to days, then hours, minutes and finally seconds’); synonyms (for example, ‘subtract’, ‘take away’, ‘minus’); imperatives (for example, ‘circle the correct answer’); the passive voice (for example, ‘if 7 is taken from 10…’); nominalisations (for example, ‘product’, ‘quotient’); technical terminology (for example, ‘digits’, ‘lowest common denominator’), including the use of common words with a specific meaning in a mathematical context (for example ‘find the value of x’ requires more than searching, it implies problem solving), and metaphorical language used to express mathematics concepts and processes.

Numeracy

Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful.

Mathematics makes a special contribution to the development of numeracy in a manner that is more explicit and foregrounded than is the case in other learning areas. It is important that the mathematics curriculum provides the opportunity to apply mathematical understanding and skills in context, both in other learning areas.
and in real world contexts. A particularly important context for the application of **Number and Algebra** is financial mathematics. In **Measurement and Geometry**, there is an opportunity to apply understanding to design. The twenty-first century world is information driven, and through **Statistics and Probability** students can interpret data and make informed judgments about events involving chance.

**Information and communication technology (ICT) competence**

Students develop ICT competence as they learn to use ICT effectively and appropriately when investigating, creating and communicating ideas and information at school, at home, at work and in their communities. ICT competence allows students to solve problems and readily perform previously onerous tasks. Calculators of all types, from the simple four-operations versions to more complex graphical and CAS calculators, can be used to make calculations, draw graphs and interpret data in ways that have previously not been possible. Digital technologies, such as spreadsheets, dynamic geometry software and computer algebra software, can engage students and promote understanding of key concepts. However, there will be occasions where teachers will ask students to undertake tasks without using technology.

**Critical and creative thinking**

Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them when seeking new pathways or solutions. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and divergence.

Critical and creative thinking is key to the development of mathematical understanding. Critical thinking is used in the proficiency strands of **Reasoning** and **Problem Solving**. Engaging students in reasoning and thinking about solutions to problems, and the strategies needed to find these solutions, are core parts of the mathematics curriculum. For example, students are encouraged to be critical thinkers in justifying their choice of a particular calculation strategy or in identifying the questions that need to be answered when undertaking a statistical investigation.

Creative thinking is essential to mathematical problem solving. The mathematics curriculum encourages students to look for alternative ways to approach problems. For example, identifying when a problem is similar to a previous one or drawing diagrams or simplifying a problem to control some variables, are strategies students will develop to find solutions.

**Ethical behaviour**

Students develop ethical behaviour as they learn to understand and act in accordance with ethical principles. This includes understanding the role of ethical principles, values and virtues in human life; acting with moral integrity; acting with regard for others, and having a desire and capacity to work for the common good.

There are opportunities in the mathematics curriculum to develop and apply ethical behaviour in a range of contexts; for example, in the selection and interpretation of data and statistics for different purposes.

**Personal and social competence**

Students develop personal and social competence as they learn to understand and manage themselves, their relationships, lives, work and learning more effectively. This involves recognising and regulating their emotions, developing concern and understanding of others, establishing positive relationships, making responsible decisions, working effectively in teams and handling challenging situations constructively.

The elements of personal and social competence relevant to mathematics include the application of mathematical skills for personal purposes, such as the use of timetables, budgeting and personal problem solving, which are all important skills in self-management.
Students’ capacities to work in teams in undertaking explorations and investigations are another important part of learning to be mathematicians.

**Intercultural understanding**

Students develop intercultural understanding as they learn to understand themselves in relation to others. This involves students valuing their own cultures and beliefs and those of others, and engaging with people of diverse cultures in ways that recognise commonalities and differences, create connections and cultivate respect between people.

Intercultural understanding can be enhanced if students are exposed to a range of cultural traditions in mathematics. For example, through examining Aboriginal and Torres Strait Islander people’s perceptions of time and weather patterns, the networks embedded in family relationships and the algebraic concepts inherent in storytelling students’ broader cultural knowledge is enriched. It is also important for mathematics classes to explore the influences of many cultures in the development of mathematical thinking.

**Cross-curriculum priorities**

There are three cross curriculum priorities in the Australian Curriculum:

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

The cross curriculum priorities are embedded in the curriculum and will have a strong but varying presence depending on their relevance to each of the learning areas.

**Aboriginal and Torres Strait Islander histories and cultures**

Aboriginal and Torres Strait Islander communities are strong, rich and diverse. Aboriginal and Torres Strait Islander Identity is central to this priority and is intrinsically linked to living, learning Aboriginal and Torres Strait Islander communities, deep knowledge traditions and holistic world view.

A conceptual framework based on Aboriginal and Torres Strait Islander Peoples’ unique sense of Identity has been developed as a structural tool for the embedding of Aboriginal and Torres Strait Islander histories and cultures within the Australian curriculum. This sense of Identity is approached through the interconnected aspects of Country/Place, People and Culture. Embracing these elements enhances all areas of the curriculum.

The Aboriginal and Torres Strait Islander priority provides opportunities for all learners to deepen their knowledge of Australia by engaging with the world’s oldest continuous living cultures. This knowledge and understanding will enrich their ability to participate positively in the ongoing development of Australia.

**Australian Curriculum: mathematics** values Aboriginal and Torres Strait Islander histories and cultures. It provides opportunities for students to appreciate that Aboriginal and Torres Strait Islander societies have sophisticated applications of mathematical concepts.

Students will explore connections between representations of number and pattern and how they relate to aspects of Aboriginal and Torres Strait Islander cultures. They will investigate time, place, relationships and measurement concepts in Aboriginal and Torres Strait Islander contexts. Students will deepen their understanding of the lives of Aboriginal and Torres Strait Islander Peoples through the application and evaluation of statistical data.
Asia and Australia's engagement with Asia

The Asia and Australia's engagement with Asia priority provides a regional context for learning in all areas of the curriculum. China, India and other Asian nations are growing rapidly and the power and influence they have in all areas of global endeavour is extensive. An understanding of Asia underpins the capacity of Australian students to be active and informed citizens working together to build harmonious local, regional and global communities, and build Australia's social, intellectual and creative capital.

This priority is concerned with Asia literacy for all Australian students. Asia literacy develops knowledge, skills and understanding about the histories, geographies, cultures, arts, literatures and languages of the diverse countries of our region. It fosters social inclusion in the Australian community. It enables students to communicate and engage with the peoples of Asia so they can effectively live, work and learn in the region. Australia now has extensive engagement with Asia in areas such as trade, investment, immigration, tourism, education and humanitarian assistance and this engagement is vital to the prosperity of all Australians.

The Australian Curriculum: mathematics provides opportunities for students to learn about the understandings and applications of mathematics in Asia. In the past, mathematicians from the Asia region have made significant contributions to the development of the human understanding of number, algebra and trigonometry. Mathematicians from Asia continue to contribute to the ongoing development of mathematical understanding.

In this learning area, students investigate the concept of chance using Asian games. They explore the way Asian societies apply other mathematical concepts such as patterns and symmetry in art and architecture. Investigations involving data collection and representation can be used to examine issues pertinent to the Asia region.

Sustainability

Sustainability addresses the ongoing capacity of Earth to maintain all life.

Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are both individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.

Education for sustainability develops the knowledge, skills and values necessary for people to act in ways that contribute to more sustainable patterns of living. It is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through action that recognises the relevance and interdependence of environmental, social, cultural and economic considerations.

The Australian Curriculum: mathematics provides the foundation for the exploration of issues of sustainability. It equips students with the skills of measurement, mathematical modelling, and data collection, representation and analysis. These skills are needed to investigate data, evaluate and communicate findings and to make predictions based on those findings.

Mathematical understandings and skills are necessary to monitor and quantify both the impact of human activity on ecosystems and changes to conditions in the biosphere. Actions to improve sustainability involve students in processes such as auditing, reading measures and gauges, and interpreting data on invoices and accounts. Mathematical and statistical analysis enables informed decision making about present and future action.

Learning in mathematics involves the use of knowledge and skills learnt in other areas, particularly in English, science and history.
The Australian National Numeracy Review Report (2008) identified numeracy as requiring an across-the-school commitment, including mathematical, strategic and contextual aspects. This across-the-school commitment can be managed by including specific references to other curriculum areas in the mathematics curriculum, and the identification of key numeracy capacities in the descriptions of other curriculum areas being developed. For example, the following are some of the numeracy perspectives that could be relevant to English, science and history.

**English**

One aspect of the link with English and literacy is that, along with other elements of study, numeracy can be understood and acquired only within the context of the social, cultural, political, economic and historical practices to which it is integral. Students need to be able to draw on quantitative and spatial information to derive meaning from certain types of texts encountered in the subject of English.

**Science**

Practical work and problem solving across all the sciences require the capacity to organise and represent data in a range of forms; plot, interpret and extrapolate graphs; estimate and solve ratio problems; use formulas flexibly in a range of situations; perform unit conversions; and use and interpret rates including concentrations, sampling, scientific notation, and significant figures.

**History**

Learning in history includes interpreting and representing large numbers and a range of data such as those associated with population statistics and growth, financial data, figures for exports and imports, immigration statistics, mortality rates, war enlistments and casualty figures; chance events, correlation and causation; imagining timelines and time frames to reconcile related events; and the perception and spatial visualisation required for geopolitical considerations, such as changes in borders of states and in ecology.

**Implications for teaching, assessment and reporting**

In mathematics, challenging problems can be posed using basic age-appropriate content. Accelerating students by using content beyond their year level may not be the best way to extend proficient mathematicians. Choosing engaging experiences as contexts for a variety of tasks assists in making mathematics inclusive, and these tasks can be effectively differentiated both for students experiencing difficulty and those who complete tasks easily. The proficiency strands apply expectations of the range and nature of how mathematical content is enacted, and can help focus teaching.

Teachers use the Australian Curriculum content and achievement standards first to identify current levels of learning and achievement and then to select the most appropriate content (possibly from across several year levels) to teach individual students and/or groups of students. This takes into account that in each class there may be students with a range of prior achievement (below, at, and above the year level expectations) and that teachers plan to build on current learning.

Teachers also use the achievement standards, at the end of a period of teaching, to make on-balance judgments about the quality of learning demonstrated by the students – that is whether they have achieved below, at, or above the standard. To make these judgments, teachers draw on assessment data that they have collected as evidence during the course of the teaching period. These judgments about the quality of learning are one source of feedback to students and their parents and inform formal reporting processes.

If a teacher judges that a student’s achievement is below the expected standard, this suggests that the teaching programs and practice should be reviewed to better assist individual students in their learning in the
future. It also suggests that additional support and targeted teaching will be needed to ensure that the student does not fall behind.

Assessment of the Australian Curriculum takes place in different levels and for different purposes, including:

- ongoing formative assessment within classrooms for the purposes of monitoring learning and providing feedback, to teachers to inform their teaching, and for students to inform their learning
- summative assessment for the purposes of twice-yearly reporting by schools to parents and carers on the progress and achievement of students
- annual testing of Years 3, 5, 7 and 9 students’ levels of achievement in aspects of literacy and numeracy, conducted as part of the National Assessment Program – Literacy and Numeracy (NAPLAN)
- periodic sample testing of specific learning areas within the Australian Curriculum as part of the National Assessment Program (NAP).
Foundation Year

The proficiency strands Understanding, Fluency, Problem Solving and Reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics.

At this year level:

**Understanding** includes connecting names, numerals and quantities

**Fluency** includes counting numbers in sequences readily, continuing patterns, and comparing the lengths of objects directly

**Problem Solving** includes using materials to model authentic problems, sorting objects, using familiar counting sequences to solve unfamiliar problems, and discussing the reasonableness of the answer

**Reasoning** includes explaining comparisons of quantities, creating patterns, and explaining processes for indirect comparison of length

<table>
<thead>
<tr>
<th>Number and Algebra</th>
<th>Measurement and Geometry</th>
<th>Statistics and Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point (ACMNA001)</td>
<td>Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language (ACMMG006)</td>
<td>Answer yes/no questions to collect information (ACMSP011)</td>
</tr>
<tr>
<td>Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (ACMNA002)</td>
<td>Compare and order the duration of events using the everyday language of time (ACMMG007)</td>
<td></td>
</tr>
<tr>
<td>Subitise small collections of objects (ACMNA003)</td>
<td>Connect days of the week to familiar events and actions (ACMMG008)</td>
<td></td>
</tr>
<tr>
<td>Compare, order and make correspondences between collections, initially to 20, and explain reasoning (ACMNA289)</td>
<td>Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment (ACMMG009)</td>
<td></td>
</tr>
<tr>
<td>Represent practical situations to model addition and sharing (ACMNA004)</td>
<td>Location and transformation</td>
<td></td>
</tr>
<tr>
<td>Patterns and algebra</td>
<td>Describe position and movement (ACMMG010)</td>
<td></td>
</tr>
<tr>
<td>Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings (ACMNA005)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Foundation Year achievement standard**

By the end of the Foundation Year, students make the connections between number names, numerals and quantities up to 10. Students are able to compare and sort shapes and objects. They make connections between events and the days of the week.
Glossary

Algebraic expression

An algebraic expression is formed by combining numbers and algebraic symbols using arithmetic operations. The expression must be constructed unambiguously according to the rules of algebra.

For example, $x^2 + 3xy - 2a^2$, and $(x + 1)a^2$ are algebraic expressions, but $2x + 3y$ is not because it is incomplete.

Algebraic fraction

An algebraic fraction is a fraction in which both the numerator and denominator are algebraic expressions.

Algebraic term

An algebraic term is an algebraic expression that forms a ‘separable’ part of some other algebraic expression. For example, $x^2$ and $5x^{-1}$ are terms in the inequality $x^2 \leq 5x^{-1}$, and $2, 3x, 5x^2$ are terms of the polynomial $2 + 3x + 5x^2$.

Alternate

In each diagram below, the two marked angles are called alternate angles (since they are on alternate sides of the transversal).

If the lines $AB$ and $CD$ are parallel, then each pair of alternate angles are equal.

Angle

An angle is the figure formed by two rays sharing a common endpoint, called the vertex of the angle.
The size of an angle

Imagine that the ray $OB$ is rotated about the point $O$ until it lies along $OA$. The amount of turning is called the size of the angle $AOB$.

![Diagram of angle AOB]

A **revolution** is the amount of turning required to rotate a ray about its endpoint until it falls back onto itself. The size of 1 revolution is $360^\circ$.

![Diagram of revolution]

A **straight angle** is the angle formed by taking a ray and its opposite ray. A straight angle is half of a revolution, and so has size equal to $180^\circ$.

![Diagram of straight angle]

**Right angle**

Let $AOB$ be a line, and let $OX$ be a ray making equal angles with the ray $OA$ and the ray $OB$. Then the equal angles $\angle AOX$ and $\angle BOX$ are called right angles.

A right angle is half of a straight angle, and so is equal to $90^\circ$.

![Diagram of right angle]

**Classification of angles**

Angles are classified according to their size.

We say that

- An angle with size $\alpha$ is **acute** if $0^\circ < \alpha < 90^\circ$.
- An angle with size $\alpha$ is **obtuse** if $90^\circ < \alpha < 180^\circ$.
- An angle with size $\alpha$ is **reflex** if $180^\circ < \alpha < 360^\circ$. 

![Diagram of classification of angles]
Adjacent angles

Two angles at a point are called adjacent if they share a common ray and a common vertex.

Hence, in the diagram,
- \( \angle AOC \) and \( \angle BOC \) are adjacent, and
- \( \angle AOB \) and \( \angle AOC \) are adjacent.

Two angles that add to \( 90^\circ \) are called complementary. For example, \( 23^\circ \) and \( 67^\circ \) are complementary angles.

In each diagram the two marked angles are called corresponding angles.

If the lines are parallel, then each pair of corresponding angles are equal.

Conversely, if a pair of corresponding angles are equal, then the lines are parallel.

Two angles that add to \( 180^\circ \) are called supplementary angles. For example, \( 45^\circ \) and \( 135^\circ \) are supplementary angles.

Angles of elevation and depression

When an observer looks at an object that is lower than ‘the eye of’ the observer, the angle between the line of sight and the horizontal is called the angle of depression.
When an observer looks at an object that is higher than ‘the eye of’ the observer, the angle between the line of sight and the horizontal is called the angle of elevation.

Array

An array is an ordered collection of objects or numbers. Rectangular arrays are commonly used in primary mathematics.

Associative

A method of combining two numbers or algebraic expressions is associative if the result of the combination of three objects does not depend on the way in which the objects are grouped.

For example, addition of numbers is associative and the corresponding associative law is:

\[(a + b) + c = a + (b + c)\] for all numbers \(a, b,\) and \(c.\)

Multiplication is also associative: \((ab)c = a(bc)\) for all numbers \(a, b,\) and \(c,\) but subtraction and division are not, because, for example,

\[(7 - 4) - 3 \neq 7 - (4 - 3)\] and \[(12 + 6) + 2 \neq 12 + (6 + 2).\]

Back-to-back stem-and-leaf plot

A back-to-back stem-and-leaf plot is a method for comparing two data distributions by attaching two sets of ‘leaves’ to the same ‘stem’ in a stem-and-leaf plot.

For example, the stem-and-leaf plot below displays the distribution of pulse rates of 19 students before and after gentle exercise.

<table>
<thead>
<tr>
<th>pulse rate</th>
<th>before</th>
<th>after</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 8 8 8</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>8 6 4 1 1 0</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8 8 6 2</td>
<td>8</td>
<td>6 7 8 8</td>
</tr>
<tr>
<td>6 0 9</td>
<td>4 10</td>
<td>0 2 2 4 5 8 9 9</td>
</tr>
<tr>
<td>4</td>
<td>11 8</td>
<td>12 4 4</td>
</tr>
<tr>
<td>0</td>
<td>13</td>
<td>14 6</td>
</tr>
</tbody>
</table>

Bi modal
**Bimodal data** is data whose distribution has two modes.

**Bivariate data**

**Bivariate data** is data relating to two variables, for example, the arm spans and heights of 16 year olds, the sex of primary school students and their attitude to playing sport.

**Bivariate numerical data**

**Bivariate numerical data** is data relating to two numerical variables, for example height and weight.

**Box plot**

The term **box plot** is a synonym for a box-and-whisker plot.

A **box-and-whisker plot** is a graphical display of a five-number summary.

In a box-and-whisker plot, the ‘box’ covers the interquartile range (IQR), with ‘whiskers’ reaching out from each end of the box to indicate maximum and minimum values in the data set. A vertical line in the box is used to indicate the location of the median.

The box-and-whisker plot below has been constructed from the five-number summary of the resting pulse rates of 17 students.

![Box plot example]

The term ‘box-and-whisker plot’ is commonly abbreviated to ‘box plot’.

A **five-number-summary** is a method for summarising a data set using five statistics, the minimum value, the lower quartile, the median, the upper quartile and the maximum value.

**Capacity**

**Capacity** is a term used to describe how much a container will hold. It is often used in relation to the volume of fluids. Units of capacity (volume of fluids or gases) include litres and millilitres.

**Cartesian coordinate system**

Two intersecting number lines are taken intersecting at right angles at their origins to form the axes of the coordinate system.

The plane is divided into four quadrants by these perpendicular axes called the x-axis (horizontal line) and the y-axis (vertical line).

The position of any point in the plane can be represented by an ordered pair of numbers \((x, y)\). These ordered are called the coordinates of the point. This is called the **Cartesian coordinate system**. The plane is called the **Cartesian plane**.
The point with coordinates \( (4, 2) \) has been plotted on the Cartesian plane shown. The coordinates of the origin are \( (0, 0) \).

### Categorical variable

A **categorical variable** is a variable whose values are categories.

Examples: blood group is a categorical variable; its values are: A, B, AB or O. So too is construction type of a house; its values might be brick, concrete, timber, or steel.

Categories may have numerical labels, for example, for the variable postcode the category labels would be numbers like 3787, 5623, 2016, etc., but these labels have no numerical significance. For example, it makes no sense to use these numerical labels to calculate the average postcode in Australia.

### Census

A **census** is an attempt to collect information about the whole population.

A **population** is the complete set of individuals, objects, places, etc, that we want information about.

### Chord

A **chord** is a line segment (interval) joining two points on a circle.

A **diameter** is a chord passing through the centre.

The word diameter is also used for the length of the diameter.

### Circle
The circle with centre \( O \) and radius \( r \) is the set of all points in the plane whose distance from \( O \) is \( r \).

![Circle Diagram](image)

The line segment \( OA \) (interval \( OA \)) is also called a radius of the circle.

Putting the point of a pair of compasses at the centre and opening the arms to the radius can draw a circle.

\( \pi \) is the name of the Greek letter \( \pi \) that is used to denote the ratio of the circumference of any circle to its diameter. The number \( \pi \) is irrational, but \( 22/7 \) is a rational approximation accurate to 2 decimal places. The decimal expansion of \( \pi \) begins

\[
\pi = 3.14159265358979\ldots
\]

There is a very long history of attempts to estimate \( \pi \) accurately. One of the early successes was due to Archimedes (287–212 BC) who showed that

\[
3\frac{10}{71} < \pi < 3\frac{1}{7}
\]

The decimal expansion of \( \pi \) has now been calculated to at least the first \( 10^{12} \) places.

**Cointerior angles**

In each diagram the two marked angles are called co-interior angles and lie on the same side of the transversal.

![Cointerior Angles Diagram](image)

If the lines \( AB \) and \( CD \) are parallel then \( a + b = 180^\circ \).
Cointerior angles formed by parallel lines are supplementary.

Conversely, if a pair of cointerior angles is supplementary then the lines are parallel.

**Column graph**

A *column graph* is a graph used in statistics for organising and displaying categorical data.

To construct a column graph, equal width rectangular bars are constructed for each category with height equal to the observed frequency of the category as shown in the example below which displays the hair colours of 27 students.

Column graphs are frequently called *bar graphs* or *bar charts*. In a bar graph or chart, the bars can be either vertical or horizontal.

A *histogram* is a statistical graph for displaying the frequency distribution of continuous data.

A histogram is a graphical representation of the information contained in a frequency table. In a histogram, class frequencies are represented by the areas of rectangles centred on each class interval. The class frequency is proportional to the rectangle’s height when the class intervals are all of equal width.

The histogram below displays the frequency distribution of the heights (in cm) of a sample of 42 people with class intervals of width 5 cm.
Common factor

A **common factor** (or **common divisor**) of a set of numbers or algebraic expression is a factor of each element of that set.

For example, 6 is a common factor of 24, 54, and 66, and x + 1 is a common factor of \(x^2 - 1\) and \(x^2 + 5x + 4\).

Commutative

A method of combining two numbers or algebraic expressions is **commutative** if the result of the combination does not depend on the order in which the objects are given.

For example, addition of numbers is commutative, and the corresponding **commutative law** is:

\[a + b = b + a\]

for all numbers \(a\) and \(b\).

Multiplication is also commutative: \(ab = ba\) for all numbers \(a\) and \(b\), but subtraction and division are not, because, for example, \(5 - 3 \neq 3 - 5\) and \(12 ÷ 4 \neq 4 ÷ 12\).

Complementary events

Events \(A\) and \(B\) are **complementary** events, if \(A\) and \(B\) are mutually exclusive and \(\Pr(A) + \Pr(B) = 1\).

Composite number

A natural number that has a factor other than 1 and itself is a **composite number**.

Compound interest

The interest earned by investing a sum of money (the principal) is **compound interest** if each successive interest payment is added to the principal for the purpose of calculating the next interest payment.

For example, if the principal \(P\) earns compound interest at the rate of \(r\) per period, then after \(n\) periods the principal plus interest is \(P(1 + r)^n\).

Congruence
Two plane figures are called **congruent** if one can be moved by a sequence of translations, rotations and reflections so that it fits exactly on top of the other figure.

Two figures are congruent when we can match every part of one figure with the corresponding part of the other figure. For example, the two figures below are congruent.

Matching intervals have the same length, and matching angles have the same size.

**Congruent triangles**

The four standard congruence tests for triangles.

Two triangles are congruent if:

- **SSS**: the three sides of one triangle are respectively equal to the three sides of the other triangle, or
- **SAS**: two sides and the included angle of one triangle are respectively equal to two sides and the included angle of the other triangle, or
- **AAS**: two angles and one side of one triangle are respectively equal to two angles and the matching side of the other triangle, or
- **RHS**: the hypotenuse and one side of one right-angled triangle are respectively equal to the hypotenuse and one side of the other right-angled triangle.

**Continuous variable**

A **continuous variable** is a numerical variable that can take any value that lies within an interval. In practice, the values taken are subject to the accuracy of the measurement instrument used to obtain these values.

Examples include height, reaction time to a stimulus and systolic blood pressure.

**Cosine**

In any right-angled triangle,

\[
\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} \quad \text{where } 0^\circ < \theta < 90^\circ
\]
In any triangle ABC,
\[ c^2 = a^2 + b^2 - 2ab \cos C \]

**Counting number**

The **counting numbers** are the non-negative integers, that is, one of the numbers 0, 1, 2, 3, ...

Sometimes it is taken to mean only a positive integer.

A **natural number** is a positive integer or counting number. The natural numbers are 1, 2, 3, ... The set of natural numbers is usually denoted by \( \mathbb{N} \).

**Counting on**

Counting a collection, or reciting a sequence of number words, from a point beyond the beginning of the sequence.

For example, when a child has counted to establish that there are 6 objects in a collection and is then asked “How Many?” after several more are added might count on from 6 saying “7, 8, 9, ...” to reach the total. This is considered a more sophisticated strategy than counting the whole collection from 1.

**Cylinder**

A **cylinder** is a solid that has parallel circular discs of equal radius at the ends. Each cross-section parallel to the ends is a circle with the same radius, and the centres of these circular cross-sections lie on a straight line, called the **axis of the cylinder**.

**Data**

**Data** is a general term for a set of observations and measurements collected during any type of systematic investigation.

**Primary data** is data collected by the user. **Secondary data** is data collected by others. Sources of secondary data include, web-based data sets, the media, books, scientific papers, etc.

**Univariate data** is data relating to a single variable, for example, hair colour or the number of errors in a test.
Data display

A **data display** is a visual format for organising and summarising data.

Examples include, box plots, column graphs, frequency tables and stem plots.

Decimal

A **decimal** is a numeral in the decimal number system.

For example, the decimal expansion of $\frac{2}{3}$ is $0.67\ldots$. The integer part is 0 and the fractional part is 0.67\ldots

A decimal is terminating if the fractional part has only finitely many decimal digits. It is non-terminating if it has infinitely digits.

For example, 0.75 is a terminating decimal, whereas 0.3161616\ldots, where the pattern 16 repeats indefinitely, is non-terminating.

Non-terminating decimals may be recurring, that is, contain a pattern of digits that repeats indefinitely after a certain number of places.

For example, 0.3161616\ldots is a recurring decimal, whereas 0.101001000100001\ldots, where the number of 0's between the 1's increases indefinitely, is not recurring.

It is common practice to indicate the repeating part of a recurring decimal by using dots or lines as superscripts.

For example, 0.3161616\ldots could be written as 0.3\overline{16} or 0.3\overline{1\overline{6}}

The **decimal number system** is the base 10, place-value system most commonly used for representing real numbers. In this system positive numbers are expressed as sequences of Arabic numerals 0 to 9, in which each successive digit to the left or right of the decimal point indicates a multiple of successive powers (respectively positive or negative) of 10.

For example, the number represented by the decimal 12.345 is the sum $1 \times 10^2 + 2 \times 10^1 + 3 \times 10^{-1} + 4 \times 10^{-2} + 5 \times 10^{-3}$.

Denominator

In the fraction $\frac{a}{b}$, $b$ is the **denominator**. It is the number of equal parts into which the whole is divided in order to obtain fractional parts. For example, if a line segment is divided into 5 equal parts, each of those parts is one fifth of the whole and corresponds to the unit fraction $\frac{1}{5}$.

Dependent variable

Two events are **independent** if knowing the outcome of one event tells us nothing about the outcome of the other event.

Difference

A difference is the result of subtraction one number or algebraic quantity from another.

Distributive

Multiplication of numbers is **distributive** over addition because the product of one number with the sum of two others equals the sum of the products of the first number with each of the others. This means that we can multiply two numbers by expressing one (or both) as a sum and then multiplying each part of the sum by the other number (or each part of its sum.)

For example,
This distributive law is expressed algebraically as follows:

\[ a(b + c) = ab + ac, \text{ for all numbers } a, b \text{ and } c \]

**Divisible**

In general, a number or algebraic expression \( x \) is divisible by another \( y \) if there exists a number or algebraic expression \( q \) of a specified type for which \( x = yq \).

A natural number \( m \) is divisible by a natural number \( n \) if there is a natural number \( q \) such that \( m = nq \).

For example, 12 is divisible by 4 because \( 12 = 3 \times 4 \).

**Dot plot**

A dot plot is a graph used in statistics for organising and displaying numerical data.

Using a number line, a dot plot displays a dot for each observation. Where there is more than one observation, or observations are close in value, the dots are stacked vertically. If there are a large number of observations, dots can represent more than one observation. Dot plots are ideally suited for organising and displaying discrete numerical data.

The dot plot below displays the number of passengers observed in 32 cars stopped at a traffic light.

![Dot plot image]

Dot plots can also be used to display categorical data, with the numbers on the number line replaced by category labels.

**Element**

An element of a set is a member of that set. For example, the elements of the set \( \{2, 3, 4, 6, 8\} \) are the numbers 2, 3, 4, 6 and 8. We write \( x \in S \) to indicate that \( x \) is a member of the set \( S \).

**Enlargement (Dilation)**

An enlargement is a scaled up (or down) version of a figure in which the transformed figure is in proportion to the original figure. The relative positions of points are unchanged and the two figures are similar.

In the diagram below triangle \( A'B'C' \) is the image of triangle \( ABC \) under the enlargement with enlargement factor 2 and centre of enlargement \( O \).
Equally Likely outcomes

Equally likely outcomes occur with the same probability.

For example, in tossing a fair coin, the outcome ‘head’ and the outcome ‘tail’ are equally likely.

In this situation, \( \Pr(\text{head}) = \Pr(\text{tail}) = 0.5 \)

Equation

An **equation** is a statement that asserts that two numbers or algebraic expressions are equal in value. An equation must include an equal sign. For example, \( 3 + 14 = 11 + 6 \).

An **identity** is an equation involving algebraic expressions that is true for all values of the variables involved.

For example, \( x^2 - 4 = (x - 2)(x + 2) \).

An identity is an equation that is true for all values of the variables involved.

Example: \( x^2 - y^2 = (x - y)(x + y) \)

An **inequality** is a statement that one number or algebraic expression is less than (or greater than) another. There are four types of inequalities:

- The relation \( a \) is less than \( b \) is written \( a < b \),
- \( a \) is greater than \( b \) is written \( a > b \),
- \( a \) is less than or equal to \( b \) is written \( a \leq b \), and
- \( a \) is greater than or equal to \( b \) is written \( a \geq b \).

Equivalent fractions

Two fractions \( \frac{a}{b} \) and \( \frac{c}{d} \) are **equivalent** if they are equal, that is, \( ad = bc \).

Equivalent fractions are alternative ways of writing the same fraction.

For example, \( \frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \ldots \)

Estimate

In statistical terms, an **estimate** is information about a population extrapolated from a sample of the population.

For example, the mean number of decayed teeth in a randomly selected group of eight-year old children is an estimate of the mean number of decayed teeth in eight-year old children in Australia.
Even number

A whole number is **even** if it is divisible by 2. The even whole numbers are 0, 2, 4, 6, ....

Event

An event is a subset of the sample space for a random experiment.

For example, the set of outcomes from tossing two coins is \{ HH, HT, TH, TT \}, where H represents a ‘head’ and T a ‘tail’.

For example, if A is the event ‘at least one head is obtained’, then \( A = \{ HT, TH, HH \} \).

Two events \( A \) and \( B \) are **mutually exclusive** if one is incompatible with the other; that is, if they cannot be simultaneous outcomes in the same chance experiment.

For example, when a fair coin is tossed twice, the events ‘HH’ and ‘TT’ cannot occur at the same time and are, therefore, mutually exclusive.

In a Venn diagram, as shown below, mutually exclusive events do not overlap.

![Venn diagram showing mutually exclusive events](image)

Expression

Two or more numbers or variables connected by operations. For example, 17 – 9, 8 x (2 + 3), 2a + 3b are all expressions. Expressions do not include an equal sign.

Factor

In general, a number or algebraic expression \( x \) is a **factor** (or divisor) of another \( y \) if there exists a number or algebraic expression \( q \) of a specified type for which \( y = xq \).

A natural number \( m \) is a factor of a natural number \( n \) if there is a natural number \( q \) such that \( n = mq \).

For example, 4 is a factor of 12 because \( 12 = 3 \times 4 \).

A polynomial \( a(x) \) is divisible by a polynomial \( b(x) \) if there is a polynomial \( q(x) \) for which \( a(x) = b(x)q(x) \).

For example, \( x - 2 \) is a factor \( x^2 - 6x + 8 \) because \( x^2 - 6x + 8 = (x - 4)(x - 2) \).

A **prime factor** of a natural number \( n \) is a factor of \( n \) that is a prime number.

For example, the prime factors of 330 are 2, 3, 5 and 11.
Factor and remainder theorem

According to the factor theorem, if \( p(x) \) is a polynomial and \( p(a) = 0 \) for some number \( a \), then \( p(x) \) is divisible by \( x - a \).

This follows easily from the remainder theorem, because for \( p(x) + (x - a) \) the remainder is \( p(a) \). So if \( p(a) = 0 \), the remainder is 0 and \( p(x) \) is divisible by \( x - a \).

The factor theorem can be used to obtain factors of a polynomial.

For example, if \( p(x) = x^3 - 3x^2 + 5x - 6 \), then it is easy to check that \( p(2) = 2^3 - 3 \times 2^2 + 5 \times 2 - 6 = 0 \). So by the factor theorem \( x - 2 \) is a factor of \( x^3 - 3x^2 + 5x - 6 \).

According to the remainder theorem, if a polynomial \( p(x) \) is divided by \( x - a \) where \( a \) is any real number, the remainder is \( p(a) \). That is, \( p(x) = q(x)(x - a) + p(a) \), for some polynomial \( q(x) \).

Factorise

To factorise a number or algebraic expression is to express it as a product.

For example, 15 is factorised when expressed as a product: \( 15 = 3 \times 5 \), and \( x^2 - 3x + 2 \) is factorised when written as a product: \( x^2 - 3x + 2 = (x - 1)(x - 2) \).

Fraction

The fraction \( \frac{a}{b} \) (written alternatively as \( a/b \)), where \( a \) is a non negative integer and \( b \) is a positive integer, was historically obtained by dividing a unit length into \( b \) equal parts and taking \( a \) of these parts.

For example, \( \frac{3}{5} \) refers to 3 of 5 equal parts of the whole, taken together.

In the fraction \( \frac{a}{b} \) the number \( a \) is the numerator and the number \( b \) is the denominator.

It is a proper fraction if \( a < b \) and an improper fraction otherwise.

Frequencies

Frequency, or observed frequency, is the number of times that a particular value occurs in a data set.

For grouped data, it is the number of observations that lie in that group or class interval.

An expected frequency is the number of times that a particular event is expected to occur when a chance experiment is repeated a number of times. For example, if the experiment is repeated \( n \) times, and on each of those times the probability that the event occurs is \( p \), then the expected frequency of the event is \( np \).

For example, suppose that a fair coin is tossed 5 times and the number of heads showing recorded. Then the expected frequency of “heads” is 5/2.

This example shows that the expected frequency is not necessarily an observed frequency, which in this case is one of the numbers 0, 1, 2, 3, 4 or 5.

A frequency table lists the frequency (number of occurrences) of observations in different ranges, called class intervals.
The frequency distribution of the heights (in cm) of a sample of 42 people is displayed in the frequency table below.

<table>
<thead>
<tr>
<th>Height (cm)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>155–&lt;160</td>
<td>3</td>
</tr>
<tr>
<td>160–&lt;165</td>
<td>2</td>
</tr>
<tr>
<td>165–&lt;170</td>
<td>9</td>
</tr>
<tr>
<td>170–&lt;175</td>
<td>7</td>
</tr>
<tr>
<td>175–&lt;180</td>
<td>10</td>
</tr>
<tr>
<td>180–&lt;185</td>
<td>5</td>
</tr>
<tr>
<td>185–&lt;190</td>
<td>5</td>
</tr>
</tbody>
</table>

A frequency distribution is the division of a set of observations into a number of classes, together with a listing of the number of observations (the frequency) in that class.

Frequency distributions can be displayed in tabular or graphical form.

Frequency, or observed frequency, is the number of times that a particular value occurs in a data set.

For grouped data, it is the number of observations that lie in that group or class interval.

Relative frequency is given by the ratio \( \frac{f}{n} \), where \( f \) is the frequency of occurrence of a particular data value or group of data values in a data set and \( n \) is the number of data values in the data set.

Frequency table

A two-way frequency table is commonly used for displaying the two-way frequency distribution that arises when a group of individuals or things are categorised according to two criteria.

For example, the two-way table below displays the two-way frequency distribution that arises when 27 children are categorised according to hair type (straight or curly) and hair colour (red, brown, blonde, black).

<table>
<thead>
<tr>
<th>Hair colour</th>
<th>Hair type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>red</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>brown</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>blonde</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>black</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>27</td>
</tr>
</tbody>
</table>

The information in a two-way frequency table can also be displayed graphically using a side-by-side column graph.

Function
A function $f$ assigns to each element of one set $X$ precisely one element of a second set $Y$.

The functions most commonly encountered in elementary mathematics are real functions of real variables. For such functions, the domain and codomain are sets of real numbers.

Functions are usually defined by a formula for $f(x)$ in terms of $x$. For example, the formula $f(x) = x^2$ defines the ‘squaring function’ that maps each real number $x$ to its square $x^2$.

**Gradient**

If $A(x_1, y_1)$ and points $B(x_2, y_2)$ are points in the plane, $x_2 - x_1 \neq 0$, the gradient of the line segment (interval) $AB = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$.

The gradient of a line is the gradient of any line segment (interval) within the line.

**Greatest common divisor**

The greatest common divisor (gcd), greatest common factor (gcf) or highest common factor (hcf), of a given set of natural numbers is the common divisor of the set that is greater than each of the other common divisors.

For example, 1, 2, 3, and 6 are the common factors of 24, 54 and 66 and 6 is the greatest common divisor.

**Histogram**

A histogram is a statistical graph for displaying the frequency distribution of continuous data.

A histogram is a graphical representation of the information contained in a frequency table. In a histogram, class frequencies are represented by the areas of rectangles centred on each class interval. The class frequency is proportional to the rectangle’s height when the class intervals are all of equal width.

The histogram below displays the frequency distribution of the heights (in cm) of a sample of 42 people with class intervals of width 5 cm.
Independent event

Two events are independent if knowing the outcome of one event tells us nothing about the outcome of the other event.

Independent variable

When investigating relationships in bivariate data, the explanatory variable is the variable that may explain or cause a difference in the response variable.

For example, when investigating the relationship between the temperature of a loaf of bread and the time it has spent in a hot oven, temperature is the response variable and time is the explanatory variable.

With numerical bivariate data it is common to attempt to model such relationships with a mathematic equation and to call the response variable the dependent variable and the explanatory variable the independent variable.

When graphing numerical data, the convention is to display the response (dependent) variable on the vertical axis and the explanatory (independent) variable on the horizontal axis.

When there is no clear causal link between the events, the classification of the variables as either the dependent or independent variable is quite arbitrary.

Index

Index is synonymous with exponent.

The exponent or index of a number or algebraic expression is the power to which the latter is be raised. The exponent is written as a superscript. Positive integral exponents indicate the number of times a term is to be multiplied by itself. For example, $a^3 = a \times a \times a$.

Index law

Index laws are rules for manipulating indices (exponents). They include

\[ x^a \times x^b = x^{a+b}; \quad (x^a)^b = x^{ab}; \quad \text{and} \quad x^a y^b = (xy)^{a+b} \]

and
Informal unit

Informal units are not part of a standardised system of units for measurement. For example, an informal unit for length could be paperclips of uniform length. An informal unit for area could be uniform paper squares of any size. Informal units are sometimes referred to as non-standard units.

Integer

The integers are the ‘whole numbers’ \(-\infty, -3, -2, -1, 0, 1, 2, 3, \ldots\). The set of integers is usually denoted by \(\mathbb{Z}\). Integers are basic building blocks in mathematics.

Interquartile range

The interquartile range (IQR) is a measure of the spread within a numerical data set. It is equal to the upper quartile (Q3) minus the lower quartiles (Q1); that is, \(\text{IQR} = Q_3 - Q_1\).

The IQR is the width of an interval that contains the middle 50% (approximately) of the data values. To be exactly 50%, the sample size must be a multiple of four.

Interval

An interval is a certain type of subset of the number line.

A finite interval is the set of all real numbers between two given real numbers called the end points of the interval. The end points may or may not be included in the interval.

Irrational number

An irrational number is a real number that is not rational. Some commonly used irrational numbers are \(\pi\), \(e\) and \(\sqrt{2}\).

The Euler number is an irrational real number whose decimal expansion begins

\[ e = 2.718281828 \ldots \]

Irregular shape

An irregular shape can be a polygon. A polygon that is not regular is irregular.

Kite

A kite is a quadrilateral with two pairs of adjacent sides equal.
A kite may be convex as shown in the diagram above to the left or non-convex as shown above to the right. The axis of the kite is shown.

**Line segment (Interval)**

If $A$ and $B$ are two points on a line, the part of the line between and including $A$ and $B$ is called a line segment or interval.

The distance $AB$ is a measure of the size or length of $AB$.

Any point $A$ on a line divides the line into two pieces called rays. The ray $AP$ is that ray which contains the point $P$ (and the point $A$). The point $A$ is called the vertex of the ray and it lies on the ray.

**Linear equation**

A linear equation is an equation involving just linear terms, that is, polynomials of degree 1. The general form of a linear equation in one variable is $ax + b = 0$.

**Location (statistics)**

A measure of location is a single number that can be used to indicate a central or “typical value” within a set of data.

The most commonly used measures of location are the mean and the median although the mode is also sometimes used for this purpose.

**Logarithm**

The logarithm of a positive number $x$ is the power to which a given number $a$, called the base, must be raised in order to produce the number $x$. The logarithm of $x$, to the base $a$, is denoted by $\log_a x$. Algebraically, $\log_a x = y \Rightarrow a^y = x$. 
For example, \( \log_{10} 100 = 2 \) because \( 10^2 = 100 \), and \( \log_{10} (\frac{1}{10}) = -1 \) because \( 10^{-1} = \frac{1}{10} \).

**Many-to-one correspondence**

A **many-to-one correspondence** is a function or mapping that takes the same value for at least two different elements of its domain. For example, the squaring function \( y \mapsto y^2 \) is many-to-one because \( y^2 = (-y)^2 \) for all real numbers \( y \).

**Mean**

The arithmetic **mean** of a list of numbers is the sum of the data values divided by the number of numbers in the list.

In everyday language, the arithmetic mean is commonly called the **average**.

For example, for the following list of five numbers \{ 2, 3, 3, 6, 8 \} the mean equals

\[
\frac{2 + 3 + 3 + 6 + 8}{5} = \frac{22}{5} = 4.4
\]

**Median**

The **median** is the value in a set of ordered data that divides the data into two parts. It is frequently called the ‘middle value’.

Where the number of observations is odd, the median is the middle value.

For example, for the following ordered data set with an **odd** number of observations, the median value is five.

1 3 3 4 5 6 8 9 9

Where the number of observations is **even**, the median is calculated as the mean of the two central values.

For example, in the following ordered data set, the two central values are 5 and 6, and median value is the mean of these two values, 5.5

1 3 3 4 5 6 8 9 9 10

The median provides a measure of location of a data set that is suitable for both symmetric and skewed distributions and is also relatively insensitive to outliers.

**Midpoint**

The **midpoint** \( M \) of a line segment (interval) \( AB \) is the point that divides the segment into two equal parts.

Let \( A(x_1, y_1) \) be points in the Cartesian plane. Then the **midpoint** \( M \) of line segment \( AB \) has coordinates \( \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \).

This can be seen from the congruent triangles below.
**Mode**

The **mode** is the most frequently occurring value in a set of data. There can be more than one mode. When there are two modes, the data set is said to be **bimodal**.

The mode is sometimes used as a measure of location.

**Monic**

A **monic** polynomial is one in which the coefficient of the leading term is 1. For example, \(x^2 + 2x - 7\) is monic, but \(4x^2 - x + 1\) is not.

**Multiple**

A multiple of a number is the product of that number and an integer.

A multiple of a real number \(x\) is any number that is a product of \(x\) and an integer. For example, 45 and -13.5 are multiples of \(1.5\) because \(45 = 3 \times 15\) and \(-13.5 = -7 \times 1.5\).

**Multiplication**

Multiplicative situations are problems or contexts that involve multiplication (or division). Calculating the number of seats in a theatre that has 30 rows of 24 seats, finding equivalent fractions, and working with ratios and percentages are all multiplicative situations.

**Net**

A **net** is a plane figure that can be folded to form a polyhedron.

One possible net for a cube is shown below.

**Number**
A real number is **rational** if it can be expressed as a quotient of integers. It is **irrational** otherwise.

**Number line**

A **number line** gives a pictorial representation of real numbers.

**Numeral**

A figure or symbol used to represent a number. For example, -3, 0, 45, IX

**Numerator**

In the fraction $\frac{a}{b}$, $a$ is the **numerator**. If an object is divided into $b$ equal parts, then the fraction $\frac{a}{b}$ represents $a$ of these parts taken together. For example, if a line segment is divided into 5 equal parts, each of those parts is one fifth of the whole and 3 of these parts taken together corresponds to the fraction $\frac{3}{5}$.

**Numerical data**

**Numerical data** is data associated with a numerical variable.

**Numerical variables** are variables whose values are numbers, and for which arithmetic processes such as adding and subtracting, or calculating an average, make sense.

**Odd and even number**

A whole number is **even** if it is divisible by 2. The even whole numbers are 0, 2, 4, 6, ...  

An **odd number** is an integer that is not divisible by 2. The odd numbers are $\ldots, -5, -3, -1, 1, 3, 5, \ldots$.

**One-to-one correspondence**

In early counting development one-to-one correspondence refers to the matching of one and only one number word to each element of a collection.

More generally it refers to a relationship between two sets such that every element of the first set corresponds to one and only one element of the second set.

**Operation**

The process of combining numbers or expressions. In the primary years operations include addition, subtraction, multiplication and division. In later years operations include substitution and differentiation.

**Order of operations**

A convention for simplifying expressions that stipulates that multiplication and division are performed before addition and subtraction and in order from left to right. For example, in $5 - 6 \div 2 + 7$, the division is performed first and the expression becomes $5 - 3 + 7 = 9$. If the convention is ignored and the operations are performed in order, the incorrect result, 6.5 is obtained.

**Outlier**
An outlier is a data value that appears to stand out from the other members of the data set by being unusually high or low. The most effective way of identifying outliers in a data set is to graph the data.

For example, in following list of ages of a group of 10 people, \{ 12, 12, 13, 13, 13, 13, 13, 14, 14, 14, 24 \}, the 24 would be considered to be a possible outlier.

### Parabola

#### Definition 1

The graph of \( y = x^2 \) is called a parabola. The point \((0, 0)\) is called the vertex of the parabola and the y axis is the axis of symmetry of the parabola called simply the axis.

Some other parabolas are the graphs of \( y = ax^2 + bx + c \) where \( a \neq 0 \).

More generally, every parabola is similar to the graph of \( y = x^2 \).

#### Definition 2

A parabola is the locus of all points \( P \) such that the distance from \( P \) to a fixed point \( F \) is equal to the distance from \( P \) to a fixed line \( l \).

### Parallel box plots

Parallel box-and-whisker-plots are used to visually compare the five-number summaries of two or more data sets.

For example, box-and-whisker-plots below can be used to compare the five-number summaries for the pulse rates of 19 students before and after gentle exercise.
Note that the box plot for pulse rates after exercise shows the pulse rate of 146 as a possible outlier (\( \bullet \)). This is because the distance of this data point above the upper quartile 42 (146-104) is more than 21 (1.5 \( \times \) IQRs = 1.5 \( \times \) (104 – 90) = 1.5 \( \times \) 14 = 21).

The term “parallel box-and-whisker plots” is commonly abbreviated to “parallel boxplots”.

**Parallelogram**

A parallelogram is a quadrilateral whose opposite sides are parallel.

Thus the quadrilateral ABCD shown below is a parallelogram because AB \parallel DC and DA \parallel CB.

![Parallelogram Diagram](image)

**Properties of a parallelogram**

- The opposite angles of a parallelogram are equal.
- The opposite sides of a parallelogram are equal.
- The diagonals of a parallelogram bisect each other.

**Partitioning**

Dividing a quantity into parts. In the early years it commonly refers to the ability to think about numbers as made up of two parts, for example, 10 is 8 and 2. In later years it refers to dividing both continuous and discrete quantities into equal parts.

**Percentage**

A percentage is a fraction whose denominator is 100.

For example, 6% percent (written as 6%) is the percentage whose value is \( \frac{6}{100} \).

Similarly, 40 as a percentage of 250 is \( \frac{40}{250} \times 100 = 16\% \).

**Perimeter**

The perimeter of a plane figure is the length of its boundary.
Picture graphs

A picture graph is a statistical graph for organising and displaying categorical data.

<table>
<thead>
<tr>
<th>Ball sports played by students in Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football</td>
</tr>
<tr>
<td>Basketball</td>
</tr>
<tr>
<td>Netball</td>
</tr>
<tr>
<td>Soccer</td>
</tr>
<tr>
<td>Rugby</td>
</tr>
<tr>
<td>Hockey</td>
</tr>
</tbody>
</table>

Key 🏀 = 10 Students

Place value

The value of digit as determined by its position in a number relative to the ones (or units) place. For integers the ones place is occupied by the rightmost digit in the number.

For example in the number 2 594.6 the 4 denotes 4 ones, the 9 denotes 90 ones or 9 tens, the 5 denotes 500 ones or 5 hundreds, the 2 denotes 2000 ones or 2 thousands, and the 6 denotes $\frac{6}{10}$ of a one or 6 tenths.

Point

A point marks a position, but has no size.

Polynomial

A polynomial in one variable $x$ (simply called a polynomial) is a finite sum of terms of the form $a_k x^k$, where $a_k$ is a number and $k$ is a non-negative integer.

A non-zero polynomial can be written in the form $a_0 + a_1 x + a_2 x^2 + \cdots + a_n x^n$, where $n$ is a non-negative integer and $a_n \neq 0$.

Population

A population is the complete set of individuals, objects, places, etc, that we want information about.

A census is an attempt to collect information about the whole population.

Prime number

A prime number is a natural number greater than 1 that has no factor other 1 and itself.

Prism

A prism is a convex polyhedron that has two congruent and parallel faces and all its remaining faces are parallelograms.

A right prism is a convex polyhedron that has two congruent and parallel faces and all its remaining faces are rectangles. A prism that is not a right prism is often called an oblique prism.
Some examples of prisms are shown below.

Probability

The probability of an event is a number between 0 and 1 that indicates the chance of something happening.

For example the probability that the sun will come up tomorrow is 1, the probability that a fair coin will come up ‘heads’ when tossed is 0.5, while the probability of someone being physically present in Adelaide and Brisbane at exactly the same time is zero.

Product

A product is the result of multiplying together two or more numbers or algebraic expressions.

For example, 36 is the product of 9 and 4, and \(x^2 - y^2\) is product of \(x - y\) and \(x + y\).

Proportion

Corresponding elements of two sets are in proportion if there is a constant ratio. For example, the circumference and diameter of a circle are in proportion because for any circle the ratio of their lengths is the constant \(\pi\).

Pyramid

A pyramid is a convex polyhedron with a polygonal base and triangular sides that meet at a point called the vertex. The pyramid is named according to the shape of its base.

Pythagoras’ theorem

For a right-angled triangle

- The square of the hypotenuse of a right-angled triangle equals the sum of the squares of the lengths of the other two sides.
- In symbols, \(c^2 = a^2 + b^2\).
The converse

If \( c^2 = a^2 + b^2 \) in a triangle \( ABC \), then \( \angle C \) is a right angle.

Quadratic equation

The general quadratic equation in one variable is \( ax^2 + bx + c = 0 \), where \( a \neq 0 \).

The roots are given by the quadratic formula

\[
x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}
\]

Quadratic expression

A quadratic expression or function contains one or more of the terms in which the variable is raised to the second power, but no variable is raised to a higher power. Examples of quadratic expressions include \( 3x^2 + 7 \) and \( x^2 + 2xy + y^2 - 2z + y + 5 \).

Quartile

Quartiles are the values that divide an ordered data set into four (approximately) equal parts. It is only possible to divide a data set into exactly four equal parts when the number of data of values is a multiple of four.

There are three quartiles. The first, the lower quartile \( (Q_1) \) divides off (approximately) the lower 25\% of data values. The second quartile \( (Q_2) \) is the median. The third quartile, the upper quartile \( (Q_3) \), divides off (approximately) the upper 25\% of data values.

Percentiles are the values that divide an ordered data set into 100 (approximately) equal parts. It is only possible to divide a data set into exactly 100 equal parts when the number of data values is a multiple of one hundred.

There are 99 percentiles. Within the above limitations, the first percentile divides off the lower 1\% of data values. The second, the lower 2\% and so on. In particular, the lower quartile \( (Q_1) \) is the 25th percentile, the median is the 50th percentile and the upper quartile is the 75th percentile.

Quotient

A quotient is the result of dividing one number or algebraic expression by another. See also remainder.

Random number

A random number is one whose value is governed by chance; for example, the number of dots showing when a fair die is tossed. The value of a random number cannot be predicted in advance.
Range (statistics)

The range is the difference between the largest and smallest observations in a data set.

The range can be used as a measure of spread in a data set, but it is extremely sensitive to the presence of outliers and should only be used with care.

Rate

A rate is a particular kind of ratio in which the two quantities are measured in different units. For example, the ratio of distance to time, known as speed, is a rate because distance and time are measured in different units (such as kilometres and hours). The value of the rate depends on the units in which the quantities are expressed.

Ratio

A ratio is a quotient or proportion of two numbers, magnitudes or algebraic expressions. It is often used as a measure of the relative size of two objects. For example, the ratio of the length of a side of a square to the length of a diagonal is $\frac{1}{\sqrt{2}}$ that is, $\frac{\sqrt{2}}{2}$.

Real numbers

The numbers generally used in mathematics, in scientific work and in everyday life are the real numbers. They can be pictured as points on a number line, with the integers evenly spaced along the line, and a real number $b$ to the right of a real number $a$ if $a < b$.

A real number is either rational or irrational.

Every real number has a decimal expansion. Rational numbers are the ones whose decimal expansions are either terminating or recurring.

Rectangle

A rectangle is a quadrilateral in which all angles are right angles.

Rectangular Hyperbola

The graph of $y = \frac{1}{x}$ is called a rectangular hyperbola. The $x$ and $y$ axes are asymptotes as the curve gets as close as we like to them.
Recurring decimal

A **recurring decimal** is a decimal that contains a pattern of digits that repeats indefinitely after a certain number of places.

For example,

\[0.1\overline{07} = 0.1070707\ldots,\]

and this is the decimal expansion of the rational number

\[
\frac{1}{10} + \frac{7}{1000} + \frac{7}{1000000} + \cdots = \frac{1}{10} + \left(\frac{7}{1000}\right) + \frac{7}{990} = \frac{106}{990}
\]

Every recurring decimal is the decimal expansion of a rational number.

Reflection

To **reflect** the point A in an **axis of reflection**, a line has been drawn at right angles to the axis of reflection and the point A′ is marked at the same distance from the axis of reflection as A, but on the other side.

The point A′ is called the reflection image of A.

A **reflection** is a transformation that moves each point to its reflection image.

Related denominators

Denominators are related when one is a multiple of the other. For example, the fractions \(\frac{1}{3}\) and \(\frac{2}{3}\) have related denominators because 9 is a multiple of 3.
Fractions with related denominators are more easily added and subtracted than fractions with unrelated denominators because only one needs to be renamed. For example, to add \( \frac{3}{4} \) and \( \frac{1}{2} \) we can rename \( \frac{3}{4} \) as \( \frac{3}{4} \) and then compute \( \frac{3}{4} + \frac{1}{2} = \frac{5}{6} \).

**Remainder**

A *remainder* is the amount left over when one number or algebraic quantity \( a \) is divided by another \( b \). If \( a \) is divisible by \( b \) then the remainder is 0.

For example, when 68 is divided by 11, the remainder is 2, because 68 can be expressed as \( 68 = 6 \times 11 + 2 \).

**Rhombus**

A rhombus is a quadrilateral with all sides equal.

**Right Cone**

A *cone* is a solid that is formed by taking a circle called the base and a point not in the plane of the circle, called the vertex, which lies above or below the circle and joining the vertex to each point on the circle.

If the vertex is directly above or below the centre of the circular base, we call the cone a **right cone**.

The *height of the cone* is the distance from the vertex to the centre of the circular base.

The *slant height* of a cone is the distance from any point on the circle to the vertex to the circle.

**Rotation**

A *rotation* turns a figure about a fixed point, called the **centre of rotation**.

A rotation is specified by:

- the centre of rotation \( O \)
- the angle of rotation
• the direction of rotation (clockwise or anticlockwise).

In the first diagram below, the point A is rotated through $120^\circ$ clockwise about O. In the second diagram, it is rotated through $60^\circ$ anticlockwise about O.

A rotation is a transformation that moves each point to its rotation image.

Rounding

The decimal expansion of a real number is rounded when it is approximated by a terminating decimal that has a given number of decimal digits to the right of the decimal point.

Rounding to $n$ decimal places is achieved by removing all decimal digits beyond (to the right of) the $n^{th}$ digit to the right of the decimal place, and adjusting the remaining digits where necessary.

If the first digit removed (the $(n+1)^{th}$ digit) is less than 5 the preceding digit is not changed.

For example, $4.02749$ becomes $4.027$ when rounded to 3 decimal places.

If the first digit removed is greater than 5, or 5 and some succeeding digit is non-zero, the preceding digit is increased by 1. For example, $6.123456$ becomes $6.12346$ when rounded to 5 decimal places.

Sample

A sample is part of a population. It is a subset of the population, often randomly selected for the purpose of estimating the value of a characteristic of the population as a whole.

For instance, a randomly selected group of eight-year old children (the sample) might be selected to estimate the incidence of tooth decay in eight-year old children in Australia (the population).

Sample space

A sample space is the set of all possible outcomes of a chance experiment. For example, the set of outcomes (also called sample points) from tossing two heads is \{ HH, HT, TH, TT \}, where H represents a ‘head’ and T a ‘tail’.

Scientific notation

A positive real number is expressed in scientific notation when it is written as the product of a power of 10 and a decimal that has just one digit to the left of the decimal point.

For example, the scientific notation for $3459$ is $3.459 \times 10^3$, and the scientific notation for $0.000004567$ is $4.567 \times 10^{-6}$.

Many electronic calculators will show these as $3.459E3$ and $4.567E-6$

Secondary data set
Primary data is data collected by the user. Secondary data is data collected by others. Sources of secondary data include, web-based data sets, the media, books, scientific papers, etc.

Shape (statistics)

The shape of a numerical data distribution is mostly simply described as symmetric if it is roughly evenly spread around some central point or skewed, if it is not. If a distribution is skewed, it can be further described as positively skewed ('tailing-off' to the upper end of the distribution) or negatively skewed ('tailing-off' to the lower end of the distribution).

These three distribution shapes are illustrated in the parallel dot plot display below.

![Dot plots, histograms and stem plots can all be used to investigate the shape of a data distribution.](image)

Shapes (geometry)

A polygon is plane figure bounded by line segments.

The figure shown above is a regular pentagon. It is a convex five-sided polygon. It is called a pentagon because it has five sides. It is called regular because all sides have equal length and all interior angles are equal.

A polyhedron is a solid figure bounded by plane polygonal faces. Two adjacent faces intersect at an edge and each edge joins two vertices.
The polyhedron shown above is a pyramid with a square base. It has 5 vertices, 8 edges and 5 faces. It is a convex polyhedron.

The figure above is a non-convex polyhedron.

A convex polyhedron is a finite region bounded by planes, in the sense that the region lies entirely on one side of the plane.

A regular shape can be a polygon. A polygon is regular if all of its sides are the same length and all of its angles have the same measure.

Side-by-side column graph

A side-by-side column graph can be used to organise and display the data that arises when a group of individuals or things are categorised according to two or more criteria.

For example, the side-by-side column graph below displays the data obtained when 27 children are categorised according to hair type (straight or curly) and hair colour (red, brown, blonde, black). The legend indicates that blue columns represent children with straight hair and red columns children with curly hair.

Side-by-side column graphs are frequently called side-by-side bar graphs or bar charts. In a bar graph or chart, the bars can be either vertical or horizontal.

Similar

The four standard tests for two triangles to be similar.

AAA: If two angles of one triangle are respectively equal to two angles of another triangle, then the two triangles are similar.

SAS: If the ratio of the lengths of two sides of one triangle is equal to the ratio of the lengths of two sides of another triangle, and the included angles are equal, then the two triangles are similar.

SSS: If we can match up the sides of one triangle with the sides of another so that the ratios of matching sides are equal, then the two triangles are similar.

RHS: If the ratio of the hypotenuse and one side of a right-angled triangle is equal to the ratio of the hypotenuse and one side of another right-angled triangle, then the two triangles are similar.
Two plane figures are called similar if an enlargement of one figure is congruent to the other.

That is, if one can be mapped to the other by a sequence of translations, rotations, reflections and enlargements.

Similar figures thus have the same shape, but not necessarily the same size.

**Simple interest**

Simple interest is the interest accumulated when the interest payment in each period is a fixed fraction of the principal. For example, if the principle $P$ earns simple interest at the rate of $\% per period, then after $n$ periods the accumulated simple interest is $\frac{Pnt}{100}$.

**Sine**

In any right-angled triangle,

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}, \text{ where } 0^\circ < \theta < 90^\circ$$

In any triangle $ABC$,

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

In words it says:
Any side of a triangle over the sine of the opposite angle equals any other side of the triangle over the sine of its opposite angle.

**Square**

A square is a quadrilateral that is both a rectangle and a rhombus.
A square thus has all the properties of a rectangle, and all the properties of a rhombus.

**Standard deviation**

*Standard deviation* is a measure of the variability or spread of a data set. It gives an indication of the degree to which the individual data values are spread around their mean.

**Stem and leaf plot**

A *stem-and-leaf plot* is a method of organising and displaying numerical data in which each data value is split into two parts, a “stem” and a “leaf”.

For example, the stem-and-leaf plot below displays the resting pulse rates of 19 students.

```
pulse rate
0   8 8 8 9
7   0 1 1 4 6 6 8
8   2 6 8 8
9   0 6
10  4
11  0
```

In this plot, the stem unit is ‘10’ and the leaf unit is ‘1’. Thus the top row in the plot 6½8 8 8 9 displays pulse rates of 68, 68, 68 and 69.

*Stemplot* is a synonym for stem-and-leaf plot.

**Subitising**

Recognising the number of objects in a collection without consciously counting

**Sum**

A *sum* is the result of adding together two or more numbers or algebraic expressions.

**Surd**

A *surd* is a numerical expression involving one or more irrational roots of numbers. Examples of surds include \( \sqrt{2} \), \( \frac{2}{\sqrt{5}} \) and \( \sqrt[4]{3} + \sqrt[7]{2} \).

**Symmetrical**

**Line symmetry**

A plane figure F has line symmetry in a line m if the image of F under the reflection in m is F itself. The line m is called the axis of symmetry.
Rotational symmetry

A plane figure $F$ has rotational symmetry about a point $O$ if there is a non-trivial rotation such that the image of $F$ under the rotation is $F$ itself.

A rotation of $120^\circ$ around $O$ moves the equilateral triangle onto itself.

Tangent

A tangent to a circle is a line that intersects a circle at just one point. It touches the circle at that point of contact, but does not pass inside it.

In any right-angled triangle,

\[
\tan \theta = \frac{\text{opposite}}{\text{adjacent}}, \text{ where } 0^\circ < \theta < 90^\circ.
\]

Terminating decimal

A terminating decimal is a decimal that contains only finitely many decimal digits.

Every terminating decimal represents a rational number $\frac{a}{b}$ where the denominator is a power of $10$. For example, $5.121$ is the decimal expansion of the sum
Transformation

The transformations included in this glossary are enlargements, reflections, rotations and translations.

Translation

Shifting a figure in the plane without turning it is called translation. To describe a translation, it is enough to say how far left or right and how far up or down the figure is moved.

A translation is a transformation that moves each point to its translation image.

Transversal

A transversal is a line that meets two or more other lines in a plane.

Trapezium

A trapezium is a quadrilateral with one pair of opposite sides parallel.

Tree diagram

A tree diagram is a diagram that can used to enumerate the outcomes of a multi-step random experiment.

The diagram below shows a tree diagram that has been used to enumerate all of the possible outcomes when a coin is tossed twice. This is an example of a two-step random experiment.
**Triangular number**

A triangular number is the number of dots required to make a triangular array of dots in which the top row consists of just one dot, and each of the other rows contains one more dot than the row above it. So the first triangular number is 1, the second is 3 (= 1 + 2), the third is 6 (= 1 + 2 + 3) and so on.

**Trigonometric ratios**

Sine, Cosine, Tangent

**Unit fraction**

A unit fraction is a simple fraction whose numerator is 1, that is, a fraction of the form \(\frac{1}{n}\) where \(n\) is a natural number.

**Variable**

**Numerical variables** are variables whose values are numbers, and for which arithmetic processes such as adding and subtracting, or calculating an average, make sense.

A **discrete numerical variable** is a numerical variable, each of whose possible values is separated from the next by a definite “gap”. The most common numerical variables have the counting numbers 0, 1, 2, 3, … as possible values. Others are prices, measured in dollars and cents.

Examples include the number of children in a family or the number of days in a month.

**Variable (algebra)**

A **variable** is a symbol, such as \(x, y\) or \(z\), used to represent an unspecified member of some set. For example, the variable \(x\) could represent an unspecified real number.

**Variable (statistics)**

A **variable** is something measurable or observable that is expected to either change over time or between individual observations.

Examples of variables in statistics include the age of students, their hair colour or a playing field’s length or its shape.

**Venn diagram**

A **Venn diagram** is a graphical representation of the extent to which two or more events, for example \(A\) and \(B\), are mutually inclusive (overlap) or mutually exclusive (do not overlap).

**Vertically opposite angle**
When two lines intersect, four angles are formed at the point of intersection. In the diagram, the angles marked $\angle AOX$ and $\angle BOY$ are called vertically opposite.

Vertically opposite angles are equal.

![Diagram of intersecting lines with angles labeled](image)

**Volume**

The volume of a solid region is a measure of the size of a region.

For a rectangular prism, $Volume = Length \times Width \times Height$

**Whole number**

A whole number is a non-negative integer, that is, one of the numbers 0, 1, 2, 3, ... . Sometimes it is taken to mean only a positive integer, or any integer.
### Mathematics Scope and Sequence: Foundation to Year 6

<table>
<thead>
<tr>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number and place value</strong></td>
<td>Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point.</td>
<td>Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond.</td>
<td>Subitise small collections of objects.</td>
<td>Represent practical situations to model addition and sharing.</td>
<td>Compare, order and make correspondences between collections, initially to 20, and explain reasoning.</td>
<td>This sequence starts at this year level.</td>
</tr>
<tr>
<td><strong>Fractions and decimals</strong></td>
<td>Recognise and describe one-half as one of two equal parts of a whole.</td>
<td>Recognise and interpret common uses of halves, quarters and eighths of shapes and collections.</td>
<td>Model and represent unit fractions including 1/2, 1/4, 1/3, 1/5 and their multiples to a complete whole.</td>
<td>Investigate the conditions required for a number to be odd or even and identify odd and even numbers.</td>
<td>Recognise, represent and order numbers to at least 1000.</td>
<td>Identify and describe factors and multiples of whole numbers and use them to solve problems.</td>
</tr>
<tr>
<td><strong>Real numbers</strong></td>
<td>Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and tens from any starting point, then moving to other sequences.</td>
<td>Recognise, model, represent and order numbers to at least 1000.</td>
<td>Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting.</td>
<td>Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems.</td>
<td>Recognise and explain the connection between addition and subtraction.</td>
<td>Identify and describe factors and multiples of whole numbers and use them to solve problems.</td>
</tr>
</tbody>
</table>

**Version 1.2**

8th March 2011
<table>
<thead>
<tr>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
<th>Year 10 A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number and place value</strong></td>
<td>Identify and describe properties of prime, composite, square and triangular numbers</td>
<td>Investigate index notation and represent whole numbers as products of powers of prime numbers</td>
<td>Use index notation with numbers to establish the index laws with positive integral indices and the zero index</td>
<td>This sequence ends at this year level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers</td>
<td>Investigate and use square roots of perfect square numbers</td>
<td>Carry out the four operations with integers, using efficient mental and written strategies and appropriate digital technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate everyday situations that use positive and negative whole numbers and zero. Locate and represent these numbers on a number line</td>
<td>Apply the associative, commutative and distributive laws to aid mental and written computation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>Compare fractions with related denominators and locate and represent them on a number line</td>
<td>This sequence ends at this year level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solve problems involving addition and subtraction of fractions with the same or related denominators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiply decimals by whole numbers and perform divisions that result in terminating decimals, with and without digital technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiply and divide decimals by powers of 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make connections between equivalent fractions, decimals and percentages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real numbers</td>
<td>This sequence starts at this year level</td>
<td>Compare fractions using equivalence. Locate and represent fractions and mixed numerals on a number line</td>
<td>Investigate terminating and recurring decimals</td>
<td>Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solve problems involving addition and subtraction of fractions, including those with unrelated denominators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiply and divide fractions and decimals using efficient written strategies and digital technologies</td>
<td>Investigate the concept of irrational numbers, including ( \sqrt{2} )</td>
<td>Apply index laws to numerical expressions with integer indices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Express one quantity as a fraction of another, with and without the use of digital technologies</td>
<td>Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies</td>
<td>Express numbers in scientific notation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Round decimals to a specified number of decimal places</td>
<td>Solve a range of problems involving rates and ratios, with and without digital technologies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connect fractions, decimals and percentages and carry out simple conversions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. Recognise and solve problems involving simple ratios</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Version 1.2
8th March 2011
<table>
<thead>
<tr>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Money and financial mathematics</strong></td>
<td>Recognise, describe and order Australian coins according to their value</td>
<td>Count and order small collections of Australian coins and notes according to their value</td>
<td>Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents</td>
<td>Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies</td>
<td>Create simple financial plans</td>
<td>Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies</td>
</tr>
<tr>
<td><strong>Patterns and algebra</strong></td>
<td>Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings</td>
<td>Investigate and describe number patterns formed by skip counting and patterns with objects</td>
<td>Describe patterns with numbers and identify missing elements</td>
<td>Describe, continue, and create number patterns resulting from performing addition or subtraction</td>
<td>Explore and describe number patterns resulting from performing multiplication</td>
<td>Describe, continue and create patterns with fractions, decimals and whole numbers, with and without digital technologies</td>
</tr>
<tr>
<td><strong>Linear and non-linear relationships</strong></td>
<td></td>
<td></td>
<td>Describe, continue, and create patterns with numbers and identify missing elements</td>
<td>Solve problems involving addition or subtraction</td>
<td>Explore and describe number patterns resulting from performing multiplication</td>
<td>Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence</td>
</tr>
</tbody>
</table>

This sequence starts at this year level.
<table>
<thead>
<tr>
<th>Number and Algebra</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
<th>Year 10 A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Money and financial mathematics</strong></td>
<td>Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies</td>
<td>Investigate and calculate “best buys”, with and without digital technologies</td>
<td>Solve problems involving profit and loss, with and without digital technologies</td>
<td>Solve problems involving simple interest</td>
<td>Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies</td>
<td></td>
</tr>
<tr>
<td><strong>Patterns and algebra</strong></td>
<td>Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence. Explore the use of brackets and order of operations to write number sentences</td>
<td>Introduce the concept of variables as a way of representing numbers using letters. Create algebraic expressions and evaluate them by substituting a given value for each variable. Extend and apply the laws and properties of arithmetic to algebraic terms and expressions.</td>
<td>Extend and apply the distributive law to the expansion of algebraic expressions. Factorise algebraic expressions by identifying numerical factors. Simplify algebraic expressions involving the four operations.</td>
<td>Extend and apply the index laws to variables, using positive integral indices and the zero index. Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate.</td>
<td>Factorise algebraic expressions by taking out a common algebraic factor. Simplify algebraic products and quotients using index laws. Apply the four operations to simple algebraic fractions with numerical denominators. Expand binomial products and factorise monic quadratic expressions using a variety of strategies. Substitute values into formulas to determine an unknown.</td>
<td></td>
</tr>
<tr>
<td><strong>Linear and non-linear relationships</strong></td>
<td>This sequence starts at this year level. Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point. Solve simple linear equations. Investigate, interpret and analyse graphs from authentic data.</td>
<td>Plot linear relationships on the Cartesian plane with and without the use of digital technologies. Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution.</td>
<td>Find the distance between two points located on a Cartesian plane using a range of strategies, including graphing software. Sketch linear graphs using the coordinates of two points. Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software. Sketch simple non-linear relations with and without the use of digital technologies.</td>
<td>Solve problems involving linear equations, including those derived from formulas. Solve linear inequalities and graph their solutions on a number line. Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology. Solve problems involving parallel and perpendicular lines. Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate. Solve linear equations involving simple algebraic fractions. Solve simple quadratic equations using a range of strategies.</td>
<td>Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations. Solve simple exponential equations. Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation. Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts.</td>
<td></td>
</tr>
<tr>
<td>Measurement and Geometry</td>
<td>Foundation Year</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
<td>Year 5</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Using units of measurement</strong></td>
<td>Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language</td>
<td>Measure and compare the lengths and capacities of pairs of objects using uniform informal units</td>
<td>Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units</td>
<td>Compare masses of objects using balance scales</td>
<td>Tell time to the minute and investigate the relationship between units of time</td>
<td>Choose appropriate units of measurement for length, area, volume, capacity and mass</td>
</tr>
<tr>
<td></td>
<td>Compare the duration of events using the everyday language of time</td>
<td>Tell time to the half-hour</td>
<td>Tell time to the quarter-hour, using the language of 'past' and 'to'</td>
<td>Tell time to the half-hour and determine the number of days in each month</td>
<td>Use am and pm notation and solve simple time problems</td>
<td>Convert between units of time</td>
</tr>
<tr>
<td></td>
<td>Connect days of the week to familiar events and actions</td>
<td>Describe duration using months, weeks, days and hours</td>
<td>Name and order months and seasons</td>
<td>Use a calendar to identify the date and determine the number of days in each month</td>
<td>Compare objects using familiar metric units of area and volume</td>
<td>Solve problems involving the comparison of lengths and areas using appropriate units</td>
</tr>
<tr>
<td><strong>Shape</strong></td>
<td>Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment</td>
<td>Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features</td>
<td>Describe and draw two-dimensional shapes, with and without digital technologies</td>
<td>Describe the features of three-dimensional objects</td>
<td>Make models of three-dimensional objects and describe key features</td>
<td>Connect three-dimensional objects with their nets and other two-dimensional representations</td>
</tr>
<tr>
<td></td>
<td>Describe the features of three-dimensional objects</td>
<td>Compare and describe two-dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies</td>
<td>Compare and describe two-dimensional shapes</td>
<td>Compare the areas of regular and irregular shapes by informal means</td>
<td>Compare the areas of regular and irregular shapes by informal means</td>
<td>Connect for three-dimensional objects with their nets and other two-dimensional representations</td>
</tr>
<tr>
<td><strong>Location and transformation</strong></td>
<td>Describe position and movement.</td>
<td>Give and follow directions to familiar locations</td>
<td>Interpret simple maps of familiar locations and identify the relative positions of key features</td>
<td>Investigate the effect of one-step slides and flips with and without digital technologies</td>
<td>Create and interpret simple grid maps to show position and pathways</td>
<td>Use simple scales, legends and directions to interpret information contained in basic maps</td>
</tr>
<tr>
<td></td>
<td>Identify and describe half and quarter turns</td>
<td>Investigate the effect of one-step slides and flips with and without digital technologies</td>
<td>Identify symmetry in the environment</td>
<td>Identify and describe half and quarter turns</td>
<td>Identify symmetry in the environment</td>
<td>Create symmetrical patterns, pictures and shapes with and without digital technologies</td>
</tr>
<tr>
<td></td>
<td>Investigate the effect of one-step slides and flips with and without digital technologies</td>
<td>Identify and describe half and quarter turns</td>
<td>Identify and describe half and quarter turns</td>
<td>Describe the relative positions of key features</td>
<td>Investigate the effect of one-step slides and flips with and without digital technologies</td>
<td>Apply the enlargement transformation to familiar two-dimensional shapes and explore the properties of the resulting image compared with the original</td>
</tr>
<tr>
<td><strong>Geometric reasoning</strong></td>
<td>This sequence starts at this year level</td>
<td>Identify angles as measures of turn and compare angle sizes in everyday situations</td>
<td>Identify angles as measures of turn and compare angle sizes in everyday situations</td>
<td>Compare angles and classify them as equal to, greater than or less than a right angle</td>
<td>Compare and classify angles as equal to, greater than or less than a right angle</td>
<td>Estimate, measure and compare angles using degrees. Construct angles using a protractor</td>
</tr>
<tr>
<td><strong>Pythagoras and trigonometry</strong></td>
<td>This sequence starts at this year level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 6</td>
<td>Year 7</td>
<td>Year 8</td>
<td>Year 9</td>
<td>Year 10</td>
<td>Year 10 A</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td><strong>Using units of measurement</strong></td>
<td>Connect decimal representations to the metric system</td>
<td>Establish the formulae for areas of rectangles, triangles and parallelograms and use these in problem solving</td>
<td>Choose appropriate units of measurement for area and volume and convert from one unit to another</td>
<td>Calculate the areas of composite shapes</td>
<td>Solve problems involving surface area and volume of surface area and volume of prisms, cylinders and composite solids</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Convert between common metric units of length, mass and capacity</td>
<td>Calculate volumes of rectangular prisms</td>
<td>Find perimeters and areas of parallelograms, rhombuses and kites</td>
<td>Calculate the surface area and volume of cylinders and solve related problems</td>
<td>Solve problems involving the surface area and volume of right prisms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solve problems involving the comparison of lengths and areas using appropriate units</td>
<td>Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulae to solve problems involving circumference and area</td>
<td>Investigate very small and very large time scales and intervals</td>
<td>Investigate very small and very large time scales and intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connect volume and capacity and their units of measurement</td>
<td>Develop the formula for the volume of rectangular and triangular prisms and prisms in general. Use formulae to solve problems involving volume</td>
<td>Solve problems involving duration, including using 12- and 24-hour time within a single time zone</td>
<td>Solve problems involving the surface area and volume of right prisms</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpret and use timetables</td>
<td>Solve problems involving the comparison of lengths and areas</td>
<td>This sequence ends at this year level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shape</strong></td>
<td>Construct simple prisms and pyramids</td>
<td>Draw different views of prisms and solids formed from combinations of prisms</td>
<td>This sequence ends at this year level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Location and transformation</strong></td>
<td>Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies</td>
<td>Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries</td>
<td>This sequence ends at this year level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Geometric reasoning</strong></td>
<td>Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles</td>
<td>Identify corresponding, alternate and co-interior angles when two parallel straight lines are crossed by a transversal</td>
<td>Define congruence of plane shapes using transformations</td>
<td>Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar</td>
<td>Prove and apply angle and chord properties of circles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning</td>
<td>Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning</td>
<td>Develop the conditions for congruence of triangles</td>
<td>Solve problems using ratio and scale factors in similar figures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classify triangles according to their side and angle properties and describe quadrilaterals</td>
<td>Classify triangles according to their side and angle properties and describe quadrilaterals</td>
<td>Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning</td>
<td>Formulate proofs involving congruent triangles and angle properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral</td>
<td>Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pythagoras and trigonometry</strong></td>
<td>This sequence starts at this year level</td>
<td>Investigate Pythagoras’ Theorem and its application to solving simple problems involving right-angled triangles</td>
<td>Solve right-angled triangle problems including those involving direction and angles of elevation and depression</td>
<td>Establish the sine, cosine and area rules for any triangle and solve related problems</td>
<td>Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles</td>
<td></td>
<td>Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apply trigonometry to solve right-angled triangle problems</td>
<td></td>
<td>Solve simple trigonometric equations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Apply Pythagoras’ theorem and trigonometry to solving three-dimensional problems in right-angled triangles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics and Probability</td>
<td>Foundation Year</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
<td>Year 5</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Chance</td>
<td>Identify outcomes of familiar events involving chance and describe them using everyday language such as 'will happen', 'won't happen' or 'might happen'</td>
<td>Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible'</td>
<td>Conduct chance experiments, identify and describe possible outcomes and recognise variation in results</td>
<td>Describe possible everyday events and order their chances of occurring. Identify everyday events where one cannot happen if the other happens. Identify events where the chance of one will not be affected by the occurrence of the other</td>
<td>List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions</td>
<td>Recognise that probabilities range from 0 to 1</td>
</tr>
<tr>
<td>Data representation and interpretation</td>
<td>Answer yes/no questions to collect information</td>
<td>Choose simple questions and gather responses. Represent data with objects and drawings where one object or drawing represents one data value. Describe the displays</td>
<td>Identify a question of interest based on one categorical variable. Gather data relevant to the question. Collect, check and classify data</td>
<td>Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording. 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. Interpret and compare data displays</td>
<td>Select and trial methods for data collection, including survey questions and recording sheets. Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values. Evaluate the effectiveness of different displays in illustrating data features including variability</td>
<td>Pose questions and collect categorical or numerical data by observation or survey. Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies. Evaluate the effectiveness of different displays in illustrating data features including variability</td>
</tr>
<tr>
<td>Mathematics Scope and Sequence: Year 6 to Year 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year 6</strong></td>
<td><strong>Year 7</strong></td>
<td><strong>Year 8</strong></td>
<td><strong>Year 9</strong></td>
<td><strong>Year 10</strong></td>
<td><strong>Year 10 A</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Chance</strong></td>
<td>Describe probabilities using fractions, decimals and percentages. Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies. Compare observed frequencies across experiments with expected frequencies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construct sample spaces for single-step experiments with equally likely outcomes. Assign probabilities to the outcomes of events and determine probabilities for events.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify complementary events and use the sum of probabilities to solve problems. Describe events using language of &quot;at least&quot;, exclusive &quot;or&quot; (A or B but not both), inclusive &quot;or&quot; (A or B or both) and &quot;and&quot;. Represent such events in two-way tables and Venn diagrams and solve related problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events. Calculate relative frequencies from given or collected data to estimate probabilities of events involving &quot;and&quot; or &quot;or&quot;. Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data representation and interpretation</strong></td>
<td>Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables. Interpret secondary data presented in digital media and elsewhere.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and investigate issues involving continuous or large count data collected from primary and secondary sources. Construct and compare a range of data displays including stem-and-leaf plots and dot plots. Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data. Describe and interpret data displays and the relationship between the median and mean.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explore the practicalities and implications of obtaining representative data using a variety of investigative processes. Investigate the effect of individual data values, including outliers, on the mean and median. Explore the variation of means and proportions in representative data.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly from secondary sources. Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including &quot;skewed&quot;, &quot;symmetric&quot; and &quot;bimodal&quot;. Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determine quantities and interquartile range. Construct and interpret box plots and use them to compare data sets. Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including &quot;skewed&quot;, &quot;symmetric&quot; and &quot;bimodal&quot;. Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Statistics and Probability</strong></td>
<td><strong>Version 1.2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8th March 2011
# Rationale and Aims

## Rationale

## Aims

# Organisation

## Content structure

## Language

## Literature

## Literacy

## Relationships between the strands

## English across Foundation to Year 12

## Achievement standards

## Diversity of learners

## General capabilities

## Cross-curriculum priorities

## Links to the other learning areas

## Implications for teaching, assessment and reporting

# Curriculum Foundation–10

## Foundation Year

# Glossary
Rationale and Aims

Rationale

The study of English is central to the learning and development of all young Australians. It helps create confident communicators, imaginative thinkers and informed citizens. It is through the study of English that individuals learn to analyse, understand, communicate with and build relationships with others and with the world around them. The study of English helps young people develop the knowledge and skills needed for education, training and the workplace. It helps them become ethical, thoughtful, informed and active members of society. In this light it is clear that the Australian Curriculum: English plays an important part in developing the understanding, attitudes and capabilities of those who will take responsibility for Australia’s future.

Although Australia is a linguistically and culturally diverse country, participation in many aspects of Australian life depends on effective communication in Standard Australian English. In addition, proficiency in English is invaluable globally. The Australian Curriculum: English contributes both to nation-building and to internationalisation.

The Australian Curriculum: English also helps students to engage imaginatively and critically with literature to expand the scope of their experience. Aboriginal and Torres Strait Islander peoples have contributed to Australian society and to its contemporary literature and its literary heritage through their distinctive ways of representing and communicating knowledge, traditions and experience. The Australian Curriculum: English values, respects and explores this contribution. It also emphasises Australia’s links to Asia.

Aims

The Australian Curriculum: English aims to ensure that students:

- learn to listen to, read, view, speak, write, create and reflect on increasingly complex and sophisticated spoken, written and multimodal texts across a growing range of contexts with accuracy, fluency and purpose
- appreciate, enjoy and use the English language in all its variations and develop a sense of its richness and power to evoke feelings, convey information, form ideas, facilitate interaction with others, entertain, persuade and argue
- understand how Standard Australian English works in its spoken and written forms and in combination with non-linguistic forms of communication to create meaning
- develop interest and skills in inquiring into the aesthetic aspects of texts, and develop an informed appreciation of literature.
Content Structure

The Australian Curriculum: English Foundation to Year 10 is organised into three interrelated strands that support students’ growing understanding and use of Standard Australian English (English). Together the three strands focus on developing students’ knowledge, understanding and skills in listening, reading, viewing, speaking and writing. The three strands are:

- **Language**: knowing about the English language
- **Literature**: understanding, appreciating, responding to, analysing and creating literature
- **Literacy**: expanding the repertoire of English usage.

Strands and sub-strands

Content descriptions in each strand are grouped into sub-strands that, across the year levels, present a sequence of development of knowledge, understanding and skills. The sub-strands are:

<table>
<thead>
<tr>
<th>Language</th>
<th>Literature</th>
<th>Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language variation and change</td>
<td>Literature and context</td>
<td>Texts in context</td>
</tr>
<tr>
<td>Language for interaction</td>
<td>Responding to literature</td>
<td>Interacting with others</td>
</tr>
<tr>
<td>Text structure and organisation</td>
<td>Examining literature</td>
<td>Interpreting, analysing and evaluating</td>
</tr>
<tr>
<td>Expressing and developing ideas</td>
<td>Creating literature</td>
<td>Creating texts</td>
</tr>
<tr>
<td>Sound and letter knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Texts

Texts provide the means for communication. They can be written, spoken or multimodal, and in print or digital/online forms. Multimodal texts combine language with other means of communication such as visual images, soundtrack or spoken word, as in film or computer presentation media. Texts provide important opportunities for learning about aspects of human experience and about aesthetic value. Many of the tasks that students undertake in and out of school involve understanding and producing imaginative, informative and persuasive texts, media texts, everyday texts and workplace texts.

The term ‘literature’ refers to past and present texts across a range of cultural contexts that are valued for their form and style and are recognised as having enduring or artistic value. While the nature of what constitutes literary texts is dynamic and evolving, they are seen as having personal, social, cultural and aesthetic value and potential for enriching students’ scope of experience. Literature includes a broad range of forms such as novels, poetry, short stories and plays; fiction for young adults and children, multimodal texts such as film, and a variety of non-fiction. Literary texts also include excerpts from longer texts. This enables a range of literary texts to be included within any one year level for close study or comparative purposes.

English educators use many ways of categorising texts. The descriptions of texts used in the Australian Curriculum: English are based on practical as well as conceptual considerations. The specific designation of a
A strand labelled ‘literature’ is aimed at encouraging teachers working at all year levels not only to use texts conventionally understood as ‘literary’, but also to engage students in examining, evaluating and discussing texts in increasingly sophisticated and informed ‘literary’ ways.

The usefulness of distinctions among types of texts relates largely to how clearly at each year level these distinctions can guide the selection of materials for students to listen to, read, view, write and create, and the kinds of purposeful activities that can be organised around these materials.

**The language modes**

The processes of listening, speaking, reading, viewing and writing, also known as language modes, are interrelated and the learning of one often supports and extends learning of the others. To acknowledge these interrelationships, content descriptions in each strand of the Australian Curriculum: English incorporate the processes of listening, speaking, reading, viewing and writing in an integrated and interdependent way.

Classroom contexts that address particular content descriptions will necessarily draw from more than one of these processes in order to support students’ effective learning. For example, students will learn new vocabulary through listening and reading and apply their knowledge and understanding in their speaking and writing as well as in their comprehension of both spoken and written texts.

Content descriptions can also be viewed by these processes or language modes. In this aspect, each content description has been placed in the mode in which a major focus of its learning occurs. Content descriptions can be filtered to identify all relevant processes or language modes.

**Year level descriptions**

Year level descriptions have three functions. First, they emphasise the interrelated nature of the three strands and the expectation that planning an English program will involve integration of content from the strands. Second, they provide information about the learning contexts that are appropriate at each year for learning across the Language, Literature and Literacy strands. Third, they provide an overview of the range of texts to be studied and an indication of their complexity and key features. They also describe differences in the texts that students create. In the early years, development in reading and writing is rapid and clear distinctions in text complexity can be made so descriptions are written for each year at Foundation, 1 and 2. In Years 3–10, the two-year description provides for greater flexibility.

**Content descriptions**

The Australian Curriculum: English includes content descriptions at each year level. These describe the knowledge, understanding, skills and processes that teachers are expected to teach and students are expected to learn, but do not prescribe approaches to teaching. Learning in English is recursive and cumulative, and builds on concepts, skills and processes developed in earlier years. Nevertheless, the content descriptions have been written to ensure that learning is appropriately ordered and that unnecessary repetition is avoided. However, a concept or skill introduced at one year level may be revisited, strengthened and extended at later year levels as needed.

**Content elaborations**

Content elaborations are provided for Foundation to Year 10 to illustrate and exemplify content and assist teachers in developing a common understanding of the content descriptions. They are not intended to be comprehensive content points that all students need to be taught.

**Glossary**
A glossary is provided to support a common understanding of key terms in the content descriptions.

**Language: knowing about the English language**

In the Language strand, students develop their knowledge of the English language and how it works. They learn that changes in English are related to historical developments and the geographical differences of its users over the centuries, and that there are many differences in dialect and accent. They learn how language enables people to interact effectively, to build and maintain relationships and to express and exchange knowledge, skills, attitudes, feelings and opinions. They discover the patterns and purposes of English usage, including spelling, grammar and punctuation at the levels of the word, sentence and extended text, and they study the connections between these levels. By developing a body of knowledge about these patterns and their connections, students learn to communicate effectively through coherent, well-structured sentences and texts. They gain a consistent way of understanding and talking about language, language-in-use and language-as-system, so they can reflect on their own speaking and writing and discuss these productively with others.

**Language variation and change:** Students learn that languages and dialects are constantly evolving due to historical, social and cultural changes, demographic movements and technological innovations. They come to understand that these factors, along with new virtual communities and environments, continue to affect the nature and spread of English.

**Language for interaction:** Students learn that the language used by individuals varies according to their social setting and the relationships between the participants. They learn that accents and styles of speech and idiom are part of the creation and expression of personal and social identities.

**Text structure and organisation:** Students learn how texts are structured to achieve particular purposes; how language is used to create texts that are cohesive and coherent; how texts about more specialised topics contain more complex language patterns and features; and how the author guides the reader/viewer through the text through effective use of resources at the level of the whole text, the paragraph and the sentence.

**Expressing and developing ideas:** Students learn how, in a text, effective authors control and use an increasingly differentiated range of clause structures, words and word groups, as well as combinations of sound, image, movement, verbal elements and layout. They learn that the conventions, patterns and generalisations that relate to English spelling involve the origins of words, word endings, Greek and Latin roots, base words and affixes.

**Sound and letter knowledge:** Students develop knowledge about the sounds of English and learn to identify the sounds in spoken words. They learn the letters of the alphabet and how to represent spoken words by using combinations of these letters.

**Language**

The Language strand is based on concepts drawn largely from historical and linguistic accounts of the English language. These approaches draw attention to the ways in which languages change, and to the distinction between language-in-use and language-as-system. These approaches also acknowledge that students’ ability to use grammar will exceed their ability to explicitly reflect on grammar. Young children, for example, will use complex sentences before they can explain how these are structured. These approaches, in describing language, also pay attention to both the structure (syntax) and meaning (semantics) at the level of the word, the sentence and the text. The Australian Curriculum: English uses standard grammatical terminology within a contextual framework, in which language choices are seen to vary according to the topics at hand, the nature
and proximity of the relationships between the language users, and the modalities or channels of communication available. This strand informs the planning and conduct of teaching and learning activities in English and provides resources that connect to key concepts and skills in the other strands.

**Literature: understanding, appreciating, responding to, analysing and creating literature**

The Literature strand aims to engage students in the study of literary texts of personal, cultural, social and aesthetic value. These texts include some that are recognised as having enduring social and artistic value and some that attract contemporary attention. Texts are chosen because they are judged to have potential for enriching the lives of students, expanding the scope of their experience, and because they represent effective and interesting features of form and style. Learning to appreciate literary texts and to create their own literary texts enriches students’ understanding of human experiences and the capacity for language to deepen those experiences. It builds students’ knowledge about how language can be used for aesthetic ends, to create particular emotional, intellectual or philosophical effects. Students interpret, appreciate and create literary texts such as short stories, novels, poetry, prose, plays, film and multimodal texts, in spoken, print and digital/online forms. Texts recognised as having enduring artistic and cultural value are drawn from world and Australian literature. These include the oral narrative traditions of Aboriginal and Torres Strait Islander peoples, texts from Asia, texts from Australia’s immigrant cultures and texts of the students’ choice.

**Literature and context:** Students learn how ideas and viewpoints about events, issues and characters that are expressed by authors in texts are drawn from and shaped by different historical, social and cultural contexts.

**Responding to literature:** Students learn to identify personal ideas, experiences and opinions about literary texts and discuss them with others. They learn how to recognise areas of agreement and difference, and how to develop and refine their interpretations through discussion and argument.

**Examining literature:** Students learn how to explain and analyse the ways in which stories, characters, settings and experiences are reflected in particular literary genres, and how to discuss the appeal of these genres. They learn how to compare and appraise the ways authors use language and literary techniques and devices to influence readers. They also learn to understand, interpret, discuss and evaluate how certain stylistic choices can create multiple layers of interpretation and effect.

**Creating literature:** Students learn how to use personal knowledge and literary texts as starting points to create imaginative writing in different forms and genres and for particular audiences. Using print, digital and online media, students develop skills that allow them to convey meaning, address significant issues and heighten engagement and impact.

**Literature**

There are many approaches to the study of literature. In the Australian Curriculum: English the sources drawn on most substantially include:

- cultural studies, with emphasis on the different ways in which literature is significant in everyday life
- structuralism, with its emphasis on close analysis of literary works and the key ideas on which they are based; for example, the detailed stylistic study of differing styles of literary work
- comparativism, with its emphasis on comparisons of works of literature from different language, ethnic and cultural backgrounds
• historicism, with its emphasis on exploring the relationships between historical, cultural and literary traditions.

The Literature strand also gives students the opportunity to study the processes by which certain literary works become ‘prized’ and ‘perennial’, the ‘valuing’ process itself, and why it is that most cultures have works they cherish. The approach to learning in this strand is not to present students with an English literary canon that is a static entity, but rather to invite their curiosity about, and develop an increasingly specialised inquiry into, the historical, cultural and aesthetic processes by which works come to be regarded as valued and cherished.

**Literacy: expanding the repertoire of English usage**

The Literacy strand aims to develop students’ ability to interpret and create texts with appropriateness, accuracy, confidence, fluency and efficacy for learning in and out of school, and for participating in Australian life more generally. Texts chosen include media texts, everyday texts and workplace texts from increasingly complex and unfamiliar settings, ranging from the everyday language of personal experience to more abstract, specialised and technical language, including the language of schooling and academic study. Students learn to adapt language to meet the demands of more general or more specialised purposes, audiences and contexts. They learn about the different ways in which knowledge and opinion are represented and developed in texts, and about how more or less abstraction and complexity can be shown through language and through multimodal representations. This means that print and digital contexts are included, and that listening, viewing, reading, speaking, writing and creating are all developed systematically and concurrently.

**Literacy**

**Texts in context:** Students learn that texts from different cultures or historical periods may reveal different patterns in how they go about narrating, informing and persuading.

**Interacting with others:** Students learn how individuals and groups use language patterns to express ideas and key concepts to develop and defend arguments. They learn how to promote a point of view by designing, rehearsing and delivering spoken and written presentations and by appropriately selecting and sequencing linguistic and multimodal elements.

**Interpreting, analysing, evaluating:** Students learn to comprehend what they read and view by applying growing contextual, semantic, grammatical and phonic knowledge. They develop more sophisticated processes for interpreting, analysing, evaluating and critiquing ideas, information and issues from a variety of sources. They explore the ways conventions and structures are used in written, digital, multimedia and cinematic texts to entertain, inform and persuade audiences, and they use their growing knowledge of textual features to explain how texts make an impact on different audiences.

**Creating texts:** Students apply knowledge they have developed in other strands and sub-strands to create with clarity, authority and novelty a range of spoken, written and multimodal texts that entertain, inform and persuade audiences. They do so by strategically selecting key aspects of a topic as well as language, visual and audio features. They learn how to edit for enhanced meaning and effect by refining ideas, reordering sentences, adding or substituting words for clarity, and removing repetition. They develop and consolidate a handwriting style that is legible, fluent and automatic, and that supports sustained writing. They learn to use a range of software programs including word processing software, selecting purposefully from a range of functions to communicate and create clear, effective, informative and innovative texts.

**Literacy**

The Literacy strand takes account of approaches to literacy learning that are based on the development of skills, social and psychological growth, and critical and cultural analysis. These approaches hold that the
technical, intellectual and cultural resources related to competence in literacy have developed to serve the big and small practical, everyday communication purposes associated with living and participating in societies such as contemporary Australia. These technical, intellectual and cultural resources include:

- fluency in the sound–letter correspondences of English
- an expanding reading, writing and speaking vocabulary and a grasp of grammatical and textual patterns sufficient to understand and learn from texts encountered in and out of school, and to create effective and innovative texts
- fluency and innovation in reading, viewing and creating texts in different settings
- the skill and disposition needed to analyse and understand the philosophical, moral, political and aesthetic bases on which many texts are built
- an interest in expanding the range of materials listened to, viewed and read, and in experimenting with innovative ways of expressing increasingly subtle and complex ideas through texts.

### Relationships between the strands

Each strand contributes to the study of English its own distinctive goals, body of knowledge, history of ideas and interests, and each relates to material worth studying in its own right. Teaching, learning and assessment programs should balance and integrate the three strands in order to support the development of knowledge, understanding and skills. The key focal point for a unit of work or a learning activity may arise from any one of the strands, but the intention is that units and activities draw on all three strands in ways that are integrated and clear to learners.

### English across Foundation to Year 12

Complementing the year by year description of the curriculum, this advice describes the nature of learners and the curriculum across four year-groupings:

- **Foundation – Year 2**: typically students from 5 to 8 years of age
- **Years 3–6**: typically students from 8 to 12 years of age
- **Years 7–10**: typically students from 12 to 15 years of age
- **Senior secondary years**: typically students from 15 to 18 years of age

**Foundation – Year 2**

Students bring with them to school a wide range of experiences with language and texts. These experiences are included in the curriculum as valid ways of communicating and as rich resources for further learning about language, literature and literacy. From Foundation to Year 2, students engage with purposeful listening, reading, viewing, speaking and writing activities for different purposes and contexts.

The curriculum in these years aims to extend the abilities of students prior to school learning and to provide the foundation needed for continued learning. The study of English from Foundation to Year 2 develops students’ skills and disposition to expand their knowledge of language as well as strategies to assist that growth. It aims to do this through pleasurable and varied experiences of literature and through the beginnings of a repertoire of activities involving listening, viewing, reading, speaking and writing.

**Years 3–6**

Students practise, consolidate and extend what they have learned. They develop an increasingly sophisticated understanding of grammar and language, and are increasingly able to articulate this knowledge. Gradually, more complex punctuation, clause and sentence structures, and textual purposes and patterns are introduced.
This deeper understanding includes more explicit metalanguage, as students learn to classify words, sentence structures and texts. To consolidate both ‘learning to read and write’ and ‘reading and writing to learn’, students explore the language of different types of texts, including visual texts, advertising, digital/online and media texts.

**Years 7–10**

Students continue to practise, consolidate and extend what they have learned from previous years. They also extend their understanding of how language works, and learn to transfer this knowledge to different contexts. To achieve this, students develop an understanding of the requirements of different types of texts; they are introduced to increasingly sophisticated analyses of various kinds of literary, popular culture, and everyday texts, and they are given opportunities to engage with the technical aspects of texts, including those of their own choosing – and to explain why they made that choice.

The notion of valuing certain texts as ‘literature’ is introduced. Students learn how such texts can be discussed and analysed in relation to themes, ideas and historical and cultural contexts.

Students engage with a variety of genres and modes. They re-enact, represent and describe texts in order to display their understanding of narrative, theme, purpose, context and argument and to defend their ideas in written and oral modes. Students are given further opportunities to create increasingly sophisticated and multimodal texts in groups and individually.

**Senior secondary years**

The Australian Curriculum: English in the senior secondary years allows students to use, consolidate and expand on what they have learned, and provides a range of choices from more specialised courses to meet students’ needs and interests. The three strands of Language, Literature and Literacy also underpin the senior secondary English courses.

**Achievement standards**

Across Foundation to Year 10, achievement standards indicate the quality of learning students should typically demonstrate by a particular point in their schooling. Achievement standards comprise a written description and student work samples.

An achievement standard describes the quality of learning (the extent of knowledge, the depth of understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required at the next level of achievement.

The sequence of achievement standards across Foundation to Year 10 describes progress in the learning area. This sequence provides teachers with a framework of growth and development in the learning area.

Student work samples play a key role in communicating expectations described in the achievement standards. Each work sample includes the relevant assessment task, the student’s response, and annotations identifying the quality of learning evident in the student’s response in relation to relevant parts of the achievement standard.

Together, the description of the achievement standard and the accompanying set of annotated work samples help teachers to make judgments about whether students have achieved the standard.

**Diversity of Learners**
The Australian Curriculum has been developed to ensure that curriculum content and achievement standards establish high expectations for all students. Every student is entitled to enriching learning experiences across all areas of the curriculum. Students in Australian classrooms have multiple, diverse and changing needs that are shaped by individual learning histories and abilities as well as cultural language backgrounds and socio-economic factors.

**Special education needs**

The objectives of the Australian Curriculum are the same for all students. The curriculum offers flexibility for teachers to tailor their teaching in ways that provide rigorous, relevant and engaging learning and assessment opportunities for students with special education needs.

Most students with special education needs can engage with the curriculum provided the necessary adjustments are made to the complexity of the curriculum content and to the means through which students demonstrate their knowledge, skills and understanding.

For some learners, making adjustments to instructional processes and to assessment strategies enables students to achieve educational standards commensurate with their peers.

For other students, teachers will need to make appropriate adjustments to the complexity of the curriculum content, focusing instruction on content different to that taught to others in their age group. It follows that adjustments will also need to be made to how the student’s progress is monitored, assessed and reported.

For a small percentage of students, the Foundation to Year 10 curriculum content and achievement standards may not be appropriate nor meaningful, even with adjustments. Most of these students have a significant intellectual disability. During 2011, ACARA will develop additional curriculum content and achievement standards for this group of students in order to provide an Australian Curriculum that is inclusive of every learner.

Further advice about how to use the curriculum with students with special education needs is available here.

**English as an additional language or dialect**

Many students in Australian schools are learners of English as an additional language or dialect (EAL/D). Learners of EAL/D are students whose first language is a language other than Standard Australian English and who require additional support to assist them to develop English language proficiency. While many EAL/D learners do well in school, a significant group of these learners leave school without achieving their potential.

EAL/D students come from diverse backgrounds and may include:

- overseas- and Australian-born children whose first language is a language other than English
- Aboriginal and Torres Strait Islander students whose first language is an Indigenous language, including traditional languages, creoles and related varieties, or Aboriginal English.

EAL/D learners enter Australian schools at different ages and at different stages of English language learning and have various educational backgrounds in their first languages. For some, school is the only place they use English.

The aims of the Australian Curriculum: English are ultimately the same for all students. However, EAL/D learners are simultaneously learning a new language and the knowledge, understanding and skills of the English curriculum through that new language. They require additional time and support, along with informed teaching that explicitly addresses their language needs, and assessments that take into account their developing language proficiency.

A national EAL/D document is being produced that will support the Australian Curriculum. It will provide a description of how language proficiency develops, and will be a valuable reference for all teachers. It will allow...
English teachers to identify the language levels of the EAL/D learners in their classrooms and to address their specific learning requirements when teaching, ensuring equity of access to the English learning area for all.

General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the twenty-first century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities:

- literacy
- numeracy
- information and communication technology (ICT) competence
- critical and creative thinking
- ethical behaviour
- personal and social competence
- intercultural understanding.

Over the course of their schooling, students develop and use these general capabilities within and across learning areas and in their lives outside school. General capabilities and learning areas have a reciprocal relationship. Learning areas provide opportunities for students to develop and use general capabilities. Similarly, wherever general capabilities are made explicit in learning areas, they can enrich and deepen learning. In the Australian Curriculum: English, each of the seven general capabilities is embedded (where appropriate) in the content descriptions or elaborations. There are further opportunities to develop the general capabilities through appropriate teaching activities.

Literacy

Students become literate as they develop the skills to learn and communicate confidently at school and to become effective individuals, community members, workers and citizens. These skills include listening, reading and viewing, writing, speaking and creating print, visual and digital materials accurately and purposefully within and across all learning areas.

The progressive development of literacy knowledge and skills is essential for success in all learning areas and is the responsibility of all teachers. It is important that teachers across all years of schooling and learning areas develop student understanding of the specific language and literacy demands of the various learning areas.

Relationship with the English curriculum

In English, students learn to read, write, listen and speak accurately, flexibly and critically, and to view and create increasingly complex texts in a variety of contexts. The general capability of Literacy is drawn from the content descriptions in the Language and Literacy strands of the English curriculum. The literacy knowledge and skills are developed and applied through all three strands: Language, Literature and Literacy.

The Literacy general capability has been developed for use across the curriculum in all learning areas. It is written for teachers of all years of schooling and learning areas and incorporates language and literacy demands specific to learning areas other than English. These demands may include, for example, the language structures of mathematics questions or problems, or the particular requirements of writing a report of an experiment in science.

Numeracy

Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful. Numeracy can be addressed in English learning contexts across all year
levels. Students select and apply numerical, measurement, spatial, graphical, statistical and algebraic concepts and skills to real-world situations and problems when they comprehend information from a range of sources and offer their ideas. When responding to or creating texts that present issues or arguments based on data, students identify, analyse and synthesise numerical information and discuss the credibility of sources and methodology.

**Information and communication technology (ICT) competence**

Students develop ICT competence as they learn to use ICT effectively and appropriately when investigating, creating and communicating ideas and information at school, at home, at work and in their communities.

ICT competence is an important component of the English curriculum. Students develop the skills and understanding required to use a range of contemporary technologies. In particular, they explicitly develop increasingly sophisticated word-processing skills to enhance text construction. Students also progressively develop skills in using information technology when conducting research, a range of digital technologies to create, publish and present their learning, and communication technologies to collaborate and communicate with others both within and beyond the classroom.

**Critical and creative thinking**

Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them when seeking new pathways or solutions. In learning to think broadly and deeply, students learn to use reason and imagination to direct their thinking for different purposes. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and innovation.

Critical and creative thinking is essential to developing understanding in English. Students are encouraged to be critical thinkers, to take responsibility for their own learning, and to reflect on their learning processes. They develop and employ critical thinking and reasoning through class discussion, close analysis of texts, and research and knowledge of language.

Creative thinking is vital to the English curriculum when reading, viewing, creating and presenting texts and when developing an aesthetic understanding of and engagement with literary texts. Through their reading and through interaction with others, students are encouraged to see existing situations in new ways, identify alternative explanations, and perceive connections that can assist in problem-solving. It is through the imaginative application of ideas and through flexible thinking that students come to understand the power of language, and become independent, innovative and imaginative learners.

**Ethical behaviour**

Students develop ethical behaviour as they learn to understand and act in accordance with ethical principles. This includes understanding the role of ethical principles, values and virtues in human life; acting with moral integrity; acting with regard for others; and having a desire and capacity to work for the common good.

Ethical behaviour and issues with an ethical dimension are integral to many of the texts that students encounter in English. By studying literary texts and exploring how moral principles affect characters’ behaviour and judgments, students’ own understanding and practice of ethical behaviour can be enhanced. Equally, when they study issues and arguments, students consider whether these issues are ethical issues and whether various positions held are reasonable.

**Personal and social competence**

Students develop personal and social competence as they learn to understand and manage themselves, their relationships, lives, work and learning more effectively. This involves students recognising and regulating their
emotions, developing concern for and understanding of others, establishing positive relationships, making responsible decisions, working effectively in teams, and handling challenging situations constructively.

There are many opportunities for students to develop personal and social competence in English. The study of English helps them to identify and express their own opinions, beliefs and responses and to interact confidently and appropriately in a range of social contexts. The English curriculum emphasises the development of communication skills for conversation, negotiation and the expression of viewpoints and arguments. Students work both independently and collaboratively to solve problems and make decisions.

**Intercultural understanding**

Students develop intercultural understanding as they learn to understand themselves in relation to others. This involves students valuing their own cultures and beliefs and those of others, and engaging with people of diverse cultures in ways that recognise differences, create connections and cultivate respect between people.

The study of English offers rich opportunities for intercultural understanding and exchange across all three strands. For example, in the Language strand, the study of ‘Language variation and changes’ and ‘Language for interaction’ includes consideration of diverse language and cultures. The Literature strand exposes students to world views and interests that may be different from their own and offers them the opportunity to consider a variety of viewpoints. Students experience a range of literature from different cultures including the inscriptive and oral narrative traditions of Aboriginal people and Torres Strait Islander people, as well as the contemporary literature of these two cultural groups. They also read classic and contemporary world literature including texts from and about Asia.

**Cross-curriculum priorities**

There are three cross curriculum priorities in the Australian Curriculum:

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

The cross curriculum priorities are embedded in the curriculum and will have a strong but varying presence depending on their relevance to each of the learning areas.

**Aboriginal and Torres Strait Islander histories and cultures**

Aboriginal and Torres Strait Islander communities are strong, rich and diverse. Aboriginal and Torres Strait Islander Identity is central to this priority and is intrinsically linked to living, learning Aboriginal and Torres Strait Islander communities, deep knowledge traditions and holistic world view.

A conceptual framework based on Aboriginal and Torres Strait Islander Peoples’ unique sense of Identity has been developed as a structural tool for the embedding of Aboriginal and Torres Strait Islander histories and cultures within the Australian curriculum. This sense of Identity is approached through the interconnected aspects of Country/Place, People and Culture. Embracing these elements enhances all areas of the curriculum.

The Aboriginal and Torres Strait Islander priority provides opportunities for all learners to deepen their knowledge of Australia by engaging with the world’s oldest continuous living cultures. This knowledge and understanding will enrich their ability to participate positively in the ongoing development of Australia.

The Australian Curriculum: English values Aboriginal and Torres Strait Islander histories and cultures. It articulates relevant aspects of Aboriginal and Torres Strait Islander languages, literatures and literacies.
All students will develop an awareness and appreciation of, and respect for, the literature of Aboriginal and Torres Strait Islander Peoples, including storytelling traditions (oral narrative) as well as contemporary literature. Students will be taught to develop respectful, critical understandings of the social, historical and cultural contexts associated with different uses of language and textual features.

Students will be taught that there are many languages and dialects spoken in Australia including Aboriginal English and Yumplatok (Torres Strait Islander Creole) and that these languages may have different writing systems and oral traditions. These languages can be used to enhance enquiry and understanding of English literacy.

Asia and Australia’s engagement with Asia

The Asia and Australia’s engagement with Asia priority provides a regional context for learning in all areas of the curriculum. China, India and other Asian nations are growing rapidly and the power and influence they have in all areas of global endeavour are extensive. An understanding of Asia underpins the capacity of Australian students to be active and informed citizens working together to build harmonious local, regional and global communities, and build Australia’s social, intellectual and creative capital.

This priority is concerned with Asia literacy for all Australian students. Asia literacy develops knowledge, skills and understanding about the histories, geographies, cultures, arts, literatures and languages of the diverse countries of our region. It fosters social inclusion in the Australian community. It enables students to communicate and engage with the peoples of Asia so they can effectively live, work and learn in the region. Australia now has extensive engagement with Asia in areas such as trade, investment, immigration, tourism, education and humanitarian assistance and this engagement is vital to the prosperity of all Australians.

In this learning area, students develop communication skills that reflect cultural awareness and intercultural understanding. They are encouraged to draw on knowledge of the arts and literature of the Asia region to influence their own creative pursuits and to express themselves through different media and genres.

Sustainability

Sustainability addresses the ongoing capacity of Earth to maintain all life.

Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are both individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.

Education for sustainability develops the knowledge, skills and values necessary for people to act in ways that contribute to more sustainable patterns of living. It is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through action that recognises the relevance and interdependence of environmental, social, cultural and economic considerations.

The Australian Curriculum: English provides students with the skills required to investigate and understand issues of environmental and social sustainability; communicate information about sustainability, and advocate action to improve sustainability.

If people now and into the future are to be treated fairly, action to improve sustainability needs to be informed by a world view of peoples, places and communities. Both literature and literacy are key elements in the development of each student’s world view. More sustainable patterns of living are largely shaped by people’s behaviours. English provides an important means of influencing behaviours, facilitating interaction and
expressing viewpoints through the creation of texts for a range of purposes, audiences and contexts including multimodal texts and the use of visual language.

**Links to other learning areas**

The study of English involves the development of understanding and knowledge for informed and effective participation not only in English but also in other learning areas. When knowledge, skills and comprehension from English are meaningfully applied to other learning areas, learning becomes more relevant and understanding deepens.

The relationship between the learning areas is also reciprocal. Science, history and mathematics emphasise skills in English literacy as well as students’ capacity to communicate coherently to a range of audiences. Each learning area draws upon what is taught in the language strand of English and incorporates subject-specific language knowledge as required.

**Mathematics**

The skills taught in English of communicating with others, comprehending texts, making connections within and across texts and creating new texts reinforce learning in mathematics. When reading texts, students develop an understanding of concepts such as time, number and space. They interpret numerical symbols and combine these with pictures to make meaning. When creating and responding to texts, students draw on an understanding of spatial features. Understanding statistical reasoning, graphical representations, quantitative data and numerical scale and proportion is an invaluable skill for analysing argument in English. Being able to present quantitative evidence as part of an argument is a persuasive tool. Deriving quantitative and spatial information can also be an important aspect of understanding a range of texts.

**Science**

The skills of communicating with others, problem solving, comprehending and using texts and creating new texts reinforce learning in science. In English, as in science, students base their discussions on the objective analysis of evidence, justifying points of view, drawing conclusions and making presentations in a variety of media. The abilities to plan investigations; think objectively about evidence; analyse data; describe objects and events; interpret descriptions; read and give instructions; explain ideas to others; write clear reports and recommendations; and participate in group discussions are all important in both disciplines.

**History**

The skills taught in English of communicating with others, comprehending and researching texts and creating new texts reinforce learning in history. Literature, with its emphasis on studying texts from a range of historical and cultural contexts, helps students understand the perspectives and contributions of people from around the world and from both the past and present. In history, students use their English skills to undertake research, read texts with critical discernment and create texts that present the results of historical understanding clearly and logically.

The Australian Curriculum: English takes account of what students have learned in these areas so their learning in English is supported and their learning in other areas is enhanced.

**Implications for teaching, assessment and reporting**
In the Australian Curriculum: English, the three strands of Language, Literature and Literacy are interrelated and inform and support each other. While the amount of time devoted to each strand may vary, each strand is of equal importance and each focuses on developing skills in listening, speaking, reading, viewing, writing and creating. Teachers combine aspects of the strands in different ways to provide students with learning experiences that meet their needs and interests.

In Year 3, for example, students might select a favourite poem and share it with the class, explaining why they chose it (Literature). They might explain the way particular grammatical choices affect meaning, for example the use of verbs, adjectives and adverbs in the poem (Language). Students might then create their own poems and present them to the class (Literacy). In Year 8, a teacher who wishes to develop a unit focusing on humour might have students begin by selecting and analysing a variety of humorous texts (Literature), considering structure and vocabulary choices that create particular effects or nuance (Language). They might then change some of the words to create different effects in the text (Literacy).

While content descriptions do not repeat key skills, it should be noted that many aspects of the English curriculum are recursive, and teachers need to provide ample opportunity for revision, ongoing practice and consolidation of previously introduced knowledge and skills.

Students learn at different rates and in different stages. Depending on each student’s rate of learning, not all of the content descriptions for a particular year level may be relevant to a student in that year level. Some students may have already learned a concept or skill, in which case it will not have to be explicitly taught to them in the year level stipulated. Other students may need to be taught concepts or skills stipulated for earlier year levels.

The content descriptions in the Australian Curriculum: English enable teachers to develop a variety of learning experiences that are relevant, rigorous and meaningful and allow for different rates of development, in particular for younger students and for those who require additional support.

Some students will require additional support to develop their skills in listening, speaking, reading, viewing and creating. In the Australian Curriculum: English it is expected that appropriate adjustments will be made for some students to enable them to access and participate in meaningful learning, and demonstrate their knowledge, understanding and skills across the three English strands. To provide the required flexibility teachers need to consider expanded interpretations of terms used in the content descriptions and content elaborations. Terms such as ‘read’, ‘listen’ and ‘write’ could be expanded and interpreted as ‘read using text to speech software or Braille’; ‘listen using signed communication’; and ‘write using computer software’.

Teachers use the Australian Curriculum content and achievement standards first to identify current levels of learning and achievement and then to select the most appropriate content (possibly from across several year levels) to teach individual students and/or groups of students. This takes into account that in each class there may be students with a range of prior achievement (below, at and above the year level expectations) and that teachers plan to build on current learning.

Teachers also use the achievement standards, at the end of a period of teaching, to make on-balance judgments about the quality of learning demonstrated by the students – that is, whether they have achieved below, at or above the standard. To make these judgments, teachers draw on assessment data that they have collected as evidence during the course of the teaching period. These judgments about the quality of learning are one source of feedback to students and their parents and inform formal reporting processes.

If a teacher judges that a student’s achievement is below the expected standard, this suggests that the teaching programs and practice should be reviewed to better assist individual students in their learning in the future. It also suggests that additional support and targeted teaching will be needed to ensure that the student does not fall behind.

Assessment of the Australian Curriculum takes place in different levels and for different purposes, including:
ongoing formative assessment within classrooms for the purposes of monitoring learning and providing feedback, to teachers to inform their teaching, and for students to inform their learning

summative assessment for the purposes of twice-yearly reporting by schools to parents and carers on the progress and achievement of students

annual testing of Years 3, 5, 7 and 9 students’ levels of achievement in aspects of literacy and numeracy, conducted as part of the National Assessment Program – Literacy and Numeracy (NAPLAN)

periodic sample testing of specific learning areas within the Australian Curriculum as part of the National Assessment Program (NAP).
Foundation Year

The English curriculum is built around the three interrelated strands of Language, Literature and Literacy. Teaching and learning programs should balance and integrate all three strands. Together the three strands focus on developing students’ knowledge, understanding and skills in listening, reading, viewing, speaking, writing and creating. Learning in English builds on concepts, skills and processes developed in earlier years, and teachers will revisit, strengthen and develop these as needed.

In the Foundation year, students communicate with peers, teachers, known adults, and students from other classes.

Students engage with a variety of texts for enjoyment. They listen to, read and view spoken, written and multimodal texts in which the primary purpose is to entertain, as well as some texts designed to inform. These include traditional oral texts, picture books, various types of stories, rhyming verse, poetry, non-fiction, film, multimodal texts and dramatic performances. They participate in shared reading, viewing and storytelling using a range of literary texts, and recognise the entertaining nature of literature.

The range of literary texts for Foundation to Year 10 comprises Australian literature, including the oral narrative traditions of Aboriginal and Torres Strait Islander peoples, as well as the contemporary literature of these two cultural groups, and classic and contemporary world literature, including texts from and about Asia.

Literary texts that support and extend Foundation students as beginner readers include predictable texts that range from caption books to books with one or more sentences per page. These texts involve straightforward sequences of events and everyday happenings with recognisable, realistic or imaginary characters. Informative texts present a small amount of new content about familiar topics of interest; a small range of language features, including simple and compound sentences; mostly familiar vocabulary, known high-frequency words and single-syllable words that can be decoded phonically, and illustrations that strongly support the printed text.

Students create a range of imaginative, informative and persuasive texts including pictorial representations, short statements, performances, recounts and poetry.

<table>
<thead>
<tr>
<th>Language</th>
<th>Literature</th>
<th>Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language variation and change</td>
<td>Recognise that texts are created by authors who tell stories and share experiences that may be similar or different to students’ own experiences (ACELT1575)</td>
<td>Identify some familiar texts and the contexts in which they are used (ACELY1645)</td>
</tr>
<tr>
<td>Understand that English is one of many languages spoken in Australia and that different languages may be spoken by family, classmates and community (ACELA1426)</td>
<td>Responding to literature</td>
<td>Interacting with others</td>
</tr>
<tr>
<td>Language for interaction</td>
<td>Respond to texts, identifying favourite stories, authors and illustrators (ACELT1577)</td>
<td>Listen to and respond orally to texts and to the communication of others in informal and structured classroom situations (ACELY1646)</td>
</tr>
<tr>
<td>Explore how language is used differently at home and school depending on the relationships between people (ACELA1428)</td>
<td>Share feelings and thoughts about the events and characters in texts (ACELT1783)</td>
<td>Use interaction skills including listening while others speak, using appropriate voice levels, articulation and body language, gestures and eye contact (ACELY1784)</td>
</tr>
<tr>
<td>Understand that language can be used to explore ways of expressing needs, likes and dislikes (ACELA1429)</td>
<td>Examining literature</td>
<td>Deliver short oral presentations to peers (ACELY1647)</td>
</tr>
<tr>
<td>Text structure and organisation</td>
<td>Identify some features of texts including events and characters and retell events from a text (ACELT1578)</td>
<td>Interpreting, analysing, evaluating</td>
</tr>
<tr>
<td>Understand that texts can take many forms, can be very short (for example an exit sign) or quite long (for example an information book or a film) and that stories and informative texts have different purposes (ACELA1430)</td>
<td>Recognise some different types of literary texts and identify some characteristic features of literary texts, for example beginnings and endings of traditional texts and rhyme in poetry (ACELT1785)</td>
<td>Identify some differences between imaginative and informative texts (ACELY1648)</td>
</tr>
<tr>
<td>Understand that some language in written texts is unlike everyday spoken language (ACELA1431)</td>
<td>Replicate the rhythms and sound patterns in stories, rhymes, songs and poems from a range of cultures (ACELT1579)</td>
<td>Read predictable texts, practising phrasing and fluency, and monitor meaning using concepts about print and emerging contextual, semantic, grammatical and phonic knowledge (ACELY1649)</td>
</tr>
</tbody>
</table>
written text different from letters; recognise how capital letters are used for names, and that capital letters and full stops signal the beginning and end of sentences (ACELA1432)

Understand concepts about print and screen, including how books, film and simple digital texts work, and know some features of print, for example directionality (ACELA1433)

Expressing and developing ideas

Recognise that sentences are key units for expressing ideas (ACELA1435)

Recognise that texts are made up of words and groups of words that make meaning (ACELA1434)

Explore the different contribution of words and images to meaning in stories and informative texts (ACELA1786)

Understand the use of vocabulary in familiar contexts related to everyday experiences, personal interests and topics taught at school (ACELA1437)

Know that spoken sounds and words can be written down using letters of the alphabet and how to write some high-frequency sight words and known words (ACELA1758)

Know how to use onset and rime to spell words (ACELA1438)

Sound and letter knowledge

Recognise rhymes, syllables and sounds (phonemes) in spoken words (ACELA1439)

Recognise the letters of the alphabet and know there are lower and upper case letters (ACELA1440)

Creating literature

Retell familiar literary texts through performance, use of illustrations and images (ACELT1580)

Use comprehension strategies to understand and discuss texts listened to, viewed or read independently (ACELY1650)

Creating texts

Create short texts to explore, record and report ideas and events using familiar words and beginning writing knowledge (ACELY1651)

Participate in shared editing of students’ own texts for meaning, spelling, capital letters and full stops (ACELY1652)

Produce some lower case and upper case letters using learned letter formations (ACELY1653)

Construct texts using software including word processing programs (ACELY1654)

Foundation Year achievement standard

By the end of the Foundation year, students listen to, read and view a range of spoken, written and multimodal texts from familiar contexts. They interpret and provide relevant explanations of characters and main events in imaginative texts, and key ideas and visual features in short informative texts, making connections to personal experience. They demonstrate understanding by retelling orally one or two ideas and events from short texts listened to or viewed. They accurately identify the letters of the English alphabet, and know the sounds represented by most letters. They read short, predictable texts aloud with some fluency and accuracy, drawing support from their developing sound and letter knowledge. They effectively use predicting and questioning strategies to make meaning from texts.

Students write one or more simple sentences to retell events and experiences for a known audience. Their writing is connected appropriately to illustrations and images produced as part of the text. They link two or more ideas or events in written and spoken texts. They use and understand familiar vocabulary, predictable text structures and common visual patterns. The short texts they produce show understanding of concepts about print including letters, words and sentences. They use left to right directionality, return sweep and spaces between words. They handwrite most lower case and some upper case letters, and use some capital letters and full stops. Their
writing shows some evidence of the use of sound–letter knowledge. In informal classroom settings students communicate clearly and purposefully and engage in pair, group and class discussions, and participate actively in group tasks.
Glossary

adverb

a word class that may modify a verb (for example, ‘beautifully’ in ‘She sings beautifully’), an adjective (for example ‘really’ in ‘He is really interesting’) or another adverb (for example ‘very’ in ‘She walks very slowly’). In English many adverbs have an –ly ending.

adverbial

a word or group of words that contributes additional but non-essential information to the larger structure of a clause.

An adverbial can contribute circumstantial information to a clause (for example about place, ‘outside’ in ‘I spoke with him outside’; when or how, ‘quickly’ in ‘She responded quickly’). It can also contribute evvaluative interpersonal meaning to a clause (for example ‘frankly’ in ‘Frankly, I don’t care’).

Adverbs, adverb groups, prepositional phrases, nouns and noun groups can function as an adverbial in a clause (for example ‘tentatively’ in ‘They opened the letter tentatively’, ‘...on the beach’ in ‘The dog was running on the beach’. An alternative term for ‘adverbial’ is adjunct.

aesthetic

relates to a sense of beauty or an appreciation of artistic expression. The selection of texts that are recognised as having aesthetic or artistic value is an important focus of the literature strand.

alliteration

the recurrence of the same consonant sounds at the beginning of words in close succession, for example ripe, red raspberry.

apposition

when one noun group immediately follows another with the same reference, they are said to be in apposition, for example ‘our neighbour, Mr Grasso...’; ‘Canberra, the capital of Australia, ...’

appreciation

the act of discerning quality and value of literary texts.

audience

the intended group of readers, listeners or viewers that the writer, designer, filmmaker or speaker is addressing.

author

the composer or originator of a work (for example a novel, film, website, speech, essay, autobiography).

camera angle

the angle at which the camera is pointed at the subject. Vertical angle can be low, level or high. Horizontal angle can be oblique (side on) or frontal.
clause

A clause creates a message through the combination of a subject (the element being identified for comment) and its predicate (the comment about the subject which contains a verb), for example: ‘I (subject) shall eat my dinner (predicate).’

There are different kinds of clauses. The clause that is essential to any sentence is an independent (or main) clause. Compound and complex sentences contain more than one clause.

A clause that provides additional information to the main clause but cannot stand alone is a dependent (or subordinate) clause. For example:

- ‘When the sun goes down (dependent), I shall eat my dinner (main).’
- ‘My time is limited (main) because I am reading Shakespeare.’ (dependent)

An embedded clause occurs within the structure of another clause often as a qualifier to a noun group, for example:

- ‘The man who came to dinner (embedded) is my brother.’

cohesion

Grammatical or lexical relationships that bind different parts of a text together and give it unity. Cohesion is achieved through various devices such as connectives, ellipses and word associations (sometimes called lexical cohesion). These associations include synonyms, antonyms (words opposite in meaning, for example ‘study/laze about’, ‘ugly/beautiful’), repetition (‘work, work, work – that’s all we do!’), word sets (for example class-sub-class or part-whole sets), and collocation (using words that go with each other, for example ‘friend’ and ‘pal’ in, ‘My friend did me a big favour last week. She’s been a real pal.’)

collocation

Those words that commonly occur in close association with one another (for example ‘blonde’ goes with ‘hair’, butter is ‘rancid’ not ‘rotten’, ‘salt and pepper’ not ‘pepper and salt’)

colon

A punctuation convention used to separate a general statement from one or more statements that provide additional information, explanation or illustration. The statements that follow the colon do not have to be complete sentences.

complex sentence

Contains an independent (or main) clause and one or more dependent (or subordinate) clauses. The dependent clause is joined to the independent clause through subordinating conjunctions like ‘when’, ‘while’, and ‘before’. A complex sentence will not make sense without an independent clause. In the following example, the dependent clause is underlined and the conjunction is in bold: ‘When the sun came out, we all went outside.’

compound sentence

A sentence consisting of two or more independent (main) clauses joined by co-ordinating conjunctions like ‘and’, ‘or’ ‘but’ and ‘so’. Each clause is coordinated or linked so as to give each one equal status as a message. In the following example, the co-ordinating conjunction is underlined and verbs are highlighted: ‘The sun emerged and we all went outside’.

comprehension strategies

Strategies and processes used by readers to make meaning from texts. Key comprehension strategies include:
- activating and using prior knowledge
- identifying literal information explicitly stated in the text
- making inferences based on information in the text and their own prior knowledge
• predicting likely future events in a text
• visualising by creating mental images of elements in a text
• summarising and organising information from a text
• integrating ideas and information in texts
• critically reflecting on content, structure, language and images used to construct meaning in a text

concepts about print

concepts about how English print works. They include information about where to start reading and how the print travels from left to right across the page. Concepts about print are essential for beginning reading

conjunction

a word that joins other words, phrases or clauses together in logical relationships such as addition, time, cause or comparison. There are two major types of conjunctions for linking messages: coordinating conjunctions and subordinating conjunctions.

• coordinating conjunctions are words that link words, phrases and clauses in such a way that the elements have equal status in meaning. They include conjunctions like ‘and’, ‘or’, ‘but’:
  • ‘Mum and dad are here’ (joining words)
  • ‘We visited some of our friends but not all of them’ (joining noun groups)
  • ‘Did I fall asleep and miss my dinner?’ (joining clauses)

• subordinating conjunctions introduce certain kinds of dependent clauses;
  • ‘that’ simply marks declaratives, for example ‘I know that he is ill’
  • ‘whether’ (or ‘if’ in the sense in which it is equivalent to whether) marks interrogatives, ‘I wonder whether/if she’s right’
  • ‘while’, ‘after’, ‘when’, ‘because’, ‘if’ (in the conditional sense) serve to mark the kind of dependent clause it introduces: for example one of time, reason, condition, ‘We went home after/when the meeting ended’, ‘They stayed in because it was raining’, ‘I’ll do it if you pay me’

connective

words which link paragraphs and sentences in logical relationships of time, cause and effect, comparison or addition. Connectives relate ideas to one another and help to show the logic of the information. Connectives are important resources for creating cohesion in texts. The logical relationships can be grouped as follows:

• temporal – to indicate time or sequence ideas (for example ‘first’, ‘second’, ‘next’)
• causal – to show cause and effect (for example ‘because’, ‘for’, ‘so’)
• additive – to add information (for example ‘also’, ‘besides’, ‘furthermore’)
• comparative – for example ‘rather’, ‘alternatively’
• conditional/concessive – to make conditions or concession (for example ‘yet’, ‘although’)
• clarifying – for example ‘in fact’, ‘for example’

context

the environment in which a text is responded to or created. Context can include the general social, historical and cultural conditions in which a text is responded to and created (the context of culture) or the specific features of its immediate environment (context of situation). The term is also used to refer to the wording surrounding an unfamiliar word that a reader or listener uses to understand its meaning

convention

an accepted language practice that has developed over time and is generally used and understood, for example use of punctuation

coordinating conjunctions

words that link phrases and clauses in such a way that the elements have equal status in meaning. They include conjunctions like ‘and’, ‘or’, ‘either/neither’, ‘but’, ‘so’ and ‘then’
create

develop and/or produce spoken, written or multimodal texts in print or digital forms

creating

creating refers to the development and/or production of spoken, written or multimodal texts in print or digital forms

decode

the process of working out the meaning of words in a text. In decoding, readers draw on contextual, vocabulary, grammatical and phonic knowledge. Readers who decode effectively combine these forms of knowledge fluently and automatically, using meaning to recognise when they make an error, and self-correct

dependent clause

a clause that cannot make complete sense on its own. It needs to be combined with an independent clause to form a complete sentence. The dependent clause can be introduced by a finite verb like ‘goes’ in the following sentence: *When* the sun goes down, I shall eat my dinner.” But it can also be introduced by non-finite verbs, as in “going” in the following sentence: “From 1966 to 2001 the total population decreased, going from 11,800 down to 11,077”

design

the way particular elements are selected and used in the process of text construction for particular purposes. These elements might be linguistic (words); visual (images); audio (sounds); gestural (body language); spatial (arrangement on the page, screen or 3D), and multimodal (a combination of more than one)

digital texts

audio, visual or multimodal texts produced through digital or electronic technology which may be interactive and include animations and/or hyperlinks. Examples of digital texts include DVDs, websites, e-literature

digraph

two letters that represent a single sound. Vowel digraphs are two vowels (‘oo’, ‘ea’). Consonant digraphs have two consonants (‘sh’, ‘th’). Vowel/consonant digraphs have one vowel and one consonant (‘er’, ‘ow’)

e-literature

the electronic publication of literature using the multimedia capabilities of digital technologies to create interactive and possibly non-linear texts, through combining written text, movement, visual, audio and spatial elements. It may include hypertext fiction, computer art installations, kinetic poetry and collaborative writing projects allowing readers to contribute to a work. E-literature also includes texts where print meanings are enhanced through digital images and/or sound and literature that is reconstituted from print texts (for example online versions of *The Little Prince* or *Alice in Wonderland*)

ellipsis

- the omission of words that repeat what has gone before; these terms are simply understood (for example ‘The project will be innovative. To be involved will be exciting.’ – ‘in the project’ is ellipsed in the second sentence)
- through a related resource called substitution, a word like ‘one’ is substituted for a noun or noun group as in ‘There are lots of apples in the bowl. Can I have one?’ (‘of them’)
- a cohesive resource that binds text together and is commonly used in dialogue for speed of response and economy of effort, for example (do you) ‘Want a drink?’ / ‘Thanks, I would.’ (like a drink)
• the use of three dots. This form of punctuation (also known as points of ellipsis) can be used to indicate such things as surprise or suspense in a narrative text or that there is more to come in an on-screen menu

**etymological knowledge**

knowledge of the origins and development of the form and meanings of words and how the meanings and forms have changed over time

**evaluative language**

positive or negative language that judges the worth of something. It includes language to express feelings and opinions, to make judgments about aspects of people such as their behaviour, and to assess the quality of objects such as literary works. Evaluations can be made explicit (for example through the use of adjectives as in: ‘She’s a lovely girl’, ‘He’s an awful man’, or ‘How wonderful!’), however, they can be left implicit (for example ‘He dropped the ball when he was tackled’, or ‘Mary put her arm round the child while she wept.’)

**figurative language**

words or phrases used in a way that differs from the expected or everyday usage. They are used in a non-literal way for particular effect (eg simile, metaphor, personification)

**framing**

the way in which elements in a still or moving image are arranged to create a specific interpretation of the whole. Strong framing creates a sense of enclosure around elements while weak framing creates a sense of openness

**genre**

the categories into which texts are grouped. The term has a complex history within literary theory and is often used to distinguish texts on the basis of their subject matter (detective fiction, romance, science fiction, fantasy fiction), form and structure (poetry, novels, short stories)

**grammar**

the language we use and the description of language as a system. In describing language, attention is paid to both structure (form) and meaning (function) at the level of the word, the sentence and the text

**graphophonic knowledge**

the knowledge of how letters in printed English relate to the sounds of the language

**handwriting**

the production of legible, correctly formed letters by hand or with the assistance of writing tools, for example pencil grip or assistive technology

**high frequency sight words**

the most common words used in written English text. They are sometimes called ‘irregular words’ or ‘sight words’. Many common or ‘high-frequency’ words in English are not able to be decoded using sound–letter correspondence because they do not use regular or common letter patterns. These words need to be learnt by sight, for example ‘come’, ‘was’, ‘were’, ‘one’, ‘they’, ‘watch’, ‘many’

**homophone**
a word identical in pronunciation with another but different in meaning, for example 'bear' and 'bear', 'air' and 'heir'

hybrid texts

composite texts resulting from a mixing of elements from different sources or genres (for example info-tainment). Email is an example of a hybrid text, combining the immediacy of talk and the expectation of a reply with the permanence of print

idiomatic expressions

a group of (more or less) fixed words having a meaning not deducible from the individual words. Idioms are typically informal expressions used by particular social groups and need to be explained as one unit (for example 'I am over the moon', 'on thin ice', 'a fish out of water', 'fed up to the back teeth')

independent clause

a clause that makes sense on its own whereas a dependent clause needs to be added to an independent clause for the sentence to make sense

intertextuality

the associations or connections between one text and other texts. Intertextual references can be more or less explicit and self-conscious. They can take the form of direct quotation, parody, allusion or structural borrowing

juxtaposition

the placement of two or more ideas, characters, actions, settings, phrases, or words side-by-side for a particular purpose for example to highlight contrast or for rhetorical effect

language features

the features of language that support meaning, eg sentence structure, vocabulary, illustrations, diagrams, graphics, punctuation, figurative language. Choices in language features and text structures together define a type of text and shape its meaning. These choices vary according to the purpose of a text, its subject matter, audience and mode or medium of production

language patterns

the arrangement of identifiable repeated or corresponding elements in a text. These include patterns of repetition or similarity (for example the repeated use of verbs at the beginning of each step in a recipe, or the repetition of a chorus after each verse in a song). The patterns may alternate (for example the call and response pattern of some games, or the to and fro of a dialogue). Other patterns may contrast (for example opposing viewpoints in a discussion, or contrasting patterns of imagery in a poem). The language patterns of a text contribute to the distinctive nature of its overall organisation and shape its meaning

layout

the spatial arrangement of print and graphics on a page or screen including size of font, positioning of illustrations, inclusion of captions, labels, headings, bullet points, borders and text boxes

lexical cohesion

the use of word associations to create links in texts. Links can be made through the use of repetition of words, synonyms, antonyms and words that are related such as by class and subclass
listen

the use of the sense of hearing as well as a range of active behaviours to comprehend information received through gesture, body language and other sensory systems

media texts

spoken, print, graphic or electronic communications with a public audience. They often involve numerous people in their construction and are usually shaped by the technology used in their production. The media texts studied in English can be found in newspapers, magazines and on television, film, radio, computer software and the internet

medium

the resources used in the production of texts including the tools and materials used (for example digital text and the computer, writing and the pen or the typewriter)

metalanguage

a language used to discuss language conventions and use

metonymy

the use of the name of one thing or attribute of something to represent something larger or related (for example using the word ‘crown’ to represent a monarch of a country; referring to a place for an event as in ‘Chernobyl’ when referring to changed attitudes to nuclear power, or a time for an event as in ‘9/11’ when referring to changed global relations)

modal verb

a verb that expresses a degree of probability attached by a speaker to a statement (for example ‘I might come home’) or a degree of obligation (for example ‘You must give it to me’, ‘You are not permitted to smoke in here’).

modality

aspects of language that suggest a particular angle on events, a speaker or writer’s assessment of possibility, probability, obligation and conditionality. It is expressed linguistically in choices for modal verbs (for example can, may, must, should), modal adverbs (for example possibly, probably, certainly) and modal nouns (possibility, probability, certainty)

mode

the various processes of communication – listening, speaking, reading/viewing and writing/creating. Modes are also used to refer to the semiotic (meaning making) resources associated with these communicative processes, such as sound, print, image and gesture

morpheme

the smallest meaningful or grammatical unit in language. Morphemes are not necessarily the same as words. The word ‘cat’ has one morpheme, while the word ‘cats’ has two morphemes: ‘cat’ for the animal and ‘s’ to indicate that there is more than one. Similarly ‘like’ has one morpheme, while ‘dislike’ has two: ‘like’ to describe appreciation and ‘dis’ to indicate the opposite. Morphemes are very useful in helping students work out how to read and spell words

morphemic knowledge
knowledge of morphemes, morphemic processes and the different forms and combinations of morphemes (for example the word ‘unfriendly’ is formed from the stem ‘friend’, the adjective-forming suffix ‘ly’ and the negative prefix ‘un’)

multimodal text

combination of two or more communication modes, for example print, image and spoken text as in film or computer presentations

narrative

a story of events or experiences, real or imagined. In literary theory, narrative includes the story (what is narrated) and the discourse (how it is narrated)

narrative point-of-view

the ways a narrator may be related to the story. For example, the narrator might take the role of first or third person, omniscient or restricted in knowledge of events, reliable or unreliable in interpretation of what happens

neologism

the creation of a new word or expression

nominalisation

a process for forming nouns from verbs (for example ‘reaction’ from ‘react’ or ‘departure’ from ‘depart’) or adjectives (for example ‘length’ from ‘long’, ‘eagerness’ from ‘eager’)

a process for forming noun phrases from clauses (for example ‘their destruction of the city’ from ‘they destroyed the city’)

Nominalisation is a way of making a text more compact and is often a feature of texts that contain abstract ideas and concepts

noun

a word class used to represent places, people, ideas and things. Nouns can be made plural (for example dog/dogs) and can be marked for possession (for example dog/dog’s). There are different types of nouns including:

- abstract noun refers to an idea, state or quality (for example ‘democracy’, ‘freedom’, ‘courage’, ‘doubt’, ‘success’ and ‘love’)
- concrete noun refers to something that has a physical reality. It may be seen, touched, tasted
- pronoun refers to words like ‘I’, ‘you’, ‘them’, ‘hers’ that are used in place of a noun

noun groups

a group of words building on a noun. Noun groups usually consist of an article (‘the’, ‘a’, ‘an’) plus one or more adjectives. They can also include demonstratives (for example ‘this’, ‘those’), possessives (for example ‘my’, ‘Ann’s’), quantifiers (for example ‘two’, ‘several’), or classifiers (for example ‘wooden’) before the head noun. These are called pre-modifiers after the noun, phrases and clauses act as post-modifiers following the head noun (for example ‘the girl with the red shirt who was playing soccer’)

onset and rime

the separate sounds in a syllable or in a one-syllable word. In ‘cat’ the onset is /c/ and the rime is /at/, in shop the onset is /sh/ and the rime is /op/. Word families can be constructed using common onsets such as /t/ in top, town, tar, tap, or common rimes such as /at/ in cat, pat, sat, rat. These are very useful for teaching spelling
personification

the description of an inanimate object as though it were a person or living thing

phoneme

the smallest unit of sound in a word. The word ‘is’ has two phonemes /i/ and /s/. The word ‘ship’ has three phonemes /sh/, /i/, /p/

phonic

the term used to refer to the ability to identify the relationships between letters and sounds when reading and spelling

phonological awareness

a broad concept that relates to the sounds of spoken language. It includes understandings about words, rhyme, syllables and onset and rime. NOTE: the term ‘sound’ relates to the sound we make when we say a letter or word, not to the letter in print. A letter may have more than one sound, such as the letter ‘a’ in ‘was’, ‘can’ or ‘father’, and a sound can be represented by more than one letter such as the sound /k/ in ‘cat’ and ‘walk’. The word ‘ship’ had three sounds /sh/, /i/, /p/, but has four letters ‘s’, ‘h’, ‘i’, ‘p’. Teachers should use the terms ‘sound’ and ‘letter’ accurately to help students clearly distinguish between the two items

phonological knowledge

information about the sounds of language and letter-sound relationships (when comprehending a text), for example single sounds, blends

phrase

a unit intermediate between clause and word consisting of a head word alone or accompanied by one or more dependents. The class of a phrase is determined by the head: a phrase with a noun as head is a noun phrase (e.g. men or the men who died), one with a verb as head is a verb phrase (e.g. went or had gone), and so on.

poetic devices

particular patterns and techniques of language used in poems to create particular effects

point of view

• refers to the viewpoint of an author, audience or characters in a text
• narrative point of view refers to the ways a narrator may be related to the story. The narrator, for example, might take the role of first or third person, omniscient or restricted in knowledge of events, reliable or unreliable in interpretation of what happens

predictable text

texts that are easily navigated and read by beginning readers because they contain highly regular features such as familiar subject matter, a high degree of repetition, consistent placement of text and illustrations, simple sentences, familiar vocabulary and a small number of sight words

prediction

an informed presumption about something that might happen. Predicting at the text level can include working out what a text might contain by looking at the cover, or working out what might happen next in a narrative. Predicting at the sentence level is identifying what word is likely to come next in a sentence
prefix

A prefix is a meaningful element added to the beginning of a word to change its meaning.

prepositional phrases

Prepositions are positional words, for example: 'below', 'for', 'down', 'above', 'to', 'near', 'under', 'since', 'between', 'with', 'before', 'after', 'into', 'from', 'beside', 'without', 'out', 'during', 'past', 'over', 'until', 'through', 'off', 'on', 'across', 'by', 'in', 'around.' Prepositional phrases are units of meaning within a clause that contain a preposition, for example 'She ran into the garden', 'He is available from nine o'clock.'

pun

Humorous use of a word to bring out more than one meaning; a play on words.

read

to process words, symbols or actions to derive and/or construct meaning. Reading includes interpreting, critically analysing and reflecting upon the meaning of a wide range of written and visual, print and non-print texts.

return sweep

The way English print travels from left to right and then returns to the left of the page for the next and each subsequent line.

rhetorical question

A question that is asked to provoke thought rather than require an answer.

rime and onset

The separate sounds in a syllable or in a one-syllable word. In 'cat' the onset is /c/ and the rime is /at/, in shop the onset is /sh/ and the rime is /op/. Word families can be constructed using common onsets such as /t/ in top, town, tar, tap, or common rimes such as /at/ in cat, pat, sat, rat. These are very useful for teaching spelling.

salience

A strategy of emphasis, highlighting what is important in a text. In images, salience is created through strategies like placement of an item in the foreground, size and contrast in tone or colour. In writing, salience can occur through placing what is important at the beginning or at the end of a sentence or paragraph or through devices such as underlining or italics.

scanning

When reading, moving the eyes quickly down the page seeking specific words and phrases. Scanning is also used when a reader first finds a resource to determine whether it will answer their questions.

semantic knowledge/information

Information related to meanings used when reading. Semantic information includes a reader's own prior knowledge and the meanings embedded in a text. Readers use semantic information to assist in decoding and to derive meanings from a text.

semicolon
join clauses that could stand alone as sentences. In this way clauses that have a close relationship with one another may be linked together in a single sentence.

**sentence**

A unit of written language consisting of one or more clauses that are grammatically linked. A written sentence begins with a capital letter and ends with a full stop, question mark or exclamation mark. There are different types of sentences:

- **simple sentence** – has the form of a single independent clause (for example ‘Mary is beautiful.’ ‘The ground shook.’ ‘Take a seat.’)
- **compound sentence** – contains two or more clauses that are coordinated or linked in such a way as to give each clause equal status. In the following example ‘and’ is the coordinating conjunction: ‘We went to the movies and bought an ice cream.’
- **complex sentence** – contains an independent (or main) clause and one or more dependent (or subordinate) clauses. The dependent clause is joined to the independent clause through subordinating conjunctions like ‘when’, ‘while’ and ‘before’ as in the following examples: ‘We all went outside when the sun came out,’ and ‘Because I am reading Shakespeare, my time is limited.’

**simple sentence**

Contains one clause and expresses a complete thought. It has a subject and a verb and may also have an object or complement.

**sound effect**

Any sound, other than speech or music, used to create an effect in a text.

**sound/letter correspondence**

The relationship of spoken sounds of English to letters of the alphabet or to letter clusters.

**speak**

Convey meaning and communicate with purpose. Some students participate in speaking activities using communication systems and assistive technologies to communicate wants, and needs, and to comment about the world.

**spoonerism**

A slip of the tongue where the initial sounds of a pair of words are transposed.

**Standard Australian English**

The variety of spoken and written English language in Australia used in more formal settings such as for official or public purposes, and recorded in dictionaries, style guides and grammars. While it is always dynamic and evolving, it is recognised as the ‘common language’ of Australians.

**stereotype**

When a person or thing is judged to be the same as all others of its type. Stereotypes are usually formulaic and oversimplified.

**stylistic features**

The ways aspects of texts (such as words, sentences, images) are arranged and how they affect meaning. Style can distinguish the work of individual authors (for example Jennings’ stories, Lawson’s poems) as well as the work of a particular period (for example Elizabethan drama, nineteenth century novels). Examples of stylistic features are narrative viewpoint, structure of stanzas, juxtaposition.
subject

an element in the structure of a clause usually filled by a noun group, for example ‘the dog (subject) was barking’. The normal position of the subject is before the verb group, but in most kinds of interrogative it follows the first auxiliary verb, for example ‘Was the dog barking?’, ‘Why was the dog barking?’

In independent clauses the subject is an obligatory element except in imperative clauses and casual style, for example ‘There will be no milk left’.

Most personal pronouns have a different form when the subject of a finite clause (I, he, she, etc.) than when the object (me, him, her), for example ‘She won the race’, not ‘Her won the race’. In the present tense, and the past tense with the verb ‘be’, the verb agrees with the subject in person and number, for example ‘Her son lives with her’ and ‘Her sons live with her’

or

subject matter refers to the topic or theme under consideration

subordinating conjunction

links a dependent clause to an independent (main) clause in a sentence. Examples include conjunctions like ‘when’ in the sentence: ‘When I went to Sydney, I met my aunt’; ‘while’ in ‘While waiting for my dinner, I fell asleep and ‘although’ in ‘Although I left my coat behind in the car, I continued on my way.’

suffix

a meaningful element added to the end of a word to change its meaning

syllabification

the process of dividing words into syllables

syllable

a unit of sound within a word

syntax

the ways words, phrases and clauses are structured in sentences. In some schools of linguistics, syntax and grammar are used interchangeably

tense

a verb form that locates the event described by the verb in time (for example ‘Sarah laughs’ is present tense, ‘Sarah laughed’ is past tense)

text

the means for communication. Their forms and conventions have developed to help us communicate effectively with a variety of audiences for a range of purposes. Texts can be written, spoken or multimodal and in print or digital/online forms. Multimodal texts combine language with other systems for communication, such as print text, visual images, soundtrack and spoken word as in film or computer presentation media

text navigation
the way readers move through text. Readers generally read novels in a linear fashion from the beginning to the end; readers of non-fiction books often use the contents page and index and move between chapters according to the information sought. Readers often read digital texts more flexibly, according to interest and purpose, using hyperlinks to move between pages and digital objects, such as videos or animations, making quick judgments about relevance of material.

**text processing strategies**

strategies readers use to decode a text. These involve drawing on contextual, semantic, grammatical and phonetic knowledge in systematic ways to work out what a text says. They include predicting, recognising words and working out unknown words, monitoring the reading, identifying and correcting errors, reading on and re-reading.

**text structure**

the ways information is organised in different types of texts for example, chapter headings, sub headings, table of contents, indexes and glossaries, overviews, introductory and concluding paragraphs, sequencing, topic sentences, taxonomies, cause and effect. Choices in text structures and language features together define a text type and shape its meaning. See language features.

**theme**

- refers to the main idea or message of a text, or
- grammatical theme indicates importance both within a clause and across a text. In a clause the theme comes in first position and indicates what the sentence is about. Theme is important at different levels of text organisation. The topic sentence serves as the theme for the points raised in a paragraph. A pattern of themes contributes to the method of development for the text as a whole.

**types of texts**

classifications according to the particular purposes they are designed to achieve. These purposes influence the characteristic features the texts employ. In general, in the Australian Curriculum: English, texts can be classified as belonging to one of three types: imaginative, informative or persuasive, although it is acknowledged that these distinctions are neither static nor watertight and particular texts can belong to more than one category.

Imaginative texts – texts whose primary purpose is to entertain through their imaginative use of literary elements. They are recognised for their form, style and artistic or aesthetic value. These texts include novels, traditional tales, poetry, stories, plays, fiction for young adults and children including picture books and multimodal texts such as film.

Informative texts – texts whose primary purpose is to provide information. They include texts which are culturally important in society and are valued for their informative content, as a store of knowledge and for their value as part of everyday life. These texts include explanations and descriptions of natural phenomena, recounts of events, instructions and directions, rules and laws and news bulletins.

Persuasive texts – whose primary purpose is to put forward a point of view and persuade a reader, viewer or listener. They form a significant part of modern communication in both print and digital environments. They include advertising, debates, arguments, discussions, polemics and influential essays and articles.

**verb**

tell us what kind of situation is described in a clause – in particular, whether it is a happening or a state – but they often need other elements to locate the situation in time, to indicate polarity (positive or negative), aspect (whether the situation is completed or not) or modality (the assessment of the speaker about the situation).

- doing - for example ‘She climbed the ladder’
- being - for example ‘The koala is an Australian mammal’
- having - for example ‘the house has several rooms’
- thinking - for example ‘She believes in her work’
- saying - for example ‘The prime minister spoke to the media’
Verbs are essential to clause structure and change their form according to tense (present tense or past tense), to person (first, second or third) and number (singular and plural)

**verb groups**

groups of words that are centred on a verb and consist of one or more verbs. The main verb in a verb group often needs auxiliary (or helping) verbs to indicate features like time (past or present), polarity (positive or negative), aspect (whether the action is completed or not) and modality (the assessment of the speaker about the action). All the following verbs contribute to the meaning of the verb group as a whole: ‘the girl played soccer’, ‘the girl was playing/had been playing soccer’, ‘the girl was not playing soccer’, ‘the girl could have been playing soccer’

**view**

observe with purpose, understanding and critical awareness. Some students use oral, written or multimodal forms to respond to a range of text types. Other students participate in viewing activities by listening to an adult or peer describing the visual features of text, diagrams, pictures and multimedia

**visual features**

visual components of a text such as placement, salience, framing, representation of action or reaction, shot size, social distance and camera angle

**visual language choices**

choices that contribute to the meaning of an image or the visual components of a multimodal text and are selected from a range of visual features like placement, salience, framing, representation of action or reaction, shot size, social distance and camera angle

**voice**

in English grammar voice is used to describe the contrast between such pairs of clauses as ‘The dog bit me’ (active voice) and ‘I was bitten by the dog’ (passive voice). Active and passive clauses differ in the way participant roles are associated with grammatical functions.

In clauses expressing actions, like the above examples, the subject of the active (the dog) has the role of actor, and the object (me) the role of patient, whereas in the passive the subject (I) has the role of patient and the object of the preposition by (the dog) the role of actor.

In clauses that describe situations other than actions, such as ‘Everyone admired the minister’ and ‘The minister was admired by everyone’, the same grammatical difference is found, so that the object of the active (the minister) corresponds to the subject of the passive, and the subject of the active (everyone) corresponds to the object of the preposition ‘by’.

and

in the literary sense, it can be used to refer to the nature of the voice projected in a text by an author (for example ‘authorial voice’ in a literary text or ‘expert voice’ in an exposition)

**write**

plan, compose, edit and publish texts in print or digital forms. Writing usually involves activities using pencils, pens, word processors; and/or using drawings, models, photos to represent text; and/or using a scribe to record responses or produce recorded responses.
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language variation and change</strong>&lt;br&gt;How English varies according to context and purpose including cultural and historical contexts</td>
<td>Understand that English is one of many languages spoken in Australia and that different languages may be spoken by family, classmates and community</td>
<td>Understand that people use different systems of communication to cater to different needs and purposes and that many people may use sign systems to communicate with others</td>
<td>Understand that spoken, visual and written forms of language are different modes of communication with different features and their use varies according to the audience, purpose, context and cultural background</td>
<td>Understand that languages have different written and visual communication systems, different oral traditions and different ways of constructing meaning</td>
<td>Understand that Standard Australian English is one of many social dialects used in Australia, and that while it originated in England it has been influenced by many other languages</td>
<td>Understand that the pronunciation, spelling and meanings of words have histories and change over time</td>
<td>Understand that different social and geographical dialects or accents are used in Australia in addition to Standard Australian English</td>
<td></td>
</tr>
<tr>
<td><strong>Language for interaction</strong>&lt;br&gt;How language used for different formal and informal social interactions is influenced by the purpose and audience</td>
<td>Explore how language is used differently at home and school depending on the relationships between people</td>
<td>Understand that language is used in combination with other means of communication, for example facial expressions and gestures to interact with others</td>
<td>Understand that there are different ways of asking for information, making offers and giving commands</td>
<td>Understand that language varies when people take on different roles in social and classroom interactions and how the use of key interpersonal language resources varies depending on context</td>
<td>Understand that successful cooperation with others depends on shared use of social conventions, including turn-taking patterns, and formats of address that vary according to the degree of formality in social situations</td>
<td>Understand that social interactions influence the way people engage with ideas and respond to others when exploring and clarifying the ideas of others, summarising students’ own views and reporting them to a larger group</td>
<td>Understand that strategies for interaction become more complex and demanding as levels of formality and social distance increase</td>
<td></td>
</tr>
<tr>
<td><strong>Evaluative language</strong>&lt;br&gt;How language is used to express opinions, and make evaluative judgments about people, places, things and texts</td>
<td>Understand that language can be used to explore ways of expressing needs, likes and dislikes</td>
<td>Identify language that can be used for appreciating texts and the qualities of people and things</td>
<td>Examine how evaluative language can be varied to be more or less forceful</td>
<td>Understand differences between the language of opinion and feeling and the language of factual reporting or recording</td>
<td>Understand how to move beyond making bare assertions and take account of differing perspectives and points of view</td>
<td>Understand the uses of objective and subjective language and bias</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purpose audience and structures of different types of texts</strong>&lt;br&gt;How texts serve different purposes and how the structures of types of texts vary according to the text purpose</td>
<td>Understand that texts can take many forms, can be very short (for example an exit sign) or quite long (for example an information book or a film) and that stories and informative texts have different purposes</td>
<td>Understand that the purposes texts serve shape their structure in predictable ways</td>
<td>Understand that different types of texts have identifiable text structures and language features that help the text serve its purpose</td>
<td>Understand how different types of texts vary in use of language choices, depending on their function and purpose, for example tense, mood, and types of sentences</td>
<td>Understand how texts vary in purpose, structure and topic as well as the degree of formality</td>
<td>Understand how texts vary in complexity and technically depending on the approach to the topic, the purpose and the intended audience</td>
<td>Understand how authors often innovate on text structures and play with language features to achieve aesthetic, humorous and persuasive purposes and effects</td>
<td></td>
</tr>
<tr>
<td><strong>Text cohesion</strong>&lt;br&gt;How texts work as cohesive wholes through language features which link the parts of the text together, such as paragraphs, connectives, nouns and associated pronouns</td>
<td>Understand that some features of text in written texts is unlike everyday spoken language</td>
<td>Understand how texts are made cohesive through resources, for example word associations, synonyms, and antonyms</td>
<td>Understand how the starting point of a sentence gives prominence to the message in the text and allows for prediction of how the text will unfold</td>
<td>Understand how texts are made cohesive through the use of linking devices including pronoun reference and text connectives</td>
<td>Understand how possession is signalled through apostrophes and how to use apostrophes of possession for common and proper nouns</td>
<td>Understand that cohesive links can be made in texts by omitting or replacing words</td>
<td>Understand that cohesive links can be made in texts by omitting or replacing words</td>
<td></td>
</tr>
<tr>
<td><strong>Punctuation</strong>&lt;br&gt;How punctuation works to perform different functions in a text.</td>
<td>Understand that punctuation is a feature of written text different from letters; recognise how capital letters are used for names, and that capital letters and full stops signal the beginning and end of sentences</td>
<td>Recognise that different types of punctuation, including full stops, question marks and exclamation marks, signal sentences that make statements, ask questions, express emotion or give commands</td>
<td>Know that capital letters signal proper nouns and commas are used to separate items in lists</td>
<td>Know that word contractions are a feature of informal language and that apostrophes of contraction are used to signal missing letters</td>
<td>Recognise how quotation marks are used in texts to signal dialogue, titles and reported speech</td>
<td>Understand the uses of commas to separate clauses</td>
<td>Understand the uses of commas to separate clauses</td>
<td></td>
</tr>
<tr>
<td><strong>Concepts of print and screen</strong>&lt;br&gt;The different conventions that apply to how text is presented on a page or screen</td>
<td>Understand concepts about print and screen, including how books, film and simple digital texts work, and know some features of print, for example directionality</td>
<td>Understand concepts about print and screen, including how different types of texts are organised using page numbering, tables of content, headings and titles, navigation buttons, bars and links</td>
<td>Know some features of text organisation including page and screen layouts, alphabetical order, and different types of diagrams, for example timelines</td>
<td>Identify the features of online texts that enhance navigation</td>
<td>Identify features of online texts that enhance readability including text, navigation, links, graphics and layout</td>
<td>Investigate how the organisation of texts into chapters, headings, subheadings, home pages and sub pages for online texts and according to chronology or topic can be used to predict content and assist navigation</td>
<td>This sequence ends at Year 5 level</td>
<td></td>
</tr>
</tbody>
</table>

**Version 1.2** 8th March 2011
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Variation and change</td>
<td>How English varies according to context and purpose including cultural and historical contexts</td>
<td>Understand that different social and geographical dialects or accents are used in Australia in addition to Standard Australian English</td>
<td>Understand the way language evolves to reflect a changing world, particularly in response to the use of new technology for presenting texts and communicating</td>
<td>Understand the influence and impact that the English language has had on other languages or dialects and how English has been influenced in return</td>
<td>Understand that Standard Australian English is a living language within which the creation and loss of words and the evolution of usage is ongoing</td>
<td>Understand that Standard Australian English in its spoken and written forms has a history of evolution and change and continues to evolve</td>
</tr>
<tr>
<td>Language for interaction</td>
<td>How language used for different formal and informal social interactions is influenced by the purpose and audience</td>
<td>Understand that strategies for interaction become more complex and demanding as levels of formality and social distance increase</td>
<td>Understand how accents, styles of speech and idioms express and create personal and social identities</td>
<td>Understand how conventions of speech adopted by communities influence the identities of people in those communities</td>
<td>Understand that roles and relationships are developed and challenged through language and interpersonal skills</td>
<td>Understand how language use can have inclusive and exclusive social effects, and can empower or disempower people</td>
</tr>
<tr>
<td>Evaluative language</td>
<td>How language is used to express opinions, and make evaluative judgments about people, places, things and texts</td>
<td>Understand the uses of objective and subjective language and bias</td>
<td>Understand how language is used to evaluate texts and how evaluations about a text can be substantiated by reference to the text and other sources</td>
<td>Understand how rhetorical devices are used to persuade and how different layers of meaning are developed through the use of metaphor, irony and parody</td>
<td>Investigate how evaluation can be expressed directly and indirectly using devices, for example allusion, evocative vocabulary and metaphor</td>
<td>Understand that people's evaluations of texts are influenced by their value systems, the context and the purpose and mode of communication</td>
</tr>
<tr>
<td>Purpose audience and structures of different types of texts</td>
<td>How texts serve different purposes and how the structures of types of texts vary according to the text purpose</td>
<td>Understand how authors often innovate on text structures and play with language features to achieve particular aesthetic, humorous and persuasive purposes and effects</td>
<td>Understand and explain how the text structures and language features of texts become more complex in informative and persuasive texts and identify underlying structures such as taxonomies, cause and effect, and extended metaphors</td>
<td>Analyse how the text structures and language features of persuasive texts, including media texts, vary according to the medium and mode of communication</td>
<td>Understand that authors innovate with text structures and language for specific purposes and effects</td>
<td>Compare the purposes, text structures and language features of traditional and contemporary texts in different media</td>
</tr>
<tr>
<td>Text cohesion</td>
<td>How texts work as cohesive wholes through language features which link the parts of the text together, such as paragraphs, connectives, nouns and associated pronouns</td>
<td>Understand that cohesive links can be made in texts by omitting or replacing words</td>
<td>Understand that the coherence of more complex texts relies on devices that signal text structure and guide readers, for example overviews, initial and concluding paragraphs and topic sentences, indexes or site maps or breadcrumb trails for online texts</td>
<td>Understand how cohesion in texts is improved by strengthening the internal structure of paragraphs through the use of examples, quotations and substantiation of claims</td>
<td>Compare and contrast the use of cohesive devices in texts, focusing on how they serve to signpost ideas, to make connections and to build semantic associations between ideas</td>
<td>Understand how paragraphs and images can be arranged for different purposes, audiences, perspectives and stylistic effects</td>
</tr>
<tr>
<td>Punctuation</td>
<td>How punctuation works to perform different functions in a text.</td>
<td>Understand the uses of commas to separate clauses</td>
<td>Understand the use of punctuation to support meaning in complex sentences with phrases and embedded clauses</td>
<td>Understand the use of punctuation conventions including colons, semicolons, dashes and brackets in formal and informal texts</td>
<td>Understand how punctuation is used along with layout and font variations in constructing texts for different audiences and purposes</td>
<td>Understand conventions for citing others, and how to reference these in different ways</td>
</tr>
<tr>
<td>Concepts of print and screen</td>
<td>The different conventions that apply to how text is presented on a page or screen</td>
<td>This sequence ends at Year 5 level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub Strand</td>
<td>Foundation Year</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
<td>Year 5</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Sentences and clause level grammar</strong></td>
<td>Recognise that sentences are key units for expressing ideas</td>
<td>Identify the parts of a simple sentence that represent “What’s happening?”, “Who or what is doing or receiving the action?” and the circumstances surrounding the action</td>
<td>Understand that simple connections can be made between ideas by using a compound sentence with two or more clauses and coordinating conjunctions</td>
<td>Understand that a clause is a unit of meaning usually containing a subject and a verb and that these need to be in agreement</td>
<td>Understand that the meaning of sentences can be enriched through the use of expanded noun and verb groups and phrases</td>
<td>Investigate how clauses can be combined in a variety of ways to elaborate, extend or explain ideas</td>
</tr>
<tr>
<td><strong>Word level grammar</strong></td>
<td>The different classes of words used in English (nouns, verbs etc) and the functions they perform in sentences and when they are combined in particular recognisable groups such as phrases and noun groups.</td>
<td>Recognise that texts are made up of words and groups of words that make meaning</td>
<td>Explore differences in words that represent people, places and things (nouns and pronouns), actions (verbs), qualities (adjectives) and details like when, where and how (adverbs)</td>
<td>Understand that verbs represent people, places, things and ideas and can be, for example, common, proper, concrete and abstract, and that noun groups can be expanded using articles and adjectives</td>
<td>Understand how adverbial phrases (adverbs and prepositional phrases) work in different ways to provide circumstantial details about an activity</td>
<td>Understand how adverbial groups can be expanded in a variety of ways to provide a fuller description of the person, thing or idea</td>
</tr>
<tr>
<td><strong>Visual language</strong></td>
<td>How images work in texts to communicate meanings, especially in conjunction with other elements such as print and sound</td>
<td>Explore the different contributions of words and images to meaning in stories and informative texts</td>
<td>Compare different kinds of images in narrative and informative texts and discuss how they contribute to meaning</td>
<td>Identify visual representations of characters’ actions, reactions, speech and thought processes in narratives, and consider how these images add to or contradict or multiply the meaning of accompanying words</td>
<td>Explore the effect of audiences of techniques, for example shot size, vertical camera angle and layout in picture books, advertisements and film segments</td>
<td>Identify and explain how images and prints contribute to our understanding of verbal information in factual and persuasive texts</td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td>The meanings of words including everyday and specialist meanings and how words take their meanings from the context of the text</td>
<td>Understand the use of vocabulary in familiar contexts related to everyday experiences, personal interests and topics being taught at school</td>
<td>Understand the use of vocabulary in everyday contexts as well as a growing number of school contexts, including appropriate use of formal and informal terms of address in different contexts</td>
<td>Incorporate new vocabulary from a range of sources into students’ own texts including vocabulary encountered in research</td>
<td>Understand the use of vocabulary to express greater precision of meaning, and know that words can have different meanings in different contexts</td>
<td>Investigate how vocabulary choices, including evaluative language can express shades of meaning, feeling and opinion</td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td>Knowledge for spelling including knowledge about the sounds of words are represented by various letters and knowledge of irregular spellings and spelling rules</td>
<td>Know that spoken sounds and words can be written down using letters of the alphabet and how to write some high-frequency sight words and known words</td>
<td>Know that regular one-syllable words are made up of letters and common letter clusters that correspond to the sounds heard, and how to use visual memory to write high-frequency words</td>
<td>Know how to use onset and rime to spell words</td>
<td>Recognise how to use morphemes in word families for example ‘play’ in ‘played’ and ‘playing’</td>
<td>Understand how to use digraphs, long vowels, blends and silent letters to spell words, and use morphemes and syllabification to break up simple words and use visual memory to write irregular words</td>
</tr>
<tr>
<td><strong>Phonemic awareness (sounds of language)</strong></td>
<td>Basic knowledge of sounds of language and how these are combined in spoken words</td>
<td>Recognise rhymes, syllables and sounds (phonemes) in spoken words</td>
<td>Manipulate sounds in spoken words including phoneme deletion and substitution</td>
<td>Recognise most sound-letter matches including silent letters, vowel/consonant digraphs and many-less common sound-letter combinations</td>
<td>This sequence ends at Year 2 level</td>
<td>Understand how to use sound-letter relationships and knowledge of spelling rules, compound words, prefixes, suffixes, morphemes and less common letter combinations, for example ‘ton’</td>
</tr>
<tr>
<td><strong>Alphabet knowledge</strong></td>
<td>The written code of English and how these are combined in words</td>
<td>Recognise the letters of the alphabet and know how these are combined in words</td>
<td>Recognise sound-letter matches including common vowel and consonant digraphs and consonant blends</td>
<td>This sequence ends at Year 1 level</td>
<td>Understand the variability of sound-letter matches</td>
<td>Understand how to use strategies for spelling words, including spelling rules, knowledge of morphemic word families, spelling generalisations, and letter combinations including double letters</td>
</tr>
</tbody>
</table>

**Version 1.2**

8th March 2011
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentences and clause level grammar</td>
<td>Investigate how clauses can be combined in a variety of ways to elaborate, extend or explain ideas</td>
<td>Recognise and understand that embedded clauses are a common feature of sentence structures and contribute additional information to a sentence</td>
<td>Analyse and examine how effective authors control and use a variety of clause structures, including embedded clauses</td>
<td>Explain how authors experiment with the structures of sentences and clauses to create particular effects</td>
<td>Analyse and evaluate the effectiveness of a wide range of clause and sentence structures as authors design and craft texts</td>
<td></td>
</tr>
<tr>
<td>Word level grammar</td>
<td>Understand how ideas can be expanded and sharpened through careful choice of verbs and elaborated tenses and a range of adverbials</td>
<td>Understand how modality is achieved through discriminating choices in modal verbs, adverbs, adjectives and nouns</td>
<td>Understand the effect of nominalisation in the writing of informative and persuasive texts</td>
<td>Understand how certain abstract nouns can be used to summarise preceding or subsequent stretches of text</td>
<td>Understand how higher order concepts are developed in complex texts through language features including nominalisation, apposition and embedding of clauses</td>
<td></td>
</tr>
<tr>
<td>Visual language</td>
<td>Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts</td>
<td>Analyse how point of view is generated in visual texts by means of choices, for example gaze, angle and social distance</td>
<td>Investigate how visual and multimodal texts allude to or draw on other texts or images to enhance and layer meaning</td>
<td>Analyse and explain the use of symbols, icons and myth in still and moving images and how these augment meaning</td>
<td>Evaluate the impact on audiences of different choices in the representation of still and moving images</td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>Investigate how vocabulary choices, including evaluative language can express shades of meaning, feeling and opinion</td>
<td>Investigate vocabulary typical of extended and more academic texts and the role of abstract nouns, classification, description and generalisation in building specialised knowledge through language</td>
<td>Recognise that vocabulary choices contribute to the specificity, abstraction and stylistic effectiveness</td>
<td>Identify how vocabulary choices contribute to specificity, abstraction and stylistic effectiveness</td>
<td>Refine vocabulary choices to discriminate between shades of meaning, with deliberate attention to the effect on audiences</td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td>Understand how to use banks of known words, word origins, base words, suffixes and prefixes, morphemes, spelling patterns and generalisations to learn and spell new words, for example technical words and words adopted from other languages</td>
<td>Understand how to use spelling rules and word origins, for example Greek and Latin roots, base words, suffixes, prefixes, spelling patterns and generalisations to learn new words and how to spell them</td>
<td>Understand how to apply learned knowledge consistently in order to spell accurately and to learn new words including nominalisations</td>
<td>Understand how spelling is used creatively in texts for particular effects, for example characterisation and humour and to represent accents and styles of speech</td>
<td>Understand how to use knowledge of the spelling system to spell unusual and technical words accurately, for example those based on uncommon Greek and Latin roots</td>
<td></td>
</tr>
<tr>
<td>Phonemic awareness (sounds of language)</td>
<td>This sequence ends at Year 2 level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound and letter knowledge</td>
<td>The written code of English (the letters) and how these are combined in words</td>
<td>This sequence ends at Year 1 level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub Strand</td>
<td>Focus of thread within the sub-strand</td>
<td>Foundation Year</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------</td>
<td>----------------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Literature and context</td>
<td>How texts reflect the context of culture and situation in which they are created</td>
<td>Recognise that texts are created by authors who tell stories and share experiences that may be similar or different to students’ own experiences</td>
<td>Discuss how authors create characters using language and images</td>
<td>Discuss how depictions of characters in print, sound and images reflect the contexts in which they were created</td>
<td>Discuss texts in which characters, events and settings are portrayed in different ways, and speculate on the authors’ reasons</td>
<td>Make connections between the ways different authors may represent similar storylines, ideas and relationships</td>
</tr>
<tr>
<td></td>
<td>Personal responses to the ideas, characters and viewpoints in texts</td>
<td>Respond to texts, identifying favourite stories, authors and illustrators</td>
<td>Discuss characters and events in a range of literary texts and share personal responses to these texts, making connections with students’ own experiences</td>
<td>Compare opinions about characters, events and settings in and between texts</td>
<td>Draw connections between personal experiences and the worlds of texts, and share responses with others</td>
<td>Discuss literary experiences with others, sharing responses and expressing a point of view</td>
</tr>
<tr>
<td></td>
<td>Expressing preferences and evaluating texts</td>
<td>Share feelings and thoughts about the events and characters in texts</td>
<td>Express preferences for specific texts and authors and listen to the opinions of others</td>
<td>Identify aspects of different types of literary texts that entertain, and give reasons for personal preferences</td>
<td>Develop criteria for establishing personal preferences for literature</td>
<td>Use metalanguage to describe the effects of ideas, text structures and language features of literary texts</td>
</tr>
<tr>
<td></td>
<td>Features of literary texts</td>
<td>Identify some features of texts, including events and characters and retell events from a text</td>
<td>Discuss features of plot, character and setting in different types of literature and explore some features of characters in different texts</td>
<td>Discuss the characters and settings of different texts, and explore how language is used to present these features in different ways</td>
<td>Discuss how language is used to describe the settings in texts, and explore how the settings shape the events and influence the mood of the narrative</td>
<td>Discuss how authors and illustrators make stories exciting, moving and absorbing and hold readers’ interest by using various techniques, for example character development and plot tension</td>
</tr>
<tr>
<td>Sub Strand</td>
<td>Focus of thread within the sub-strand</td>
<td>Year 6</td>
<td>Year 7</td>
<td>Year 8</td>
<td>Year 9</td>
<td>Year 10</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Literature and context</td>
<td>How texts reflect the context of culture and situation in which they are created</td>
<td>Make connections between students' own experiences and those of characters and events represented in texts drawn from different historical, social and cultural contexts</td>
<td>Identify and explore ideas and viewpoints about events, issues and characters represented in texts drawn from different historical, social and cultural contexts</td>
<td>Explore the ways that ideas and viewpoints in literary texts drawn from different historical, social and cultural contexts may reflect or challenge the values of individuals and groups</td>
<td>Explore the interconnectedness of Country and Place, People, Identity and Culture in texts including those by Aboriginal and Torres Strait Islander authors</td>
<td>Compare and evaluate a range of representations of individuals and groups in different historical, social and cultural contexts</td>
</tr>
<tr>
<td>Personal responses to the ideas, characters and viewpoints in texts</td>
<td>An individual response to the ideas, characters and viewpoints in literary texts, including relating texts to own their own experiences</td>
<td>Analyse and evaluate similarities and differences in texts on similar topics, themes or plots</td>
<td>Reflect on ideas and opinions about characters, settings and events in literary texts, identifying areas of agreement and difference with others and justifying a point of view</td>
<td>Share, reflect on, clarify and evaluate opinions and arguments about aspects of literary texts</td>
<td>Present an argument about a literary text based on initial impressions and subsequent analysis of the whole text</td>
<td>Reflect on, extend, endorse or refute others' interpretations of and responses to literature</td>
</tr>
<tr>
<td>Responding to literature</td>
<td>Expressing preferences and evaluating texts</td>
<td>Expressing a personal preference for different texts and types of texts, and identifying the features of texts that influence personal preference</td>
<td>Identify and explain how choices in language, for example modality, emphasis, repetition and metaphor influence personal response to different texts</td>
<td>Compare the ways that language and images are used to create character, and to influence emotions and opinions in different types of texts</td>
<td>Understand and explain how combinations of words and images in texts are used to represent particular groups in society, and how texts position readers in relation to those groups</td>
<td>Recognise and explain differing viewpoints about the world, cultures, individual people and concerns represented in texts</td>
</tr>
<tr>
<td>Features of literary texts</td>
<td>The key features of literary texts and how they work to construct a literary work, such as plot, setting, characterisation, mood and theme</td>
<td>Identify, describe, and discuss similarities and differences between texts, including those by the same author or illustrator, and evaluate characteristics that define an author's individual style</td>
<td>Recognise and analyse the ways that characterisation, events and settings are combined in narratives, and discuss the purposes and appeal of different approaches</td>
<td>Recognise, explain and analyse the ways literary texts draw on readers' knowledge of other texts and enable new understandings and appreciation of aesthetic qualities</td>
<td>Analyse texts from familiar and unfamiliar contexts, and discuss and evaluate their content and the appeal of an individual author's literary style</td>
<td>Identify, explain and discuss how narrative viewpoint, structure, characterisation and devices including analogy and satire shape different interpretations and responses to a text</td>
</tr>
</tbody>
</table>
### Examining literature

<table>
<thead>
<tr>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language devices in literary texts including figurative language</td>
<td>Replicate the rhythms and sound patterns in stories, rhymes, songs and poems from a range of cultures</td>
<td>Listen to, recite and perform poems, chants, rhymes and songs, imitating and inventing sound patterns including alliteration and rhyme</td>
<td>Identify, reproduce and experiment with rhythmic, sound and word patterns in poems, chants, rhymes and songs</td>
<td>Discuss the nature and effects of some language devices used to enhance meaning and shape the reader's reaction, including rhythm and onomatopoeia</td>
<td>Understand, interpret and experiment with a range of devices and deliberate word play in poetry and other literary texts, for example nonsense words, spoonerisms, neologisms and puns</td>
<td>Understand, interpret and experiment with sound devices and imagery, including simile, metaphor and personification, in narratives, shape poetry, songs, anthems and odes</td>
<td>Identify the relationship between words, sounds, imagery and language patterns in narratives and poetry such as ballads, limericks and free verse</td>
</tr>
</tbody>
</table>

### Creating literary texts

<table>
<thead>
<tr>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating literary texts</td>
<td>Retell familiar literary texts through performance, use of illustrations and images</td>
<td>Recreate texts imaginatively using drawing, writing, performance and digital forms of communication</td>
<td>Create events and characters using different media that develop key events and characters from literary texts</td>
<td>Create imaginative texts based on characters, settings and events from a students’ own and other cultures using visual features, for example perspective, distance and angle</td>
<td>Create literary texts that explore students’ own experiences and imagining</td>
<td>Create literary texts using realistic and fantasy settings and characters that draw on the worlds represented in texts students have experienced</td>
<td>Create literary texts that adapt or combine aspects of texts students have experienced in innovative ways</td>
</tr>
</tbody>
</table>

### Experimentation and adaptation

<table>
<thead>
<tr>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a variety of texts, including multimodal texts, adapting ideas and devices from literary texts</td>
<td>This sequence starts at this year level</td>
<td>Create texts that adapt language features and patterns encountered in literary texts, for example characterisation, rhyme, rhythm, mood, music, sound effects and dialogue</td>
<td>Create literary texts by developing storylines, characters and settings</td>
<td>Create literary texts that experiment with structures, ideas and stylistic features of selected authors</td>
<td>Experiment with text structures and language features and their effects in creating literary texts, for example, using imagery, sentence variation, metaphor and word choice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examine literature</td>
<td>Studstrand</td>
<td>Focus of thread within the sub-strand</td>
<td>Year 6</td>
<td>Year 7</td>
<td>Year 8</td>
<td>Year 9</td>
<td>Year 10</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------</td>
<td>---------------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>Language devices in literary texts including figurative language</td>
<td>Identify the relationship between words, sounds, imagery and language patterns in narratives and poetry such as ballads, limericks and free verse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The language devices that authors use and how these create certain meanings and effects in literary texts, especially devices in poetry</td>
<td>Identify and evaluate devices that create tone, for example humour, wordplay, innuendo and parody in poetry, humorous prose, drama or visual texts</td>
<td>Identify and analyse language choices, including sentence patterns, dialogue, imagery and other language features, in short stories, literary essays and plays</td>
<td>Investigate and experiment with the use and effect of extended metaphor, metonymy, allegory, icons, myths and symbolism in texts, for example poetry, short films, graphic novels and plays on similar themes</td>
<td>Compare and evaluate how &quot;voice&quot; as a literary device can be used in a range of different types of texts such as poetry to evoke particular emotional responses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Creating literature | Creating literary texts | Create literary texts that adapt or combine aspects of texts students have experienced in innovative ways | Create literary texts that adapt stylistic features encountered in other texts, for example, narrative viewpoint, structure of stanzas, contrast and juxtaposition | Create literary texts that draw upon text structures and language features of other texts for particular purposes and effects | Create literary texts, including hybrid texts, that innovate on aspects of other texts, for example by using parody, allusion and appropriation | Create literary texts that reflect an emerging sense of personal style and evaluate the effectiveness of these texts |

| Experimentation and adaptation | Creating a variety of texts, including multimodal texts, adapting ideas and devices from literary texts | Experiment with text structures and language features and their effects in creating literary texts, for example, using imagery, sentence variation, metaphor and word choice | Experiment with text structures and language features and their effects in creating literary texts, for example, using rhythm, sound effects, monologue, layout, navigation and colour | Experiment with particular language features drawn from different types of texts, including combinations of language and visual choices to create new texts | Experiment with the ways that language features, image and sound can be adapted in literary texts, for example the effects of stereotypical characters and settings, the playfulness of humour and comedy, pun and hyperlink | Create literary texts with a sustained "voice", selecting and adapting appropriate text structures, literary devices, language, auditory and visual structures and features and for a specific purpose and intended audience |

| | | | | | | |

<p>| | Version 1.2 | 8th March 2011 | | | | |</p>
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texts in context</td>
<td>Texts and the contexts in which they are used</td>
<td>Identify some familiar texts and the contexts in which they are used</td>
<td>Respond to texts drawn from a range of cultures and experiences</td>
<td>Discuss different texts on a similar topic, identifying similarities and differences between the texts</td>
<td>Identify the point of view in a text and suggest alternative points of view</td>
<td>Identify and explain language features of texts from earlier times and compare with the vocabulary, images, layout and content of contemporary texts</td>
<td>Show how ideas and points of view in texts are conveyed through the use of vocabulary, including idiomatic expressions, objective and subjective language, and that these can change according to context</td>
<td>Compare texts including media texts that represent ideas and events in different ways, explaining the effects of the different approaches</td>
</tr>
<tr>
<td>Listening</td>
<td>Listening and speaking interactions</td>
<td>Listen to and respond orally to texts and to the communication of others in informal and structured classroom situations</td>
<td>Engage in conversations and discussions, using active listening behaviours, showing interest, and contributing ideas, information and questions</td>
<td>Listen for specific purposes and information, including instructions, and extend students' own and others' ideas in discussions</td>
<td>Listen to and contribute to conversations and discussions to share information and ideas and negotiate in collaborative situations</td>
<td>Interpret ideas and information in spoken texts and listen for key points in order to carry out tasks and use information to share and extend ideas and information</td>
<td>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</td>
<td>Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions</td>
</tr>
<tr>
<td>Oral presentations</td>
<td>Oral presentations</td>
<td>Deliver short oral presentations to peers</td>
<td>Make short presentations using some introduced text structures and language, for example opening statements</td>
<td>Rehearse and deliver short presentations on familiar and new topics</td>
<td>Plan and deliver short presentations, providing some key details in logical sequence</td>
<td>Plan, rehearse and deliver presentations incorporating learned content and taking into account the particular purposes and audiences</td>
<td>Plan, rehearse and deliver presentations for defined audiences and purposes incorporating accurate and sequenced content and multimodal elements</td>
<td>Plan, rehearse and deliver presentations selecting and sequencing appropriate content and multimodal elements for defined audiences and purposes, making appropriate choices for modality and emphasis</td>
</tr>
</tbody>
</table>

**Literacy English Scope and Sequence: Foundation to Year 6**

**The Australian Curriculum**

Version 1.2
8th March 2011
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texts in context</td>
<td>Texts and the contexts in which they are used</td>
<td>Compare texts including media texts that represent ideas and events in different ways, explaining the effects of different approaches</td>
<td>Analyse and explain the effect of technological innovations on texts, particularly media texts</td>
<td>Analyse and explain how language has evolved over time and how technology and the media have influenced language use and forms of communication</td>
<td>Analyse how the construction and interpretation of texts, including cultural perspectives and other texts</td>
<td>Analyse and evaluate how people, cultures, places, events, objects and concepts are represented in texts, including media texts, through language, structural and/or visual choices</td>
</tr>
<tr>
<td>Interacting with others</td>
<td>Listening and speaking interactions</td>
<td>Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions</td>
<td>Identify and discuss main ideas, concepts and points of view in spoken texts to evaluate qualities, for example the strength of an argument or the lyrical power of a poetic rendition</td>
<td>Interpret the stated and implied meanings in spoken texts, and use evidence to support or challenge different perspectives</td>
<td>Listen to spoken texts constructed for different purposes, for example to entertain and to persuade, and analyse how language features of these texts position listeners to respond in particular ways</td>
<td>Identify and explore the purposes and effects of different text structures and language features of spoken texts, and use this knowledge to create purposeful texts that inform, persuade and engage</td>
</tr>
<tr>
<td>Oral presentations</td>
<td>The formal oral presentations that students engage in including presenting recounts and information, and presenting and arguing a point of view</td>
<td>Plan, rehearse and deliver presentations selecting and sequencing appropriate content and multimodal elements for defined audiences and purposes, making appropriate choices for modality and emphasis</td>
<td>Plan, rehearse and deliver presentations selecting and sequencing appropriate content and multimodal elements to promote a point of view or enable a new way of seeing</td>
<td>Plan, rehearse and deliver presentations selecting and sequencing appropriate content, including multimodal elements, to reflect a diversity of viewpoints</td>
<td>Plan, rehearse and deliver presentations selecting and sequencing appropriate content and multimodal elements to influence a course of action</td>
<td></td>
</tr>
</tbody>
</table>

Version 1.2
8th March 2011
<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation</td>
<td>Purpose and audience</td>
<td>Recognising and analysing differences between different types of texts</td>
<td>Identify some differences between imaginative and informative texts</td>
<td>Describe some differences between imaginative and informative texts</td>
<td>Identify the audience of imaginative, informative and persuasive texts</td>
<td>Identify the audience and purpose of imaginative, informative and persuasive texts</td>
<td>Identify characteristic purpose of imaginative, informative and persuasive texts used in imaginative, informative and persuasive texts to meet the purpose of the text</td>
<td>Analyse how text structures and language features work together to meet the purpose of a text</td>
</tr>
<tr>
<td>Reading processes</td>
<td>Strategies for using and combining contextual, semantic, grammatical and phonic knowledge to decode texts including predicting, monitoring, cross-checking, self-correcting, skimming and scanning</td>
<td>Read predictable texts, practicing phrasing and fluency and monitor meaning using concepts about print and emerging contextual, semantic, grammatical and phonic knowledge</td>
<td>Read supportive texts using developing phrasing, fluency, contextual, semantic, grammatical and phonic knowledge and support meaning, monitoring and rereading</td>
<td>Read less predictable texts using phrasing and fluency and by combining contextual, semantic, grammatical and phonic knowledge using text processing strategies, for example monitoring meaning, predicting, rereading and self-correcting</td>
<td>Read an increasing range of different types of texts using developing phrasing, fluency, contextual, semantic, grammatical and phonic knowledge, using text processing strategies, for example monitoring meaning, predicting, confirming, rereading and self-correcting</td>
<td>Read different types of texts by combining contextual, semantic, grammatical and phonic knowledge, using text processing strategies, for example monitoring meaning, cross checking and reviewing</td>
<td>Navigate and read texts for specific purposes applying appropriate text processing strategies, for example predicting and confirming, monitoring meaning, skimming and scanning</td>
<td></td>
</tr>
<tr>
<td>Comprehension strategies</td>
<td>Strategies for constructing meaning from texts, including literal and inferential meaning</td>
<td>Use comprehension strategies to understand and discuss texts listened to, viewed or read independently</td>
<td>Use comprehension strategies to build literal and inferenced meaning and begin to analyse texts by drawing on growing knowledge of context, text structures and language features</td>
<td>Use comprehension strategies to build literal and inferenced meaning and begin to analyse texts by drawing on growing knowledge of context, text structures and language features</td>
<td>Use comprehension strategies to build literal and inferenced meaning and begin to evaluate texts by drawing on growing knowledge of context, text structures and language features</td>
<td>Use comprehension strategies to express their understanding of texts and integrate ideas from a variety of print, digital and sound texts</td>
<td>Use comprehension strategies to interpret and analyse text information and ideas, comparing content from a variety of textual sources including media and digital texts</td>
<td></td>
</tr>
<tr>
<td>Analysing and evaluating texts</td>
<td>Analysis and evaluation of how text structures and language features construe meaning and influence readers/viewers</td>
<td>Interpret, analysing, evaluating</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Not specified</td>
<td>Not specified</td>
</tr>
<tr>
<td>Creating texts</td>
<td>Creating different types of spoken, written and multimodal texts using knowledge of text structures and language features</td>
<td>Create short texts to explore, record and report ideas and events using familiar words and phrases and beginning writing knowledge</td>
<td>Create short imaginative and informative texts that show emerging use of appropriate text structure, sentence-level grammar, word choice, spelling, punctuation and appropriate multimodal elements, for example illustrations and diagrams</td>
<td>Create short imaginative, informative and persuasive texts using growing knowledge of text structures and language features for familiar and some less familiar audiences, selecting print and multimodal elements appropriate to the audience and purpose</td>
<td>Plan, draft and publish imaginative, informative and persuasive texts demonstrating increasing control over text structures and language features and selecting print, and multimodal elements appropriate to the audience and purpose</td>
<td>Plan, draft and publish imaginative, informative and persuasive texts containing key information and supporting details for a widening range of audiences, demonstrating increasing control over text structures and language features</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Editing</td>
<td>Editing texts for meaning, structure and grammatical features</td>
<td>Participate in shared editing of students' own texts for meaning, spelling, capital letters and full stops</td>
<td>Reread student's own texts and discuss possible changes to improve meaning, spelling and punctuation</td>
<td>Reread and edit text for spelling, sentence-boundary punctuation and text structure</td>
<td>Reread and edit texts for meaning, appropriate structure, grammatical choices and punctuation</td>
<td>Reread and edit for meaning by adding, deleting or moving words or words groups to improve content and structure</td>
<td>Reread and edit student's own and others' work using agreed criteria for text structures and language features</td>
<td>Reread and edit students' own and others' work using agreed criteria and explaining editing choices</td>
</tr>
<tr>
<td>Handwriting</td>
<td>Developing a fluent, legible handwriting style, beginning with unjoined letters and moving to joined handwriting</td>
<td>Produce some lower case and upper case letters using learned letter formations</td>
<td>Write using unjoined lower case and upper case letters</td>
<td>Write legibly and with growing fluency using unjoined upper case and lower case letters</td>
<td>Write using joined letters that are clearly formed and consistent in size</td>
<td>Write using clearly-formed joined letters, and develop increased fluency and automatically</td>
<td>Develop a handwriting style that is legible, fluent and automatic and varies according to audience and purpose</td>
<td>Develop a handwriting style that is legible, fluent and automatic</td>
</tr>
<tr>
<td>Use of software</td>
<td>Using a range of software applications to construct and edit print and multimodal texts</td>
<td>Construct texts using software including word processing programs</td>
<td>Construct texts that incorporate supporting images using software including word processing programs</td>
<td>Construct texts featuring print, visual and audio elements using software, including word processing programs</td>
<td>Use software including word processing programs to grow speed and efficiency to construct and edit texts featuring visual, print and audio elements</td>
<td>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</td>
<td>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</td>
<td>Use a range of software, including word processing programs, learning new functions as required to create texts</td>
</tr>
</tbody>
</table>

This sequence starts at this year level. Analyse strategies authors use to influence readers.
## Literacy English Scope and Sequence: Year 6 to Year 10

<table>
<thead>
<tr>
<th>Sub Strand</th>
<th>Focus of thread within the sub-strand</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creating texts</strong></td>
<td>Creating different types of spoken, written and multimodal texts using knowledge of text structures and language features</td>
<td>Plan, draft and publish imaginative, informative and persuasive texts</td>
<td>Plan, draft and publish imaginative, informative and persuasive texts</td>
<td>Create imaginative, informative and persuasive texts</td>
<td>Create imaginative, informative and persuasive texts</td>
<td>Create sustained texts, including texts that combine specific digital or media content, for imaginative, informative, or persuasive purposes, and that reflect upon challenging and complex issues</td>
</tr>
<tr>
<td><strong>Editing</strong></td>
<td>Editing texts for meaning, structure and grammatical features</td>
<td>Reread and edit their students’ own and others’ work using agreed criteria and explaining editing choices</td>
<td>Edit for meaning by removing repetition, refining ideas, reordering sentences and adding or substituting words for impact</td>
<td>Experiment with text structures and language features to refine and clarify ideas and to improve the effectiveness of students’ own texts imaginatively</td>
<td>Review and edit students’ own and others’ texts to improve clarity and control over content, organisation, paragraphing, sentence structure, vocabulary and audio/visual features</td>
<td>Review, edit and refine students’ own and others’ texts for control of content, organisation, sentence structure, vocabulary, and/or visual features, to achieve particular purposes and effects</td>
</tr>
<tr>
<td><strong>Handwriting</strong></td>
<td>Developing a fluent, legible handwriting style, beginning with unjoined letters and moving to joined handwriting</td>
<td>Develop a handwriting style that is legible, fluent and automatic and varies according to audience and purpose</td>
<td>Consolidate a personal handwriting style that is legible, fluent and automatic and supports writing for extended periods</td>
<td>This sequence ends at this year level</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use of software</strong></td>
<td>Using a range of software applications to construct and edit print and multimodal texts</td>
<td>Use a range of software, including word processing programs, to create, edit and publish texts</td>
<td>Use a range of software, including word processing programs, to create, edit and publish texts</td>
<td>Use a range of software, including word processing programs, flexibly and imaginatively to publish texts</td>
<td>Use a range of software, including word processing programs, confidently, flexibly and imaginatively to publish texts, considering the identified purpose and the characteristics of the user</td>
<td></td>
</tr>
</tbody>
</table>
# Science

## Rationale and Aims

| Rationale | 1 |
| Aims | 1 |

## Organisation

| Content structure | 3 |
| The overarching ideas | 6 |
| Science across Foundation to Year 12 | 7 |
| Achievement standards | 9 |
| Diversity of learners | 9 |
| General capabilities | 10 |
| Cross-curriculum priorities | 13 |
| Links to the other learning areas | 15 |
| Implications for teaching, assessment and reporting | 16 |

## Curriculum Foundation–10

| Foundation Year | 17 |

## Glossary

| 18 |
Rationale and Aims

Rationale
Science provides an empirical way of answering interesting and important questions about the biological, physical and technological world. The knowledge it produces has proved to be a reliable basis for action in our personal, social and economic lives. Science is a dynamic, collaborative and creative human endeavour arising from our desire to make sense of our world through exploring the unknown, investigating universal mysteries, making predictions and solving problems. Science aims to understand a large number of observations in terms of a much smaller number of broad principles. Science knowledge is contestable and is revised, refined and extended as new evidence arises.

The Australian Curriculum: Science provides opportunities for students to develop an understanding of important science concepts and processes, the practices used to develop scientific knowledge, of science’s contribution to our culture and society, and its applications in our lives. The curriculum supports students to develop the scientific knowledge, understandings and skills to make informed decisions about local, national and global issues and to participate, if they so wish, in science-related careers.

In addition to its practical applications, learning science is a valuable pursuit in its own right. Students can experience the joy of scientific discovery and nurture their natural curiosity about the world around them. In doing this, they develop critical and creative thinking skills and challenge themselves to identify questions and draw evidence-based conclusions using scientific methods. The wider benefits of this “scientific literacy” are well established, including giving students the capability to investigate the natural world and changes made to it through human activity.

The science curriculum promotes six overarching ideas that highlight certain common approaches to a scientific view of the world and which can be applied to many of the areas of science understanding. These overarching ideas are patterns, order and organisation; form and function; stability and change; systems; scale and measurement; and matter and energy.

Aims
The Australian Curriculum: Science aims to ensure that students develop:

- an interest in science as a means of expanding their curiosity and willingness to explore, ask questions about and speculate on the changing world in which they live
- an understanding of the vision that science provides of the nature of living things, of the Earth and its place in the cosmos, and of the physical and chemical processes that explain the behaviour of all material things
- an understanding of the nature of scientific inquiry and the ability to use a range of scientific inquiry methods, including questioning; planning and conducting experiments and investigations based on ethical principles; collecting and analysing data; evaluating results; and drawing critical, evidence-based conclusions
- an ability to communicate scientific understanding and findings to a range of audiences, to justify ideas on the basis of evidence, and to evaluate and debate scientific arguments and claims
- an ability to solve problems and make informed, evidence-based decisions about current and future applications of science while taking into account ethical and social implications of decisions
- an understanding of historical and cultural contributions to science as well as contemporary science issues and activities and an understanding of the diversity of careers related to science
- a solid foundation of knowledge of the biological, chemical, physical, Earth and space sciences, including being able to select and integrate the scientific knowledge and methods needed to explain and predict phenomena, to apply that understanding to new situations and events, and to appreciate the dynamic
nature of science knowledge.
Content structure

The Australian Curriculum: Science has three interrelated strands: Science Understanding, Science as a Human Endeavour and Science Inquiry Skills.

Together, the three strands of the science curriculum provide students with understanding, knowledge and skills through which they can develop a scientific view of the world. Students are challenged to explore science, its concepts, nature and uses through clearly described inquiry processes.

Science Understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time.

The Science Understanding strand comprises four sub-strands. The content is described by year level.

Biological sciences

The biological sciences sub-strand is concerned with understanding living things. The key concepts developed within this sub-strand are that: a diverse range of living things have evolved on Earth over hundreds of millions of years; living things are interdependent and interact with each other and their environment; and the form and features of living things are related to the functions that their body systems perform. Through this sub-strand, students investigate living things, including animals, plants, and micro-organisms, and their interdependence and interactions within ecosystems. They explore their life cycles, body systems, structural adaptations and behaviours, how these features aid survival, and how their characteristics are inherited from one generation to the next. Students are introduced to the cell as the basic unit of life and the processes that are central to its function.

Chemical sciences

The chemical sciences sub-strand is concerned with understanding the composition and behaviour of substances. The key concepts developed within this sub-strand are that: the chemical and physical properties of substances are determined by their structure at an atomic scale; and that substances change and new substances are produced by rearranging atoms through atomic interactions and energy transfer. In this sub-strand, students classify substances based on their properties, such as solids, liquids and gases, or their composition, such as elements, compounds and mixtures. They explore physical changes such as changes of state and dissolving, and investigate how chemical reactions result in the production of new substances. Students recognise that all substances consist of atoms which can combine to form molecules, and chemical reactions involve atoms being rearranged and recombined to form new substances. They explore the relationship between the way in which atoms are arranged and the properties of substances, and the effect of energy transfers on these arrangements.

Earth and space sciences

The Earth and space sciences sub-strand is concerned with Earth’s dynamic structure and its place in the cosmos. The key concepts developed within this sub-strand are that: Earth is part of a solar system that is part of a larger universe; and Earth is subject to change within and on its surface, over a range of timescales as a result of natural processes and human use of resources. Through this sub-strand, students view Earth as part of a solar system, which is part of a galaxy, which is one of many in the universe and explore the immense scales associated with space. They explore how changes on Earth, such as day and night and the seasons relate to Earth’s rotation and its orbit around the sun. Students investigate the processes that result in change.
to Earth’s surface, recognising that Earth has evolved over 4.5 billion years and that the effect of some of these processes is only evident when viewed over extremely long timescales. They explore the ways in which humans use resources from the Earth and appreciate the influence of human activity on the surface of the Earth and the atmosphere.

Physical sciences

The physical sciences sub-strand is concerned with understanding the nature of forces and motion, and matter and energy. The two key concepts developed within this sub-strand are that: forces affect the behaviour of objects; and that energy can be transferred and transformed from one form to another. Through this sub-strand students gain an understanding of how an object’s motion (direction, speed and acceleration) is influenced by a range of contact and non-contact forces such as friction, magnetism, gravity and electrostatic forces. They develop an understanding of the concept of energy and how energy transfer is associated with phenomena involving motion, heat, sound, light and electricity. They appreciate that concepts of force, motion, matter and energy apply to systems ranging in scale from atoms to the universe itself.

Science as a Human Endeavour

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and science knowledge can be changed as new evidence becomes available. Science influences society by posing, and responding to, social and ethical questions, and scientific research is itself influenced by the needs and priorities of society. This strand highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving. It acknowledges that in making decisions about science practices and applications, ethical and social implications must be taken into account. This strand also recognises that science advances through the contributions of many different people from different cultures and that there are many rewarding science-based career paths.

The content in the **Science as a Human Endeavour** strand is described in two-year bands. There are two sub-strands of **Science as a Human Endeavour**. These are:

**Nature and development of science**: This sub-strand develops an appreciation of the unique nature of science and scientific knowledge, including how current knowledge has developed over time through the actions of many people.

**Use and influence of science**: This sub-strand explores how science knowledge and applications affect peoples’ lives, including their work, and how science is influenced by society and can be used to inform decisions and actions.

Science Inquiry Skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments.

Science investigations are activities in which ideas, predictions or hypotheses are tested and conclusions are drawn in response to a question or problem. Investigations can involve a range of activities, including experimental testing, field work, locating and using information sources, conducting surveys, and using modelling and simulations. The choice of the approach taken will depend on the context and subject of the investigation.

In science investigations, collection and analysis of data and evidence play a major role. This can involve collecting or extracting information and reorganising data in the form of tables, graphs, flow charts, diagrams,
prose, keys, spreadsheets and databases.

The content in the Science Inquiry Skills strand is described in two-year bands. There are five sub-strands of Science Inquiry Skills. These are:

**Questioning and predicting:** Identifying and constructing questions, proposing hypotheses and suggesting possible outcomes.

**Planning and conducting:** Making decisions regarding how to investigate or solve a problem and carrying out an investigation, including the collection of data.

**Processing and analysing data and information:** Representing data in meaningful and useful ways; identifying trends, patterns and relationships in data, and using this evidence to justify conclusions.

**Evaluating:** Considering the quality of available evidence and the merit or significance of a claim, proposition or conclusion with reference to that evidence.

**Communicating:** Conveying information or ideas to others through appropriate representations, text types and modes.

**Relationship between the strands**

In the practice of science, the three strands of Science Understanding, Science as a Human Endeavour and Science Inquiry Skills are closely integrated; the work of scientists reflects the nature and development of science, is built around scientific inquiry and seeks to respond to and influence society’s needs. Students’ experiences of school science should mirror and connect to this multifaceted view of science.

To achieve this, the three strands of the Australian Curriculum: Science should be taught in an integrated way. The content descriptions of the three strands have been written so that at each year this integration is possible. In the earlier years, the ‘Nature and development of science’ sub-strand within the Science as a Human Endeavour strand focuses on scientific inquiry. This enables students to make clear connections between the inquiry skills that they are learning and the work of scientists. As students progress through the curriculum they investigate how science understanding has developed, including considering some of the people and the stories behind these advances in science.

They will also recognise how this science understanding can be applied to their lives and the lives of others. As students develop a more sophisticated understanding of the knowledge and skills of science they are increasingly able to appreciate the role of science in society. The content of the Science Understanding strand will inform students’ understanding of contemporary issues, such as climate change, use of resources, medical interventions, biodiversity and the origins of the universe. The importance of these areas of science can be emphasised through the content of the Science as a Human Endeavour strand, and students can be encouraged to view contemporary science critically through aspects of the Science Inquiry Skills strand, for example by analysing, evaluating and communicating.

**Year level descriptions**

Year level descriptions have three functions. Firstly, they emphasise the interrelated nature of the three strands, and the expectation that planning a science program will involve integration of content from across the strands. Secondly, they re-emphasise the overarching ideas as appropriate for that stage of schooling. Thirdly, they provide an overview of the content for the year level.

**Content descriptions**

The Australian Curriculum: Science includes content descriptions at each year level. These describe the knowledge, concepts, skills and processes that teachers are expected to teach and students are expected to
learn. However, they do not prescribe approaches to teaching. While Science Understanding content is presented in year levels, when units of work are devised, attention should be given to the coverage of content from Science Inquiry Skills and Science as a Human Endeavour over the two-year band. The content descriptions ensure that learning is appropriately ordered and that unnecessary repetition is avoided. However, a concept or skill introduced at one year level may be revisited, strengthened and extended at later year levels as needed.

Content elaborations

Content elaborations are provided for Foundation to Year 10 to illustrate and exemplify content and assist teachers to develop a common understanding of the content descriptions. They are not intended to be comprehensive content points that all students need to be taught.

Glossary

A glossary is provided to support a common understanding of key terms in the content descriptions.

The Overarching Ideas

There are a number of overarching ideas that represent key aspects of a scientific view of the world and bridge knowledge and understanding across the disciplines of science.

In the Australian Curriculum: Science, six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels. The overarching ideas frame the development of concepts in the Science Understanding strand, support key aspects of the Science Inquiry Skills strand and contribute to developing students’ appreciation of the nature of science.

The six overarching ideas that frame the Australian Curriculum: Science are:

Patterns, order and organisation

An important aspect of science is recognising patterns in the world around us, and ordering and organising phenomena at different scales. As students progress from Foundation to Year 10, they build skills and understanding that will help them to observe and describe patterns at different scales, and develop and use classifications to organise events and phenomena and make predictions. Classifying objects and events into groups (such as solid/liquid/gas or living/non-living) and developing criteria for those groupings relies on making observations and identifying patterns of similarity and difference. As students progress through the primary years, they become more proficient in identifying and describing the relationships that underpin patterns, including cause and effect. Students increasingly recognise that scale plays an important role in the observation of patterns; some patterns may only be evident at certain time and spatial scales. For example, the pattern of day and night is not evident over the time scale of an hour.

Form and function

Many aspects of science are concerned with the relationships between form (the nature or make-up of an aspect of an object or organism) and function (the use of that aspect). As students progress from Foundation to Year 10, they see that the functions of both living and non-living objects rely on their forms. Their understanding of forms such as the features of living things or the nature of a range of materials, and their related functions or uses, is initially based on observable behaviours and physical properties. In later years, students recognise that function frequently relies on form and that this relationship can be examined at many scales. They apply an understanding of microscopic and atomic structures, interactions of force and flows of energy and matter to describe relationships between form and function.
Stability and change

Many areas of science involve the recognition, description and prediction of stability and change. Early in their schooling, students recognise that in their observations of the world around them, some properties and phenomena appear to remain stable or constant over time, whereas others change. As they progress from Foundation to Year 10, they also recognise that phenomena (such as properties of objects and relationships between living things) can appear to be stable at one spatial or time scale, but at a larger or smaller scale may be seen to be changing. They begin to appreciate that stability can be the result of competing, but balanced forces. Students become increasingly adept at quantifying change through measurement and looking for patterns of change by representing and analysing data in tables or graphs.

Scale and measurement

Quantification of time and spatial scale is critical to the development of science understanding as it enables the comparison of observations. Students often find it difficult to work with scales that are outside their everyday experience - these include the huge distances in space, the incredibly small size of atoms and the slow processes that occur over geological time. As students progress from Foundation to Year 10, their understanding of relative sizes and rates of change develops and they are able to conceptualise events and phenomena at a wider range of scales. They progress from working with scales related to their everyday experiences and comparing events and phenomena using relative language (such as ‘bigger’ or ‘faster’) and informal measurement, to working with scales beyond human experience and quantifying magnitudes, rates of change and comparisons using formal units of measurement.

Matter and energy

Many aspects of science involve identifying, describing and measuring transfers of energy and/or matter. As students progress through Foundation to Year 10, they become increasingly able to explain phenomena in terms of the flow of matter and energy. Initially, students focus on direct experience and observation of phenomena and materials. They are introduced to the ways in which objects and living things change and begin to recognise the role of energy and matter in these changes. In later years, they are introduced to more abstract notions of particles, forces and energy transfer and transformation. They use these understandings to describe and model phenomena and processes involving matter and energy.

Systems

Science frequently involves thinking, modelling and analysing in terms of systems in order to understand, explain and predict events and phenomena. As students progress through Foundation to Year 10, they explore, describe and analyse increasingly complex systems.

Initially, students identify the observable components of a clearly identified ‘whole’ such as features of plants and animals and parts of mixtures. Over Years 3 to 6 they learn to identify and describe relationships between components within simple systems, and they begin to appreciate that components within living and non-living systems are interdependent. In Years 7 to 10 they are introduced to the processes and underlying phenomena that structure systems such as ecosystems, body systems and the carbon cycle. They recognise that within systems, interactions between components can involve forces and changes acting in opposing directions and that for a system to be in a steady state, these factors need to be in a state of balance or equilibrium. They are increasingly aware that systems can exist as components within larger systems, and that one important part of thinking about systems is identifying boundaries, inputs and outputs.
Science across Foundation to Year 12

Although the curriculum is described year by year, this document provides advice across four year groupings on the nature of learners and the relevant curriculum:

- **Foundation – Year 2**: typically students from 5 to 8 years of age
- **Years 3–6**: typically students from 8 to 12 years of age
- **Years 7–10**: typically students from 12 to 15 years of age
- **Senior secondary years**: typically students from 15 to 18 years of age.

**Foundation – Year 2**

**Curriculum focus: awareness of self and the local world**

Young children have an intrinsic curiosity about their immediate world. Asking questions leads to speculation and the testing of ideas. Exploratory, purposeful play is a central feature of their investigations.

In this stage of schooling students’ explorations are precursors to more structured inquiry in later years. They use the senses to observe and gather information, describing, making comparisons, sorting and classifying to create an order that is meaningful. They observe and explore changes that vary in their rate and magnitude and begin to describe relationships in the world around them. Students’ questions and ideas about the world become increasingly purposeful. They are encouraged to develop explanatory ideas and test them through further exploration.

**Years 3–6**

**Curriculum focus: recognising questions that can be investigated scientifically and investigating them**

During these years students can develop ideas about science that relate to their lives, answer questions, and solve mysteries of particular interest to their age group. In this stage of schooling students tend to use a trial-and-error approach to their science investigations. As they progress, they begin to work in a more systematic way. The notion of a ‘fair test’ and the idea of variables are developed, as well as other forms of science inquiry. Understanding the importance of measurement in quantifying changes in systems is also fostered.

Through observation, students can detect similarities among objects, living things and events and these similarities can form patterns. By identifying these patterns, students develop explanations about the reasons for them. Students’ understanding of the complex natural or built world can be enhanced by considering aspects of the world as systems, and how components, or parts, within systems relate to each other. From evidence derived from observation, explanations about phenomena can be developed and tested. With new evidence, explanations may be refined or changed.

By examining living structures, Earth, changes of solids to liquids and features of light, students begin to recognise patterns in the world. The observation of aspects of astronomy, living things, heat, light and electrical circuits helps students develop the concept of a system and its interacting components, and understand the relationships, including the notion of cause and effect, between variables.

**Years 7–10**

**Curriculum focus: explaining phenomena involving science and its applications**

During these years, students continue to develop their understanding of important science concepts across the major science disciplines. It is important to include contemporary contexts in which a richer understanding of science can be enhanced. Current science research and its human application motivates and engages students.
Within the outlined curriculum, students should undertake some open investigations that will help them refine their science inquiry skills. The quantitative aspects of students’ inquiry skills are further developed to incorporate consideration of uncertainty in measurement. In teaching the outlined curriculum, it is important to provide time to build the more abstract science ideas that underpin understanding.

Students further develop their understanding of systems and how the idea of equilibrium is important in dynamic systems. They consider how a change in one of the components can affect all components of the system because of the interrelationships between the parts. They consider the idea of form and function at a range of scales in both living and non-living systems. Students move from an experiential appreciation of the effects of energy to a more abstract understanding of the nature of energy.

As students investigate the science phenomena outlined in these years, they begin to learn about major theories that underpin science, including the particle theory, atomic theory, the theory of evolution, plate tectonic theory and the Big Bang theory.

**Senior secondary years**

**Curriculum focus: disciplines of science**

The senior secondary courses for physics, chemistry, biology, and Earth and environmental science build on prior learning across these areas in Foundation to Year 10.

**Achievement standards**

Across Foundation to Year 10, achievement standards indicate the quality of learning that students should typically demonstrate by a particular point in their schooling. Achievement standards comprise a written description and student work samples.

An achievement standard describes the quality of learning (the extent of knowledge, the depth of understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required at the next level of achievement.

The sequence of achievement standards across Foundation to Year 10 describes progress in the learning area. This sequence provides teachers with a framework of growth and development in the learning area.

Student work samples play a key role in communicating expectations described in the achievement standards. Each work sample includes the relevant assessment task, the student’s response, and annotations identifying the quality of learning evident in the student’s response in relation to relevant parts of the achievement standard.

Together, the description of the achievement standard and the accompanying set of annotated work samples help teachers to make judgments about whether students have achieved the standard.

**Diversity of Learners**

The Australian Curriculum has been developed to ensure that curriculum content and achievement standards establish high expectations for all students. Every student is entitled to enriching learning experiences across all areas of the curriculum. Students in Australian classrooms have multiple, diverse and changing needs that are shaped by individual learning histories and abilities as well as cultural language backgrounds and socio-economic factors.

**Special education needs**
The objectives of the Australian Curriculum are the same for all students. The curriculum offers flexibility for teachers to tailor their teaching in ways that provide rigorous, relevant and engaging learning and assessment opportunities for students with special education needs.

Most students with special education needs can engage with the curriculum provided the necessary adjustments are made to the complexity of the curriculum content and to the means through which students demonstrate their knowledge, skills and understanding.

For some learners, making adjustments to instructional processes and to assessment strategies enables students to achieve educational standards commensurate with their peers.

For other students, teachers will need to make appropriate adjustments to the complexity of the curriculum content, focusing instruction on content different to that taught to others in their age group. It follows that adjustments will also need to be made to how the student’s progress is monitored, assessed and reported.

For a small percentage of students, the Foundation to Year 10 curriculum content and achievement standards may not be appropriate nor meaningful, even with adjustments. Most of these students have a significant intellectual disability. During 2011, ACARA will develop additional curriculum content and achievement standards for this group of students in order to provide an Australian Curriculum that is inclusive of every learner.

Further advice and guidance are available about how to use each learning area and the curriculum generally for these students.

**English as an additional language or dialect**

Many students in Australian schools are learners of English as an additional language or dialect (EAL/D). Learners of EAL/D are students whose first language is a language other than Standard Australian English and who require additional support to assist them to develop English language proficiency. While many EAL/D learners do well in school, there is a significant group of these learners who leave school without achieving their potential.

EAL/D students come from diverse backgrounds and may include:

- overseas- and Australian-born children whose first language is a language other than English
- Aboriginal and Torres Strait Islander students whose first language is an Indigenous language, including traditional languages, creoles and related varieties, or Aboriginal English.

EAL/D learners enter Australian schools at different ages and at different stages of English language learning and have various educational backgrounds in their first languages. For some, school is the only place they use English.

The aims of the Australian Curriculum: Science are ultimately the same for all students. However, EAL/D learners are simultaneously learning a new language and the knowledge, understanding and skills of the science curriculum through that new language. They require additional time and support, along with informed teaching that explicitly addresses their language needs, and assessments that take into account their developing language proficiency.

A national EAL/D document is being produced that will support the Australian Curriculum. It will provide a description of how language proficiency develops, and will be a valuable reference for all teachers. It will allow teachers of science to identify the language levels of the EAL/D learners in their classrooms and to address their specific learning requirements when teaching, ensuring equity of access to the science learning area for all.
General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the twenty-first century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities:

- literacy
- numeracy
- information and communication technology (ICT) competence
- critical and creative thinking
- ethical behaviour
- personal and social competence
- intercultural understanding.

Over the course of their schooling, students develop and use these general capabilities within and across learning areas and in their lives outside school. General capabilities and learning areas have a reciprocal relationship. Learning areas provide opportunities for students to develop and use general capabilities. Similarly, wherever general capabilities are made explicit in learning areas, they can enrich and deepen learning. In the Australian Curriculum: Science each of the seven general capabilities is embedded (where appropriate) in the content descriptions or elaborations. There are further opportunities to develop the general capabilities through appropriate teaching activities.

Literacy

Students become literate as they develop the skills to learn and communicate confidently at school and to become effective individuals, community members, workers and citizens. These skills include listening, reading and viewing, writing, speaking and creating print, visual and digital materials accurately and purposefully within and across all learning areas.

Literacy is important in science. The language and literacy knowledge specific to the study of science develops along with scientific understanding and skills. For example, students move from recognising, observing and discussing familiar phenomena in the early years to documenting and hypothesising about speculative ideas in later years.

In science, commonly encountered genres and language features include: the procedural report and the explanatory genre (for example, ‘the water cycle’); the use of the passive voice (for example, ‘clouds are formed’); nominalisation (for example ‘sedimentation’, ‘condensation’); imperatives (for example, ‘heat the test tube’), and technical terms, which include common words that have a specific meaning in a science context.

Numeracy

Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful.

Many elements of numeracy are evident in science, particularly in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data from investigations. Students are introduced to measurement using informal units in the early years, then formal units; later they consider issues of uncertainty and reliability in measurement. As students progress, both qualitative and, later, quantitative data are collected, analysed and represented in graphical forms. Students learn data analysis skills, including identifying trends and patterns from numerical data and graphs. In later years, numeracy demands include the statistical analysis of data, including issues relating to accuracy, and linear mathematical relationships to calculate and predict values.
Information and communication technology (ICT) competence

Students develop ICT competence as they learn to use ICT effectively and appropriately when investigating, creating and communicating ideas and information at school, at home, at work and in their communities.

ICT competence is evident in science, particularly in Science Inquiry Skills. Information technologies are used to research science concepts and applications; digital technologies such as logging and spreadsheet software are used to collect, analyse and report on data. ICT enables students to use and analyse results efficiently and develop valid conclusions, and also allows access to other potential areas for investigation. Digital aids such as animations and simulations provide opportunities to test predictions that cannot be investigated through practical experiments in the classroom and may enhance students’ understanding and engagement with science. Communication technologies facilitate a collaborative approach among students that models the methods of contemporary science and offers opportunities for the communication and sharing of students’ ideas and results both within and beyond the classroom.

Critical and creative thinking

Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them when seeking new pathways or solutions. In learning to think broadly and deeply students learn to use reason and imagination to direct their thinking for different purposes. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and innovation.

Critical and creative thinking are embedded in a range of skills taught in science, including the ability to pose questions, make predictions, speculate, solve problems through investigation, make evidence-based decisions, analyse and evaluate evidence and summarise information. Students are encouraged to develop their own understanding of concepts based on active inquiry. This involves planning and conducting practical investigations, as well as selecting appropriate information from secondary sources and evaluating the sources of information to formulate conclusions. Students also learn to evaluate claims based on science and distinguish science from non-science.

Creative thinking enables the development of ideas that are new to the individual, and this is intrinsic to the development of scientific understanding. Students are taught skills that enable them to develop creative questions, to speculate, to think in new ways about observations of the world, and to suggest novel solutions to science-based problems. By their nature, science understandings change over time. The ability to be flexible and open-minded will be developed as students’ own understanding of concepts changes and develops as they actively acquire an increasingly scientifically informed view of their world. Through the use of critical and creative thinking, students develop a capacity to control their own learning.

Ethical behaviour

Students develop ethical behaviour as they learn to understand and act in accordance with ethical principles. This includes understanding the role of ethical principles, values and virtues in human life; acting with moral integrity; acting with regard for others; and having a desire and capacity to work for the common good.

Ethical behaviour is relevant to experimental science and the use of scientific information. Students explore what integrity means in science, and investigate and apply ethical guidelines in the gathering of evidence, including considering the implications of their investigation on others, on the environment and on other living organisms. Students are taught to evaluate claims based on science, enabling them to make reasoned judgments about a range of social, environmental and personal issues. Students also consider the ethical implications of various applications of science.
Personal and social competence

Students develop personal and social competence as they learn to understand and manage themselves, their relationships, lives, work and learning more effectively. This involves students recognising and regulating their emotions, developing concern for and understanding of others, establishing positive relationships, making responsible decisions, working effectively in teams and handling challenging situations constructively.

Self-management skills are built into the scientific inquiry process, in planning effectively, following procedures and working safely. These skills become more important in later years as students are required to work more independently.

Teamwork is an important aspect of science. From the early years, students work together, sharing ideas and discussing their work. They learn that scientists often work in teams made up of people with different expertise. This collaborative method of inquiry is used in their own learning.

Students also use their scientific knowledge to make informed choices about issues that impact their lives and consider the application of science to meet a range of personal and social needs.

Intercultural understanding

Students develop intercultural understanding as they learn to understand themselves in relation to others. This involves students valuing their own cultures and beliefs and those of others, and engaging with people of diverse cultures in ways that recognise commonalities and differences, create connections and cultivate respect between people.

There are opportunities within science to develop intercultural understanding, particularly in relation to Science as a Human Endeavour; in the application of science in a range of cultural contexts and the influence of people from a variety of cultures on the development of scientific knowledge and understanding.

Cross-curriculum priorities

There are three cross curriculum priorities in the Australian Curriculum:

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

The cross curriculum priorities are embedded in the curriculum and will have a strong but varying presence depending on their relevance to each of the learning areas.

Aboriginal and Torres Strait Islander histories and cultures

Aboriginal and Torres Strait Islander communities are strong, rich and diverse. Aboriginal and Torres Strait Islander Identity is central to this priority and is intrinsically linked to living, learning Aboriginal and Torres Strait Islander communities, deep knowledge traditions and holistic world view.

A conceptual framework based on Aboriginal and Torres Strait Islander Peoples’ unique sense of Identity has been developed as a structural tool for the embedding of Aboriginal and Torres Strait Islander histories and cultures within the Australian curriculum. This sense of Identity is approached through the interconnected aspects of Country/Place, People and Culture. Embracing these elements enhances all areas of the curriculum.

The Aboriginal and Torres Strait Islander priority provides opportunities for all learners to deepen their knowledge of Australia by engaging with the world’s oldest continuous living cultures. This knowledge and understanding will enrich their ability to participate positively in the ongoing development of Australia.
The Australian Curriculum: science values Aboriginal and Torres Strait Islander histories and cultures. It acknowledges that Aboriginal and Torres Strait Islander Peoples have longstanding scientific knowledge traditions.

Students will have opportunities to learn that Aboriginal and Torres Strait Islander Peoples have developed knowledge about the world through observation, using all the senses; through prediction and hypothesis; through testing (trial and error); and through making generalisations within specific contexts. These scientific methods have been practised and transmitted from one generation to the next. Students will develop an understanding that Aboriginal and Torres Strait Islander Peoples have particular ways of knowing the world and continue to be innovative in providing significant contributions to development in science. They will investigate examples of Aboriginal and Torres Strait Islander science and the ways traditional knowledge and western scientific knowledge can be complementary.

**Asia and Australia’s engagement with Asia**

The Asia and Australia’s engagement with Asia priority provides a regional context for learning in all areas of the curriculum. China, India and other Asian nations are growing rapidly and the power and influence they have in all areas of global endeavour is extensive. An understanding of Asia underpins the capacity of Australian students to be active and informed citizens working together to build harmonious local, regional and global communities, and build Australia’s social, intellectual and creative capital.

This priority is concerned with Asia literacy for all Australian students. Asia literacy develops knowledge, skills and understanding about the histories, geographies, cultures, arts, literatures and languages of the diverse countries of our region. It fosters social inclusion in the Australian community. It enables students to communicate and engage with the peoples of Asia so they can effectively live, work and learn in the region. Australia now has extensive engagement with Asia in areas such as trade, investment, immigration, tourism, education and humanitarian assistance and this engagement is vital to the prosperity of all Australians.

The Australian Curriculum: science provides opportunities for students to appreciate that the Asia region plays an important leadership role in addressing significant contemporary global challenges related to climate change, biodiversity and genetic engineering. Students recognise that people from the Asia region have made and continue to make significant contributions to the application of technology in industry and everyday life. This learning area allows students to understand that the Asia region includes diverse environments and to appreciate that interaction between human activity and these environments continues to influence the region, including Australia, and has significance for the rest of the world.

**Sustainability**

Sustainability addresses the ongoing capacity of Earth to maintain all life.

Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are both individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.

Education for sustainability develops the knowledge, skills and values necessary for people to act in ways that contribute to more sustainable patterns of living. It is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through action that recognises the relevance and interdependence of environmental, social, cultural and economic considerations.

The Australian Curriculum: science provides content that, over the years of schooling, enables students to build an understanding of the biosphere as a dynamic system providing conditions that sustain life on Earth. They gain an appreciation that all life is connected through ecosystems and humans depend on ecosystems...
for their wellbeing. This understanding is based on the view that humans are part of the ecosystems that comprise the biosphere, and that human activity impacts on ecosystems and therefore on biosphere processes and biosphere sustainability.

Scientific understanding and science inquiry processes help students to appreciate how people forecast change and plan the actions necessary to shape more sustainable futures, including the design, construction and/or management of the physical and social environment. By providing a focus on change in systems, its causes and consequences, the sustainability priority assists students to relate learning across the strands of science.

Links to the other learning areas

Learning in science involves the use of knowledge and skills learnt in other areas, particularly in English, mathematics and history.

English

There is strong support in schools across Australia for linking learning in science with learning literacy skills. The science tradition places a high priority on accurate communication. The Australian Curriculum: Science is supported by and in turn reinforces the learning of literacy skills. Students need to describe objects and events, interpret descriptions, read and give instructions, explain ideas to others, write reports and procedural accounts, participate in group discussions and provide expositions.

Mathematics

The science curriculum closely complements that of mathematics. In science, students process data using simple tables, lists, picture graphs, simple column graphs and line graphs. In the mathematics curriculum they will be developing these skills at similar year levels. In mathematics, students' data analysis skills will develop to include scatter plots, linear graphs and the gradient of graphs. This will enhance their ability to analyse patterns and trends in data as part of scientific investigations.

Students develop their use of metric units in both the mathematics and science curriculums. The ability to convert between common metric units of length and mass and their use of decimal notation in mathematics will enable them to represent and compare data in meaningful ways in science. In mathematics, students learn simple statistical methods and these skills will enable students to apply quantitative analysis of data as required in science. The concept of outliers, learnt in mathematics, will help them to identify inconsistencies in quantitative data in science.

When considering phenomena and systems at a vast range of scales in science, students use their mathematical knowledge of timescales and intervals. They use scientific notation in the representation of these values as required. Students' mathematical ability to solve problems involving linear equations can be utilised in science when investigating quantitative relationships.

History

History provides another avenue to the understanding of how science works. Science and its discoveries are a source of historical facts and artefacts. The strand Science as a Human Endeavour is an important link to historical developments. It is important that students learn that science and technology have grown through the gradual accumulation of knowledge over many centuries; that all sorts of people, including people like themselves, use and contribute to science. Historical studies of science and technology in the early Egyptian, Greek, Chinese, Arabic and Aboriginal and Torres Strait Islander cultures extending to modern times will help students understand the contributions of people from around the world.
The Australian Curriculum: Science takes account of what students have learnt in these areas so that their science learning is supported and their learning in other areas enhanced.

Implications for teaching, assessment and reporting

The science curriculum emphasises inquiry-based teaching and learning. A balanced and engaging approach to teaching will typically involve context, exploration, explanation and application. This requires a context or point of relevance through which students can make sense of the ideas they are learning. Opportunities for student-led open inquiry should also be provided within each phase of schooling.

Assessment encourages longer-term understanding and provides detailed diagnostic information. It shows what students know, understand and can demonstrate. It also shows what they need to do to improve. In particular, **Science Inquiry Skills** and **Science as a Human Endeavour** require a variety of assessment approaches.

Teachers use the Australian Curriculum content and achievement standards first to identify current levels of learning and achievement and then to select the most appropriate content (possibly from across several year levels) to teach individual students and/or groups of students. This takes into account that in each class there may be students with a range of prior achievement (below, at and above the year level expectations) and that teachers plan to build on current learning.

Teachers also use the achievement standards, at the end of a period of teaching, to make on-balance judgments about the quality of learning demonstrated by the students – that is, whether they have achieved below, at or above the standard. To make these judgments, teachers draw on assessment data that they have collected as evidence during the course of the teaching period. These judgments about the quality of learning are one source of feedback to students and their parents and inform formal reporting processes.

If a teacher judges that a student’s achievement is below the expected standard, this suggests that the teaching programs and practice should be reviewed to better assist individual students in their learning in the future. It also suggests that additional support and targeted teaching will be needed to ensure that the student does not fall behind.

Assessment of the Australian Curriculum takes place in different levels and for different purposes, including:

- ongoing formative assessment within classrooms for the purposes of monitoring learning and providing feedback, to teachers to inform their teaching and for students to inform their learning
- summative assessment for the purposes of twice-yearly reporting by schools to parents and carers on the progress and achievement of students
- annual testing of Years 3, 5, 7 and 9 students’ levels of achievement in aspects of literacy and numeracy, conducted as part of the National Assessment Program – Literacy and Numeracy (NAPLAN)
- periodic sample testing of specific learning areas within the Australian Curriculum as part of the National Assessment Program (NAP).
Foundation Year

The science content includes the three strands of Science Understanding, Science Inquiry Skills and Science as a Human Endeavour. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching/learning programs are decisions to be made by the teacher.

From Foundation to Year 2, students learn that observations can be organised to reveal patterns, and that these patterns can be used to make predictions about phenomena. In Foundation, students observe and describe the behaviours and properties of everyday objects, materials and living things. They explore change in the world around them, including changes that impact on them, such as the weather, and changes they can effect, such as making things move or change shape. They learn that seeking answers to questions and making observations is a core part of science and use their senses to gather different types of information.

<table>
<thead>
<tr>
<th>Science Understanding</th>
<th>Science as a Human Endeavour</th>
<th>Science Inquiry Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biological sciences</strong></td>
<td>Science involves exploring and observing the world using the senses (ACSHE013)</td>
<td>Questioning and predicting</td>
</tr>
<tr>
<td>Living things have basic needs, including food and water (ACSSU002)</td>
<td>Respond to questions about familiar objects and events (ACSIS014)</td>
<td>Planning and conducting</td>
</tr>
<tr>
<td><strong>Chemical sciences</strong></td>
<td></td>
<td>Explore and make observations by using the senses (ACSIS011)</td>
</tr>
<tr>
<td>Objects are made of materials that have observable properties (ACSSU003)</td>
<td></td>
<td>Processing and analysing data and information</td>
</tr>
<tr>
<td><strong>Earth and space sciences</strong></td>
<td></td>
<td>Engage in discussions about observations and use methods such as drawing to represent ideas (ACSIS233)</td>
</tr>
<tr>
<td>Daily and seasonal changes in our environment, including the weather, affect everyday life (ACSSU004)</td>
<td></td>
<td>Communicating</td>
</tr>
<tr>
<td><strong>Physical sciences</strong></td>
<td></td>
<td>Share observations and ideas (ACSIS012)</td>
</tr>
<tr>
<td>The way objects move depends on a variety of factors, including their size and shape (ACSSU005)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Foundation Year achievement standard**

By the end of the Foundation year students make observations of familiar objects and materials and explore their properties and behaviour. They suggest how the environment affects them and other living things.
Adaptation

a physical or behavioural characteristic that is inherited and which result in an individual being more likely to survive and reproduce in its environment

Analyse

consider in detail for the purpose of finding meaning or relationships, and identifying patterns, similarities and differences

Characteristic

distinguishing aspect (including features and behaviours) of an object material, living thing or event

Classify

arrange into named categories in order to sort, group or identify

Collaborate

work with others to perform a specific task

Conclusion

a judgement based on evidence

Contemporary science

new and emerging science research and issues of current relevance and interest

Continuous data

quantitative data with a potentially infinite number of possible values along a continuum

Controlled variable

a variable that is kept constant (or changed in constant ways) during an investigation

Conventions

agreed methods of representing concepts, information and behaviours

Data

the plural of datum; the measurement of an attribute, e.g. the volume of gas or the type of rubber. This does not necessarily mean a single measurement: it may be the result of averaging several repeated measurements and these could be quantitative or qualitative
Dependent variable

a variable that changes in response to changes to the independent variable in an investigation

Design

plan and evaluate the construction of a product or process, including an investigation

Digital technologies

technology systems that handle digital data including hardware and software for specific purposes

Discrete data

quantitative data consisting of a number of separate values where intermediate values are not permissible

Environment

all the surroundings, both living and non-living

Evaluate

examine and judge the merit or significance of something, including processes, events, descriptions, relationships or data

Evidence

in science, evidence is data that is considered reliable and valid and which can be used to support a particular idea, conclusion or decision. Evidence gives weight or value to data by considering its credibility, acceptance, bias, status, appropriateness and reasonableness

Experimental (investigation)

an investigation that involves carrying out a practical activity

Fair test

an investigation where one variable (the independent variable) is changed and all other conditions (controlled variables) are kept the same; what is measured or observed is referred to as the dependent variable

Field work

observational research undertaken in the normal environment of the subject of the study

Force

a push or pull between objects which may cause one or both objects to change speed and/or the direction of their motion (i.e. accelerate) or change their shape. Scientists identify four fundamental forces: gravitational, electromagnetic (involving both electrostatic and magnetic forces), weak nuclear forces and strong nuclear forces. All interactions between matter can be explained as the action of one or a combination of the four fundamental forces
Formal measurement
measurement based on an agreed standard unit (e.g. metre, second, gram)

Graph
a visual representation of the relationship between quantities plotted with reference to a set of axes

Guided investigation
an investigation partly directed by the teacher

Hypothesis
a tentative idea, based on observation, that can be supported or refuted by experiment

Independent variable
the variable that is changed in an investigation to see what effect it has on the dependent variable

Informal measurement
measurement which is not based on any agreed standard unit (e.g. hand spans, paces, cups)

Investigation
a scientific process of answering a question, exploring an idea or solving a problem that requires activities such as planning a course of action, collecting data, interpreting data, reaching a conclusion and communicating these activities

Law
statement of a relationship based on available evidence

Local environment
surroundings that can be considered as proximal or familiar to the subject of investigation (e.g. an organism, mountain, student)

Material
a substance with particular qualities or that is used for specific purposes

Matter
a physical substance; anything that has mass and occupies space

Model
a representation that describes, simplifies, clarifies or provides an explanation of the workings, structure or relationships within an object, system or idea
Multi-modal text

text that combines two or more communication modes e.g. print text, image and spoken word as in film or computer presentations

Natural materials

any product or physical matter that comes from plants, animals, or Earth and has undergone very little modification by humans e.g. minerals and the metals that can be extracted from them (without further modification) are considered natural materials

Observable

that which can be seen, heard, felt, tasted or smelled either directly by an individual or indirectly by a measuring device e.g. a ruler, camera or thermometer

Pattern

repeated occurrences or sequences

Primary source

in science, a primary source is information created by the person or persons directly involved in a study or observing an event

Processed materials

products of physical matter that have been modified from natural materials by human intervention or that do not occur at all in the natural environment, but have been designed and manufactured to fulfil a particular purpose

Property

attribute of an object or material, normally used to describe attributes common to a group

Qualitative data

information that is not numerical in nature

Quantitative data

numerical information

Reflect on

think carefully about something, such as past experiences, activities or events

Relationship

the connection or association between ideas or between components of systems and structures

Reliable data
data that has been judged to have a high level of reliability; reliability is the degree to which an assessment instrument or protocol consistently and repeatedly measures an attribute achieving similar results for the same population.

**Report**

a written account of an investigation.

**Research**

to locate, gather, record and analyse information in order to develop understanding.

**Scientific language**

terminology that has specific meaning in a scientific context.

**Scientific literacy**

the ability to use scientific knowledge, understanding, and inquiry skills to identify questions, acquire new knowledge, explain science phenomena, solve problems and draw evidence-based conclusions in making sense of the world, and to recognise how understandings of the nature, development, use and influence of science help us make responsible decisions and shape our interpretations of information.

**Scientist**

a person who works within a recognised field of science.

**Secondary source**

information that has been compiled from primary sources by a person or persons not directly involved in the original study or event.

**Senses**

hearing, sight, smell, touch and taste.

**Simulation**

a representation of a process, event or system which imitates the real situation.

**Survey**

an investigation method involving asking questions of a range of respondents.

**Sustainable**

supports the needs of the present without compromising the ability of future generations to support their needs.

**System**

a group of interacting objects, materials or processes that form an integrated whole.
Table

an arrangement of data or ideas in rows and columns

Technology

the development of products, services, systems and environments, using various types of knowledge, to meet human needs and wants

Theory

an explanation of a set of observations that is based on one or more proven hypotheses which has been accepted through consensus by a group of scientists

Tools

equipment used to make a task easier

Trend

general direction in which something is changing

Validity

the extent to which tests measure what was intended; the extent to which data, inferences and actions produced from tests and other processes are accurate

Variable

a factor that can be changed, kept the same or measured in an investigation e.g. time, distance, light, temperature
<table>
<thead>
<tr>
<th>Science Understanding</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological sciences</td>
<td>Living things have basic needs, including food and water</td>
<td>Living things have a variety of external features and have offspring similar to themselves</td>
<td>Living things can be grouped on the basis of observable features and can be distinguished from non-living things</td>
<td>Living things have life cycles</td>
<td>Living things, including plants and animals, depend on each other and the environment to survive</td>
<td>The growth and survival of living things are affected by the physical conditions of their environment</td>
<td></td>
</tr>
<tr>
<td>Chemical sciences</td>
<td>Objects are made of materials that have observable properties</td>
<td>Everyday materials can be physically changed in a variety of ways</td>
<td>Different materials can be combined, including by mixing, for a particular purpose</td>
<td>A change of state between solid and liquid can be caused by adding or removing heat</td>
<td>Natural and processed materials have a range of physical properties; these properties can influence their use</td>
<td>Solids, liquids and gases have different observable properties and behave in different ways</td>
<td>Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting</td>
</tr>
<tr>
<td>Earth and space sciences</td>
<td>Daily and seasonal changes in our environment, including the weather, affect everyday life</td>
<td>Observable changes occur in the sky and landscape</td>
<td>Earth’s resources, including water, are used in a variety of ways</td>
<td>Earth’s rotation on its axis causes regular changes, including night and day</td>
<td>Earth’s surface changes over time as a result of natural processes and human activity</td>
<td>The Earth is part of a system of planets orbiting around a star (the sun)</td>
<td>Sudden geological changes or extreme weather conditions can affect Earth’s surface</td>
</tr>
<tr>
<td>Physical sciences</td>
<td>The way objects move depends on a variety of factors, including their size and shape</td>
<td>Light and sound are produced by a range of sources and can be sensed</td>
<td>A push or a pull affects how an object moves or changes shape</td>
<td>Heat can be produced in many ways and can move from one object to another</td>
<td>Forces can be exerted by one object on another through direct contact or from a distance</td>
<td>Light from a source forms shadows and can be absorbed, reflected and refracted</td>
<td>Electrical circuits provide a means of transferring and transforming electricity</td>
</tr>
<tr>
<td>Science Understanding</td>
<td>Year 5</td>
<td>Year 6</td>
<td>Year 7</td>
<td>Year 8</td>
<td>Year 9</td>
<td>Year 10</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td><strong>Biological sciences</strong></td>
<td>Living things have structural features and adaptations that help them to survive in their environment</td>
<td>The growth and survival of living things are affected by the physical conditions of their environment</td>
<td>There are differences within and between groups of organisms; classification helps organise this diversity</td>
<td>Cells are the basic units of living things and have specialised structures and functions</td>
<td>Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment</td>
<td>The transmission of heritable characteristics from one generation to the next involves DNA and genes</td>
<td></td>
</tr>
<tr>
<td><strong>Chemical sciences</strong></td>
<td>Solids, liquids and gases have different observable properties and behave in different ways</td>
<td>Changes to materials can be reversible, such as melting, freezing, evaporating; or irreversible, such as burning and rusting</td>
<td>Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques</td>
<td>The properties of the different states of matter can be explained in terms of the motion and arrangement of particles</td>
<td>All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms</td>
<td>The atomic structure and properties of elements are used to organise them in the Periodic Table</td>
<td></td>
</tr>
<tr>
<td><strong>Earth and space sciences</strong></td>
<td>The Earth is part of a system of planets orbiting around a star (the sun)</td>
<td>Sudden geological changes or extreme weather conditions can affect Earth’s surface</td>
<td>Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon</td>
<td>Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales</td>
<td>The theory of plate tectonics explains global patterns of geological activity and continental movement</td>
<td>The universe contains features including galaxies, stars and solar systems and the Big Bang theory can be used to explain the origin the universe</td>
<td></td>
</tr>
<tr>
<td><strong>Physical sciences</strong></td>
<td>Light from a source forms shadows and can be absorbed, reflected and refracted</td>
<td>Electrical circuits provide a means of transferring and transforming electricity</td>
<td>Change to an object’s motion is caused by unbalanced forces acting on the object</td>
<td>Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems</td>
<td>Forms of energy can be transferred in a variety of ways through different mediums</td>
<td>Energy conservation in a system can be explained by describing energy transfers and transformations</td>
<td></td>
</tr>
<tr>
<td><strong>Science Understanding</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence</td>
<td>The motion of objects can be described and predicted using the laws of physics</td>
</tr>
</tbody>
</table>
# Science Scope and Sequence: Foundation to Year 6

<table>
<thead>
<tr>
<th>Science Inquiry Skills</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nature and development of science</strong></td>
<td>Science involves exploring and observing the world using the senses</td>
<td>Science involves asking questions about, and describing changes in, objects and events</td>
<td>Science involves making predictions and describing patterns and relationships</td>
<td>Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena</td>
<td>Important contributions to the advancement of science have been made by people from a range of cultures</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use and influence of science</strong></td>
<td>People use science in their daily lives, including when caring for their environment and living things</td>
<td>Science knowledge helps people to understand the effect of their actions</td>
<td>Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives</td>
<td>Scientific knowledge is used to inform personal and community decisions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Questioning and predicting</strong></td>
<td>Respond to questions about familiar objects and events</td>
<td>Respond to and pose questions, and make predictions about familiar objects and events</td>
<td>With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge</td>
<td>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Planning and conducting</strong></td>
<td>Explore and make observations by using the senses</td>
<td>Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources</td>
<td>Suggest ways to plan and conduct investigations to find answers to questions</td>
<td>With guidance, select appropriate investigation methods to answer questions or solve problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Processing and analysing data and information</strong></td>
<td>Engage in discussions about observations and use methods such as drawing to represent ideas</td>
<td>Use a range of methods to sort information, including drawings and provided tables</td>
<td>Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends</td>
<td>Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluating</strong></td>
<td>Compare observations with those of others</td>
<td>Reflect on the investigation, including whether a test was fair or not</td>
<td>Compare results with predictions, suggesting possible reasons for findings</td>
<td>Use equipment and materials safely, identifying potential risks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communicating</strong></td>
<td>Share observations and ideas</td>
<td>Represent and communicate observations and ideas in a variety of ways such as oral and written language, drawing and role play</td>
<td>Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports</td>
<td>Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Science as a Human Endeavour**

- **Science involves exploring and observing the world using the senses**
- **Science involves asking questions about, and describing changes in, objects and events**
- **Science involves making predictions and describing patterns and relationships**
- **Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena**

- **Important contributions to the advancement of science have been made by people from a range of cultures**
- **People use science in their daily lives, including when caring for their environment and living things**
- **Science knowledge helps people to understand the effect of their actions**
- **Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives**
- **Scientific knowledge is used to inform personal and community decisions**

---

**Version 1.2**

8th March 2011
<table>
<thead>
<tr>
<th>Science Inquiry Skills</th>
<th>Science as a Human Endeavour</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Science Scope and Sequence: Year 5 to Year 10</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nature and development of science</strong></td>
<td>Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Important contributions to the advancement of science have been made by people from a range of cultures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use and influence of science</strong></td>
<td>Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples’ lives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific knowledge is used to inform personal and community decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Questioning and predicting</strong></td>
<td>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Planning and conducting</strong></td>
<td>With guidance, select appropriate investigation methods to answer questions or solve problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use equipment and materials safely, identifying potential risks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Processing and analysing data and information</strong></td>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compare data with predictions and use as evidence in developing explanations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Evaluating</strong></td>
<td>Suggest improvements to the methods used to investigate a question or solve a problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communicating</strong></td>
<td>Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people’s understanding of the world</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Science knowledge can develop through collaboration and connecting ideas across the disciplines of science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>People use understanding and skills from across the disciplines of science in their occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The values and needs of contemporary society can influence the focus of scientific research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use knowledge of scientific concepts to draw conclusions that are consistent with evidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Systematically and accurately collect and record data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construct and use a range of representations, including graphs, key concepts and models, to represent and analyse patterns or relationships, including using digital technologies as appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Summarise data, from students’ own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Version 1.2
8th March 2011
Rationale and Aims

Rationale

History is a disciplined process of inquiry into the past that develops students’ curiosity and imagination. Awareness of history is an essential characteristic of any society, and historical knowledge is fundamental to understanding ourselves and others. It promotes the understanding of societies, events, movements and developments that have shaped humanity from earliest times. It helps students appreciate how the world and its people have changed, as well as the significant continuities that exist to the present day. History, as a discipline, has its own methods and procedures which make it different from other ways of understanding human experience. The study of history is based on evidence derived from remains of the past. It is interpretative by nature, promotes debate and encourages thinking about human values, including present and future challenges. The process of historical inquiry develops transferable skills, such as the ability to ask relevant questions; critically analyse and interpret sources; consider context; respect and explain different perspectives; develop and substantiate interpretations, and communicate effectively.

The curriculum generally takes a world history approach within which the history of Australia is taught. It does this in order to equip students for the world (local, regional and global) in which they live. An understanding of world history enhances students’ appreciation of Australian history. It enables them to develop an understanding of the past and present experiences of Aboriginal and Torres Strait Islander peoples, their identity and the continuing value of their culture. It also helps students to appreciate Australia’s distinctive path of social, economic and political development, its position in the Asia-Pacific region, and its global interrelationships. This knowledge and understanding is essential for informed and active participation in Australia’s diverse society.

Aims

The Australian Curriculum: History aims to ensure that students develop:

- interest in, and enjoyment of, historical study for lifelong learning and work, including their capacity and willingness to be informed and active citizens
- knowledge, understanding and appreciation of the past and the forces that shape societies, including Australian society
- understanding and use of historical concepts, such as evidence, continuity and change, cause and effect, perspectives, empathy, significance and contestability
- capacity to undertake historical inquiry, including skills in the analysis and use of sources, and in explanation and communication.
Content Structure

The Australian Curriculum: History is organised into two interrelated strands: Historical Knowledge and Understanding and Historical Skills.

Historical Knowledge and Understanding

This strand includes personal, family, local, state or territory, national, regional and world history. There is an emphasis on Australian history in its world history context at Foundation to Year 10 and a focus on world history in the senior secondary years. The strand includes a study of societies, events, movements and developments that have shaped world history from the time of the earliest human communities to the present day.

This strand explores key concepts for developing historical understanding, such as: evidence, continuity and change, cause and effect, significance, perspectives, empathy and contestability. These concepts may be investigated within a particular historical context to facilitate an understanding of the past and to provide a focus for historical inquiries.

Historical Skills

This strand promotes skills used in the process of historical inquiry: chronology, terms and concepts; historical questions and research; the analysis and use of sources; perspectives and interpretations; explanation and communication. Within this strand there is an increasing emphasis on historical interpretation and the use of evidence.

Relationship between the strands

The two strands are integrated in the development of a teaching and learning program. The Historical Knowledge and Understanding strand provides the contexts through which particular skills are to be developed. Historical Skills have been described in bands of schooling (over three years at Foundation to Year 2 and at two-year intervals in subsequent year levels). The sequencing and description of the Historical Skills strand, in bands of schooling will assist in multi-age programming by providing a common focus for the teaching and learning of content in the Historical Knowledge and Understanding strand.

Inquiry questions

Each year level from Foundation to Year 10 includes key inquiry questions that provide a framework for developing students’ historical knowledge, understanding and skills.

Overviews

Historical Knowledge and Understanding includes an overview of the historical period to be covered in each year level 7–10. The overview is not intended to be taught in depth; it will constitute approximately 10% of the total teaching time for the year. The overview content identifies important features of the historical period at the relevant year level and provides an expansive chronology that helps students understand broad patterns of historical change.

Depth studies

In addition to the overview, Historical Knowledge and Understanding includes three depth-studies for the historical period at each year level 7–10. For each depth study, there are up to three electives that focus on a particular society, event, movement or development. It is expected that ONE elective is studied in detail, which will constitute approximately 30% of the total teaching time for the year. The content in each elective is
designed to allow detailed study of specific aspects of the historical period. The order and detail in which content is taught is a programming decision. Content may be integrated in ways appropriate to the specific local context; and it may be integrated with the content of other depth-study electives.

Relationship between overviews and depth studies

As part of a teaching and learning program, the depth-study content at each year level 7-10 may be integrated with the overview content. The overview provides the broader context for the teaching of depth-study content. This means that the overview content can provide students with an introduction to the historical period; it can make the links to and between the depth studies, and it can consolidate understanding through a review of the period.

Concepts for developing historical understanding

The Australian Curriculum: History includes concepts for developing historical understanding, such as: evidence, continuity and change, cause and effect, perspectives, empathy, significance and contestability.

In Foundation to Year 2, there is a particular emphasis on the concepts of continuity and change, cause and effect, and significance within the context of personal, family and local history. These concepts continue to be a focus of study in Years 3-6 with the inclusion of content related to perspectives challenging the notion that the past is a given and is unproblematic. In Years 7-10 the concepts of evidence and contestability are introduced to further develop student’s understanding of the nature of historical interpretation and argument.

Year level descriptions

Year level descriptions provide an overview of the content that is being studied at that year level. They also emphasise the interrelated nature of the two strands and the expectation that planning will involve integration of content from across the strands.

Content descriptions

The Australian Curriculum: History includes content descriptions at each year level. These set out the knowledge, understanding and skills that teachers are expected to teach and students are expected to learn. However they do not prescribe approaches to teaching. The content descriptions have been written to ensure that learning is appropriately ordered and that unnecessary repetition is avoided. However, a concept or skill introduced at one year level may be revisited, strengthened and extended at later year levels as needed.

Content elaborations

Content elaborations are provided for Foundation to Year 10 to illustrate and exemplify content and to assist teachers in developing a common understanding of the content descriptions. They are not intended to be comprehensive content points that all students need to be taught.

Glossary

A glossary is provided to support a common understanding of key terms and concepts in the content descriptions.

History across Foundation to Year 12

Complementing the year by year description of the curriculum, this document provides advice across the four year groupings on the nature of learners and the relevant curriculum:
• Foundation–Year 2: typically students from 5 to 8 years of age
• Years 3–6: typically students from 8 to 12 years of age
• Years 7–10: typically students from 12 to 15 years of age
• Senior secondary years: typically students from 15 to 18 years of age.

**Foundation–Year 2**

Curriculum focus: Awareness of family history and community heritage

Through experimentation, practice and play, children in these years use their interest in people and how things work to make sense of their world.

This history curriculum enables students in Foundation to Year 2 to learn about their own social context of family, friends and school, and the significance of the past. They engage with the remains of the past; develop a concept of time as present, past and future, and through role play use their imagination to speculate about the lives of others in the past.

**Years 3–6**

Curriculum focus: Local/national history and use of a range of sources

Students draw on their growing experience of family, school and the wider community to develop their understanding of the world and their relationship to others past and present. In these years, students begin to better understand and appreciate different points of view and to develop an awareness of justice and fair play.

This history curriculum seeks to target the distinct nature of learners in Years 3–6 by including content about Aboriginal and Torres Strait Islander societies, democratic concepts and rights, and the diversity of Australian society.

In this way, students develop an understanding of the heritage of their community and of their ability to contribute to it. They become aware of similarities and differences between people and become more aware of diversity in the wider community as well as the concept of change over time.

**Years 7–10**

Curriculum focus: World and Australian history, the analysis and use of sources and historical interpretation

As students move into adolescence, they undergo a range of important physical, cognitive, emotional and social changes. Students often begin to question established conventions, practices and values. Their interests extend well beyond their own communities and they begin to develop concerns about wider issues.

Students in this age range increasingly look for and value learning that is perceived to be relevant, is consistent with personal goals, and/or leads to important outcomes. Increasingly they are able to work with more abstract concepts and are keen to explore the nature of evidence and the contestability of ideas.

Through this history curriculum, students in Years 7–10 pursue broad questions such as: How do we know about the ancient past? What key beliefs and values emerged and how did they influence societies? How did the nature of global conflict change during the twentieth century? This curriculum also provides opportunities to engage students through contexts that are meaningful and relevant to them and through past and present debates.

**Senior secondary years**

Curriculum focus: World history, the evaluation of sources and historical debates

The senior secondary history curriculum consists of two courses: Ancient History and Modern History. These courses offer more opportunities for specialisation in learning, through electives.
In this curriculum, students further develop their capacity for historical inquiry and their ability to critically evaluate historians’ claims by examining the sources on which those claims are based.

**Curriculum structure: Foundation–Year 6 and Years 7–10**

The curriculum structure at each year level (F–6) includes a description of the content focus and key inquiry questions. The curriculum provides opportunities for the content to be taught using specific local contexts.

The curriculum structure at each year level (7–10) includes a description of the content focus, key inquiry questions, overview of the historical period, and depth studies. The overview is designed to introduce the broad content and contexts for study. In addition, for Years 7–10 there are three depth studies that provide an opportunity to investigate aspects in greater depth and thus provide scope for the development of historical knowledge, understanding and skills. The curriculum provides opportunities for the content to be taught using specific local contexts. The study of history in Years 7–10 consists of four historical periods:

- the Year 7 curriculum focuses on history from the time of the earliest human communities to the end of the ancient period (approximately 60,000 BCE – c.650 CE); a period defined by the development of cultural practices and organised societies.
- the Year 8 curriculum focuses on history from the end of the ancient period to the beginning of the modern period (c.650 – 1750); a span of human history marked by significant economic, religious and political change.
- the Year 9 curriculum focuses on the making of the modern world and Australia from 1750 to 1918; an era of industrialism, nationalism and imperialism.
- the Year 10 curriculum focuses on the history of the modern world and Australia from 1918 to the present; The twentieth century was an important period in Australia’s social, cultural, economic and political development.

The curriculum structure for the senior secondary courses in Ancient History and Modern History consists of four units for each course.

**Achievement Standards**

Across Foundation to Year 10, achievement standards indicate the quality of learning that students should typically demonstrate by a particular point in their schooling. Achievement standards comprise a written description and student work samples.

An achievement standard describes the quality of learning (the extent of knowledge, the depth of understanding, and the sophistication of skills) that would indicate the student is well placed to commence the learning required at the next level of achievement.

The sequence of achievement standards across Foundation to Year 10 describes progress in the learning area. This sequence provides teachers with a framework of growth and development in the learning area.

Student work samples play a key role in communicating expectations described in the achievement standards. Each work sample includes the relevant assessment task, the student’s response, and annotations identifying the quality of learning evident in the student’s response in relation to relevant parts of the achievement standard.

Together, the description of the achievement standard and the accompanying set of annotated work samples help teachers to make judgments about whether students have achieved the standard.
Diversity of Learners

The Australian Curriculum has been developed to ensure that curriculum content and achievement standards establish high expectations for all students. Every student is entitled to enriching learning experiences across all areas of the curriculum. Students in Australian classrooms have multiple, diverse and changing needs that are shaped by individual learning histories and abilities as well as cultural, language backgrounds and socio-economic factors.

Special education needs

The objectives of the Australian Curriculum are the same for all students. The curriculum offers flexibility for teachers to tailor their teaching in ways that provide rigorous, relevant and engaging learning and assessment opportunities for students with special education needs.

Most students with special education needs can engage with the curriculum provided the necessary adjustments are made to the complexity of the curriculum content and to the means through which students demonstrate their knowledge, understanding and skills.

For some learners, making adjustments to instructional processes and to assessment strategies enables students to achieve educational standards commensurate with their peers.

For other students, teachers will need to make appropriate adjustments to the complexity of the curriculum content, focusing instruction on content different to that taught to others in their age group. It follows that adjustments will also need to be made to how the student’s progress is monitored, assessed and reported.

For a small percentage of students, the Foundation to Year 10 curriculum content and achievement standards may not be appropriate nor meaningful, even with adjustments. Most of these students have a significant intellectual disability. During 2011, ACARA will develop additional curriculum content and achievement standards for this group of students in order to provide an Australian Curriculum that is inclusive of every learner.

Further guidance about how to use the curriculum with students with special education needs is available here.

English as an additional language or dialect

Many students in Australian schools are learners of English as an additional language or dialect (EAL/D). Learners of EAL/D are students whose first language is a language other than Standard Australian English and who require additional support to assist them to develop English language proficiency. While many EAL/D learners do well in school, there is a significant group of these learners who leave school without achieving their potential.

EAL/D students come from diverse backgrounds and may include:

- overseas- and Australian-born children whose first language is a language other than English
- Aboriginal and Torres Strait Islander students whose first language is an Indigenous language, including traditional languages, creoles and related varieties, or Aboriginal English.

EAL/D learners enter Australian schools at different ages and at different stages of English language learning and have various educational backgrounds in their first languages. For some, school is the only place they use English.

The aims of the Australian Curriculum: History are ultimately the same for all students. However, EAL/D learners are simultaneously learning a new language and the knowledge, understanding and skills of the history curriculum through that new language. They require additional time and support, along with informed teaching that explicitly addresses their language needs, and assessments that take into account their developing language proficiency.
A national EAL/D document is being produced that supports the Australian Curriculum. It provides a description of how language proficiency develops, and is a valuable reference for all teachers. It allows history teachers to identify the language levels of the EAL/D learners in their classrooms and to address their specific learning requirements when teaching, ensuring equity of access to the history learning area for all.

**General capabilities**

The skills, behaviours and attributes that students need to succeed in life and work in the twenty-first century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities:

- literacy
- numeracy
- competence in information and communication technology (ICT)
- critical and creative thinking
- ethical behaviour
- personal and social competence
- intercultural understanding.

Over the course of their schooling, students develop and use these general capabilities within and across learning areas and in their lives outside school. General capabilities and learning areas have a reciprocal relationship. Learning areas provide opportunities for students to develop and use general capabilities. Similarly, wherever general capabilities are made explicit in learning areas, they can enrich and deepen learning. In the Australian Curriculum: History each of the seven general capabilities is embedded (where appropriate) in the content descriptions or elaborations. There are further opportunities to develop the general capabilities through appropriate teaching activities.

**Literacy**

Students become literate as they develop the skills to learn and communicate confidently at school and to become effective individuals, community members, workers and citizens. These skills include listening, reading and viewing, writing, speaking and creating print, visual and digital materials accurately and purposefully within and across all learning areas.

The study of history, has specific language and literacy demands. These demands change in accordance with the development of historical knowledge, understanding and skills. For example, in their early years students use personal experience to relate life-stories; in upper primary they recount events focused on places and historical periods; and in junior secondary they write more formal historical accounts, using increasingly abstract concepts such as cause and effect to explain sequences of events.

**Numeracy**

Students become numerate as they develop the capacity to recognise and understand the role of mathematics in the world around them and the confidence, willingness and ability to apply mathematics to their lives in ways that are constructive and meaningful.

Knowledge and skills in numeracy are evident in specific elements of the history curriculum. Students need to organise and interpret historical events and developments and this may require analyses of data to make meaning of the past, for example to understand cause and effect, and continuity and change. This requires skills in numeracy such as the ability to represent and interpret quantitative data.

**Information and communication technology (ICT) competence**
Students develop ICT competence as they learn to use ICT effectively and appropriately when investigating, creating and communicating ideas and information at school, at home, at work and in their communities.

Competence in ICT is most evident in historical skills associated with locating, processing and communicating historical information. This includes the use of information technologies to access a growing range of digitised online materials; spreadsheets and databases for analysing evidence and historical trends; digital technologies such as word processing, publishing and presentation software to process and represent learning; communication technologies, such as wikis and blogs, to enhance students’ analytical thinking capabilities in their study of history; and online forums and videoconferencing to discuss and debate ideas.

Critical and creative thinking

Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them when seeking new pathways or solutions. In learning to think broadly and deeply students learn to use reason and imagination to direct their thinking for different purposes. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and innovation.

History develops students’ critical and creative thinking. Critical thinking is essential to the historical inquiry process. Historical inquiry requires the ability to ask questions of sources; locate and select information from sources; think critically about the usefulness and reliability of sources; develop interpretations using sources from the past that are often incomplete; and develop an argument and use evidence in support of that argument. Creative thinking is important in developing new interpretations to explain aspects of the past that are contested or not well understood. It is taught in the design of historical inquiries and in the use of different approaches to represent the past.

Ethical behaviour

Students develop ethical behaviour as they learn to understand and act in accordance with ethical principles. This includes understanding the role of ethical principles, values and virtues in human life; acting with moral integrity; acting with regard for others, and having a desire and capacity to work for the common good.

In history students critically explore the character traits, actions and motivations of people in the past, while recognising that there may have been different standards and expectations then compared to the present. Students investigate the diversity of values and principles that have influenced human affairs and that continue to be influential. Examining the nature of evidence deepens students’ understanding of ethical issues.

Personal and social competence

Students develop personal and social competence as they learn to understand and manage themselves, their relationships, lives, work and learning more effectively. This involves recognising and regulating their emotions, developing concern for and understanding of others, establishing positive relationships, making responsible decisions, working effectively in teams and handling challenging situations constructively.

In the study of history there are many opportunities in the early years of schooling to develop personal and social competence, with a focus on personal awareness, through the study of personal, family and local histories. In later years, there are opportunities to develop social awareness through the study of the relationships between individuals and diverse social groups in Australian and world history.

Intercultural understanding

Students develop intercultural understanding as they learn to understand themselves in relation to others. This involves students valuing their own cultures and beliefs and those of others, and engaging with people of diverse cultures in ways that recognise commonalities and differences, create connections and cultivate respect.
Intercultural understanding is an important aspect of historical learning. Students learn about the perspectives, beliefs and values of people, past and present, and the importance of understanding their own and others' histories. Intercultural understanding is enhanced when students can relate the understanding they develop about historical perspectives and empathy to contexts and circumstances in their own lives and in the wider world.

**Cross-curriculum priorities**

There are three cross curriculum priorities in the Australian Curriculum:

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

The cross-curriculum priorities are embedded in the curriculum and will have a strong but varying presence depending on their relevance to each of the learning areas.

**Aboriginal and Torres Strait Islander histories and cultures**

Aboriginal and Torres Strait Islander communities are strong, rich and diverse. Aboriginal and Torres Strait Islander Identity is central to this priority and is intrinsically linked to living, learning Aboriginal and Torres Strait Islander communities, deep knowledge traditions and holistic world view.

A conceptual framework based on Aboriginal and Torres Strait Islander Peoples’ unique sense of Identity has been developed as a structural tool for the embedding of Aboriginal and Torres Strait Islander histories and cultures within the Australian curriculum. This sense of Identity is approached through the interconnected aspects of Country/Place, People and Culture. Embracing these elements enhances all areas of the curriculum.

The Aboriginal and Torres Strait Islander priority provides opportunities for all learners to deepen their knowledge of Australia by engaging with the world’s oldest continuous living cultures. This knowledge and understanding will enrich their ability to participate positively in the ongoing development of Australia.

The Australian Curriculum: history values Aboriginal and Torres Strait Islander histories and cultures. It celebrates Aboriginal and Torres Strait Islander histories as part of the shared history belonging to all Australians.

Students will examine historical perspectives from an Aboriginal and Torres Strait Islander viewpoint. They will learn about Aboriginal and Torres Strait Islander Peoples prior to colonisation by the British, the ensuing contact and its impacts. They will examine key policies and political movements over the last two centuries. Students will develop an awareness of the significant roles of Aboriginal and Torres Strait Islander people in Australian society.

**Asia and Australia’s engagement with Asia**

The Asia and Australia’s engagement with Asia priority provides a regional context for learning in all areas of the curriculum. China, India and other Asian nations are growing rapidly and the power and influence they have in all areas of global endeavour is extensive. An understanding of Asia underpins the capacity of Australian students to be active and informed citizens working together to build harmonious local, regional and global communities, and build Australia’s social, intellectual and creative capital.
This priority is concerned with Asia literacy for all Australian students. Asia literacy develops knowledge, skills and understanding about the histories, geographies, cultures, arts, literatures and languages of the diverse countries of our region. It fosters social inclusion in the Australian community. It enables students to communicate and engage with the peoples of Asia so they can effectively live, work and learn in the region. Australia now has extensive engagement with Asia in areas such as trade, investment, immigration, tourism, education and humanitarian assistance and this engagement is vital to the prosperity of all Australians.

In the Australian Curriculum: history, students develop an understanding of the diversity of the peoples of Asia and their contributions to the region and the world, and an appreciation of the importance of the region for Australia and the world. Students understand the dynamic nature of socio-political relationships within the region over time, and the role that individuals, governments and other organisations play in shaping relationships between peoples and countries. Students develop an appreciation of the history of Australia-Asia engagement and how this influences contemporary Australian society and relationships with the countries of Asia. They understand the long history of migration to Australia by people from Asia and appreciate the contributions made over time by Asian Australians to the development of Australia’s culture and society. They also understand the ongoing role played by Australia and individual Australians in major events and developments in the Asia region.

**Sustainability**

Sustainability addresses the ongoing capacity of Earth to maintain all life.

Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are both individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.

Education for sustainability develops the knowledge, skills and values necessary for people to act in ways that contribute to more sustainable patterns of living. It is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through action that recognises the relevance and interdependence of environmental, social, cultural and economic considerations.

The Australian Curriculum: history provides content that supports the development of students’ world views, particularly in relation to actions that require judgment about past social systems and access to and use of the Earth’s resources. The curriculum provides opportunities for students to develop an historical perspective on sustainability by understanding, for example, the emergence of farming and settled communities, the development of the Industrial Revolution and the growth of population, the overuse of natural resources, the rise of environmental movements and the global energy crisis and innovative technological responses to it. Making decisions about sustainability to help shape a better future requires an understanding of how the past relates to the present, and needs to be informed by historical trends and experiences.

**Links to the other learning areas**

Learning in history involves the use of knowledge and skills learnt in other areas, particularly in English, mathematics and science.

**English**

Strong connections exist between English and history, and literacy is essential to historical understanding. Through the study of history, students learn how to read texts with critical discernment and how to create their own texts that present the results of historical understanding clearly and logically. In their studies, they
encounter representations of the past that demonstrate the power of language and symbol, and they learn to extend the range of their own expression. These skills are developed across a range of textual genres and formats, including art, photography, film, music, fiction and multimedia.

Mathematics

Much of the evidence and reasoning in historical understanding is quantitative: chronology, demography, economic activity, changes in the movement of peoples and in the size and reach of institutions. All of these call for an appreciation of numerical scale and proportion.

Science

A knowledge and understanding of history provides a useful context for student learning in science. The history of invention and discovery provides students with an awareness of the pace of scientific and technological development over time and its implications for the future. An understanding of the past provides opportunities to engage in an informed manner in present debates about, for example, the ethical use of technology and the management of the environment. This is relevant to content within the strand Science as a Human Endeavour in the Australian Curriculum: Science. The study of sources of evidence and the conservation of historical sites and materials broadens students’ understanding of the various applications of science.

Implications for teaching, assessment and reporting

The Australian Curriculum: History employs a skills and inquiry-based model of teaching. The skills of historical inquiry are developed through teacher-directed and student-centred learning, enabling students to pose and investigate questions with increasing initiative, self-direction and expertise. In the teaching of history there should not be an artificial separation of content and process, nor a focus on historical method at the expense of historical knowledge. In Years 7–10 there is a particular emphasis on the use of overviews and depth studies, which draw on a range of historical contexts.

Students’ interest in and enjoyment of history is enhanced through a range of different approaches such as the use of artefacts, museums, historical sites, hands-on activities and archives. Historical narrative is used so that students experience the ‘story’ in history, and this can be extended to investigations of cause and consequence, historical significance and contestability. Connections are made where appropriate between past and present events and circumstances to make learning more meaningful for students and to help students make sense of key ideas.

Teachers use the Australian Curriculum content and achievement standards first to identify current levels of learning and achievement and then to select the most appropriate content (possibly from across several year levels) to teach individual students and/or groups of students. This takes into account that in each class there may be students with a range of prior achievement (below, at, and above the year level expectations) and that teachers plan to build on current learning.

Teachers also use the achievement standards, at the end of a period of teaching, to make on-balance judgments about the quality of learning demonstrated by the students – that is whether they have achieved below, at, or above the standard. To make these judgments, teachers draw on assessment data that they have collected as evidence during the course of the teaching period. These judgments about the quality of learning are one source of feedback to students and their parents and inform formal reporting processes.

If a teacher judges that a student’s achievement is below the expected standard, this suggests that the teaching programs and practice should be reviewed to better assist individual students in their learning in the future. It also suggests that additional support and targeted teaching will be needed to ensure that the student...
Assessment of the Australian Curriculum takes place in different levels and for different purposes, including:

- ongoing formative assessment within classrooms for the purposes of monitoring learning and providing feedback, to teachers to inform their teaching, and for students to inform their learning
- summative assessment for the purposes of twice-yearly reporting by schools to parents and carers on the progress and achievement of students
- annual testing of Years 3, 5, 7 and 9 students’ levels of achievement in aspects of literacy and numeracy, conducted as part of the National Assessment Program – Literacy and Numeracy (NAPLAN)
- periodic sample testing of specific learning areas within the Australian Curriculum as part of the National Assessment Program (NAP).
Foundation Year

Personal and Family Histories

The Foundation curriculum provides a study of personal and family histories. Students learn about their own history and that of their family; this may include stories from different cultures and other parts of the world. As participants in their own history, students build on their knowledge and understanding of how the past is different from the present.

The content provides opportunities to develop historical understanding through key concepts including continuity and change, cause and effect, perspectives, empathy and significance. These concepts may be investigated within a particular historical context to facilitate an understanding of the past and to provide a focus for historical inquiries.

The history content at this year level involves two strands: Historical Knowledge and Understanding and Historical Skills. These strands are interrelated and should be taught in an integrated way; they may be integrated across learning areas and in ways that are appropriate to specific local contexts. The order and detail in which they are taught are programming decisions.

A framework for developing students’ historical knowledge, understanding and skills is provided by inquiry questions. The key inquiry questions at this year level are:

- What is my history and how do I know?
- What stories do other people tell about the past?
- How can stories of the past be told and shared?

### Historical Knowledge and Understanding

- **Who the people in their family are, where they were born and raised and how they are related to each other (ACHHK001)**
- **The different structures of families and family groups today, and what they have in common (ACHHK002)**
- **How they, their family and friends commemorate past events that are important to them (ACHHK003)**
- **How the stories of families and the past can be communicated, for example through photographs, artefacts, books, oral histories, digital media, and museums (ACHHK004)**

### Historical Skills

- **Chronology, terms and concepts**
  - Sequence familiar objects and events (ACHHS015)
  - Distinguish between the past, present and future (ACHHS016)
- **Historical questions and research**
  - Pose questions about the past using sources provided (ACHHS017)
- **Analysis and use of sources**
  - Explore a range of sources about the past (ACHHS018)
  - Identify and compare features of objects from the past and present (ACHHS019)
- **Perspectives and interpretations**
  - Explore a point of view (ACHHS020)
- **Explanation and communication**
  - Develop a narrative about the past (ACHHS021)
  - Use a range of communication forms (oral, graphic, written, role play) and digital technologies (ACHHS022)

### Foundation Year achievement standard

By the end of the Foundation year, students identify experiences or events that are personally significant to them. Students pose questions to find out about their own past using at least one type of historical source. They identify similarities and differences between families using sources and important family events. Students relate a story about their past using different forms of communication (oral, graphic, role play).
Glossary

Ancient
as defined in the Australian Curriculum: History, the Ancient period covers history from the development of early human communities (from 60,000 BCE) to the end of late antiquity (around 650 CE)

Artefacts
something made or shaped by humans for their use, such as a stone tool, a metal sword, a plastic toy

Asia
as defined in the Australian Curriculum: History, ‘Asia’ refers to the territorial area that extends from the western border of Pakistan, to the northern border of Mongolia, the eastern border of Japan, and that extends to the southern border of Indonesia

BCE
an abbreviation of ‘Before the Common Era’. It is the same dating system as the traditionally used BC, meaning ‘Before Christ’. Historical dates before the birth of Christ are classified as BCE. There is no year zero in this dating system, so the year CE 1 immediately follows the year 1 BCE. See the glossary term for CE.

Cause and effect
used by historians to identify chains of events and developments over time, short term and long term

CE
an abbreviation of ‘Common Era’. It is the same dating system as the traditionally used AD, short for the Latin phrase Anno Domini, ‘the year of our Lord’. Historical dates after the birth of Christ are classified as CE. There is no year zero in this dating system, so the year CE 1 immediately follows the year 1 BCE. See the glossary term for BCE.

Chronology
chronology is the study of time. In history, chronology involves the arrangement of events in order, as in a timeline.

Concepts
a concept refers to any general notion or idea that is used to develop an understanding of the past, such as concepts related to the process of historical inquiry (for example evidence, continuity and change, perspectives, significance) and concepts that are culturally significant to Aboriginal and Torres Strait Islander peoples, such as Country and Place

Contestability
occurs when particular interpretations about the past are open to debate, for example, as a result of a lack of evidence or different perspectives.

Continuity and change
aspects of the past that remained the same over certain periods of time are referred to as continuities. Continuity and change are evident in any given period of time and concepts such as progress and decline may be used to evaluate continuity and change.

**Demography**

the study of the characteristics of human populations, such as size, age profile and life expectancy

**Depth study**

a depth study is a detailed study of specific aspects of an historical period, for example a particular society, event, movement or development. It provides students with the opportunity to develop and apply the concepts and skills of historical inquiry. A depth study commonly employs investigation of a range of sources, and may include site and museum visits.

**Empathy**

empathy is an understanding of the past from the point of view of a particular individual or group, including an appreciation of the circumstances they faced, and the motivations, values and attitudes behind their actions

**Empire**

an empire exercises political, economic and cultural rule or control over other peoples and nations, such as the Roman Empire and the British Empire

**Evidence**

in History, evidence is the information obtained from sources that is valuable for a particular inquiry (for example the relative size of historical figures in an ancient painting may provide clues for an inquiry into the social structure of the society). Evidence can be used to help construct a historical narrative, to support a hypothesis or to prove or disprove a conclusion.

**Historical inquiry**

historical inquiry is the process of investigation undertaken in order to understand the past. Steps in the inquiry process include posing questions, locating and analysing sources and using evidence from sources to develop an informed explanation about the past.

**Imperialism**

imperialism is the process whereby rule or control is established and maintained over other peoples and nations

**Industrialism**

the introduction of machinery to produce large quantities of goods using fuel-based technology. Industrialisation involves a division of labour and the development of factories and cities

**Interpretation**

an interpretation is an explanation of the past, for example about a specific person, event or development. There may be more than one interpretation of a particular aspect of the past because historians may have used different sources, asked different questions and held different points of view about the topic.

**Medieval**
is a term used to describe the period of history between the end of the Roman Empire in the west in the fifth century CE to the end of the Renaissance around 1500 CE

Modern

as defined in the Australian Curriculum: History, the ‘modern’ period covers history from the beginning of the Industrial Revolution around 1750 CE to the present

Narrative

a way of making sense of the past based on a selection of events. There are different types of narrative such as accounts of the past that relate a story (for example personal, fictitious) and historical recounts (such as the course of events during the Second World War)

Nationalism

nationalism is the feeling of belonging to a people, a place and a common culture. When the nation becomes the primary loyalty, it gives rise to movements of national independence.

Oral histories

people’s spoken recollections of the past, recorded through an audio or video interview

Overview

an overview provides a conceptual and chronological framework for understanding a particular historical period. It can consist of key features, events, developments and broad patterns of historical change. An overview provides a context for a depth study.

Perspective

a person’s perspective is their point of view, the position from which they see and understand events going on around them. People in the past may have had different points of view about a particular event, depending on their age, gender, social position and their beliefs and values. For example a convict girl and an Aboriginal Elder would have had quite different perspectives on the arrival of the First Fleet in Australia. Historians also have perspectives and this can influence their interpretation of the past.

Primary sources

in History, primary sources are objects and documents created or written during the time being investigated, for example during an event or very soon after. Examples of primary sources include official documents, such as laws and treaties; personal documents, such as diaries and letters; photographs; film and documentaries. These original, first-hand accounts are analysed by the historian to answer questions about the past.

Quantitative

capable of being measured and expressed in numerical terms, such as the numbers of women who arrived on the First Fleet, the proportion of Australian soldiers who died in World War I, radiocarbon dating of an ancient site

Secondary sources

in History, secondary sources are accounts about the past that were created after the time being investigated and which often use or refer to primary sources and present a particular interpretation. Examples of secondary sources include writings of historians, encyclopaedia, documentaries, history textbooks, and websites.
Significance

the importance that is assigned to particular aspects of the past, eg events, developments, movements and historical sites. Significance includes an examination of the principles behind the selection of what should be investigated and remembered and involves consideration of questions such as: How did people in the past view the significance of an event? How important were the consequences of an event? What was the duration of the event? How relevant is it to the contemporary world?

Source

any written or non-written materials that can be used to investigate the past, for example coins, photographs, letters, gravestones, buildings. A source becomes ‘evidence’ if it is of value to a particular inquiry.

Sustainability

supports the needs of the present without compromising the ability of future generations to meet their own needs.

Terms

a word or phrase used to describe abstract aspects or features of the past (for example colonisation, revolution, imperialism, democracy) and more specific features such as a pyramid, gladiator, temple, rock shelter
## Historical Skills Scope and Sequence: Foundation to Year 6

<table>
<thead>
<tr>
<th>Historical Skills</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chronology, terms and concepts</strong></td>
<td>Sequence familiar objects and events</td>
<td>Sequence historical people and events</td>
<td>Sequence historical people and events</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distinguish between the past, present and future</td>
<td>Use historical terms</td>
<td>Use historical terms and concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Historical questions and research</strong></td>
<td>Pose questions about the past using sources provided</td>
<td>Pose a range of questions about the past</td>
<td>Identify questions to inform an historical inquiry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identify and locate a range of relevant sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analysis and use of sources</strong></td>
<td>Explore a range of sources about the past</td>
<td>Locate relevant information from sources provided</td>
<td>Locate information related to inquiry questions in a range of sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Identify and compare features of objects from the past and present</td>
<td>Compare information from a range of sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perspectives and interpretations</strong></td>
<td>Explore a point of view</td>
<td>Identify different points of view</td>
<td>Identify points of view in the past and present</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Explanation and communication</strong></td>
<td>Develop a narrative about the past</td>
<td>Develop historical texts, particularly narratives</td>
<td>Develop historical texts, particularly narratives and descriptions, which incorporate source material</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use a range of communication forms (oral, graphic, written, role play) and digital technologies</td>
<td>Use a range of communication forms (oral, graphic, written) and digital technologies</td>
<td>Use a range of communication forms (oral, graphic, written) and digital technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historical Skills</td>
<td>Year 5</td>
<td>Year 6</td>
<td>Year 7</td>
<td>Year 8</td>
<td>Year 9</td>
<td>Year 10</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td><strong>Chronology, terms and concepts</strong></td>
<td>Sequence historical people and events</td>
<td>Sequence historical events and periods</td>
<td>Sequence events chronologically to demonstrate the relationship between events in different periods and places</td>
<td>Use historical terms and concepts</td>
<td>Use historical terms and concepts</td>
<td>Use historical terms and concepts</td>
<td></td>
</tr>
<tr>
<td><strong>Historical questions and research</strong></td>
<td>Identify questions to inform an historical inquiry</td>
<td>Identify a range of questions about the past to inform a historical inquiry</td>
<td>Identify and select different kinds of questions about the past to inform historical inquiry</td>
<td>Identify and locate a range of relevant sources</td>
<td>Identify and locate relevant sources, using ICT and other methods</td>
<td>Identify and locate relevant sources, using ICT and other methods</td>
<td></td>
</tr>
<tr>
<td><strong>Analysis and use of sources</strong></td>
<td>Locate information related to inquiry questions in a range of sources</td>
<td>Identify the origin and purpose of primary and secondary sources</td>
<td>Identify the origin, purpose and context of primary and secondary sources</td>
<td>Compare information from a range of sources</td>
<td>Locate, select and use information from a range of sources as evidence</td>
<td>Process and synthesise information from a range of sources for use as evidence in an historical argument</td>
<td></td>
</tr>
<tr>
<td><strong>Perspectives and interpretations</strong></td>
<td>Identify points of view in the past and present</td>
<td>Identify and describe points of view, attitudes and values in primary and secondary sources</td>
<td>Identify and analyse the perspectives of people from the past</td>
<td></td>
<td></td>
<td>Identify and analyse different historical interpretations (including their own)</td>
<td></td>
</tr>
<tr>
<td><strong>Explanation and communication</strong></td>
<td>Develop historical texts, particularly narratives and descriptions, which incorporate source material</td>
<td>Develop historical texts, particularly descriptions and explanations that use evidence from a range of sources</td>
<td>Develop historical texts, particularly explanations and historical arguments that use evidence from a range of sources</td>
<td>Use a range of communication forms (oral, graphic, written) and digital technologies</td>
<td>Use a range of communication forms (oral, graphic, written) and digital technologies</td>
<td>Select and use a range of communication forms (oral, graphic, written) and digital technologies</td>
<td></td>
</tr>
</tbody>
</table>
# Historical Knowledge and Understanding Scope and Sequence: Foundation to Year 6

**Key concepts**

The content provides opportunities to develop historical understanding through key concepts including continuity and change, cause and effect, perspectives, empathy and significance.

<table>
<thead>
<tr>
<th>Year level</th>
<th>Focus</th>
<th>Foundation Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal and family histories</td>
<td>Present and past family life</td>
<td>The past in the present</td>
<td>Community and remembrance</td>
<td>First contacts</td>
<td>The Australian colonies</td>
<td>Australia as a nation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is my history and how do I know?</td>
<td>How has family life changed or remained the same over time?</td>
<td>What aspects of the past can you see today? What do they tell us?</td>
<td>Who lived here first and how do we know?</td>
<td>Why did the great journeys of exploration occur?</td>
<td>What do we know about the lives of people in Australia's colonial past and how do we know?</td>
<td>Why and how did Australia become a nation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do other people tell about the past?</td>
<td>How can we show that the present is different from or similar to the past?</td>
<td>What remains of the past are important to the local community? Why?</td>
<td>How has our community changed? What features have been lost and what features have been retained?</td>
<td>What was like for Aboriginal and/or Torres Strait Islander Peoples before the arrival of the Europeans?</td>
<td>How did an Australian colony develop over time and why?</td>
<td>How did Australian society change throughout the twentieth century?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How can stories of the past be told and shared?</td>
<td>How do we describe the sequence of time?</td>
<td>How and why do people choose to remember significant events of the past?</td>
<td>What is the nature of the contribution made by different groups and individuals in the community?</td>
<td>Why did the Europeans settle in Australia?</td>
<td>How did colonial settlement change the environment?</td>
<td>Who were the people who came to Australia? Why did they come?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key questions**

The content provides opportunities to develop historical understanding through key concepts including sources, continuity and change, cause and effect, perspectives, empathy and significance.

- **When did people arrive in Australia?**
- **What was life like for Aboriginal and/or Torres Strait Islander peoples before the arrival of the Europeans?**
- **How did the great journeys of exploration and settlement take place?**
- **How did the Europeans settle on Aboriginal and/or Torres Strait Islander lands?**
- **Why did the First Fleet arrive in 1788?**
- **What was life like for early settlers and Aboriginal and/or Torres Strait Islander peoples?**
- **What significant events and changes have occurred in Australia since 1788?**
- **What are Australia’s future challenges?**

**Knowledge and understanding**

- **People:**
  - Who are the different groups and subgroups of the First Fleet? What were their backgrounds and experiences? How did they contribute to the development of Australia?
  - How did the experiences of the First Fleet differ from the experiences of later settlers and immigrants?

- **Places and environments:**
  - How did the environment change with European settlement? What were the impacts of this change on Aboriginal and Torres Strait Islander peoples?

- **Time:**
  - How have dates and changes of time been marked in Australia? How do these changes affect our understanding of the past?

- **Change and continuity:**
  - How have different aspects of life changed over time in Australia? What has remained consistent?

**Reasons and causes:**

- **Economic:**
  - How did economic factors influence settlement and development in Australia?

- **Political:**
  - How did political factors influence settlement and development in Australia?

- **Social:**
  - How did social factors influence settlement and development in Australia?
## Historical Knowledge and Understanding Scope and Sequence: Year 7 to Year 10

<table>
<thead>
<tr>
<th>Year level</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year level focus</strong></td>
<td>The ancient world</td>
<td>The ancient to the modern world</td>
<td>The making of the modern world</td>
<td>The modern world and Australia</td>
</tr>
<tr>
<td>The Year 7 curriculum provides a study of history from the time of the earliest human communities to the end of the ancient period (approximately 60 000 BCE – c.1750).</td>
<td>The Year 8 curriculum provides a study of history from the end of the ancient period to the beginning of the modern period (c.650 CE – c.1750).</td>
<td>The Year 9 curriculum provides a study of the history of the making of the modern world from 1750 to 1918.</td>
<td>The Year 10 curriculum provides a study of the history of the modern world and Australia from 1918 to the present, with an emphasis on Australia in its global context.</td>
<td></td>
</tr>
<tr>
<td><strong>Key questions</strong></td>
<td>How do we know about the ancient past?</td>
<td>How did societies change from the end of the ancient period to the beginning of the modern age?</td>
<td>What were the changing features of the movements of people from 1750 to 1918?</td>
<td>How did the nature of global conflict change during the twentieth century?</td>
</tr>
<tr>
<td>Why and where did the earliest societies develop?</td>
<td>What key beliefs and values emerged and how did they influence societies?</td>
<td>How did new ideas and technological developments contribute to change in this period?</td>
<td>What were the consequences of World War II?</td>
<td></td>
</tr>
<tr>
<td>What emerged as the defining characteristics of ancient societies?</td>
<td>What were the causes and effects of contact between societies in this period?</td>
<td>What was the origin, development, significance and long-term impact of imperialism in this period?</td>
<td>How did these consequences shape the modern world?</td>
<td></td>
</tr>
<tr>
<td>What have been the legacies of ancient societies?</td>
<td>Which significant people, groups and ideas from this period have influenced the world today?</td>
<td>What was the significance of World War I?</td>
<td>How was Australian society affected by other significant global events and changes in this period?</td>
<td></td>
</tr>
<tr>
<td><strong>Key concepts</strong></td>
<td>The content provides opportunities to develop historical understanding through key concepts, including evidence, continuity and change, cause and effect, perspectives, empathy, significance and contestability.</td>
<td>Overview content for the ancient world (Egypt, Mesopotamia, Persia, Greece, Rome, India, China and the Mayas) includes the following:</td>
<td>Overview content for the making of the modern world includes the following:</td>
<td>Overview content for the Modern World and Australia includes the following:</td>
</tr>
<tr>
<td>the theory that people moved out of Africa around 60 000 BCE and migrated to other parts of the world, including Australia</td>
<td>the transformation of the Roman world and the spread of Christianity and Islam</td>
<td>the nature and significance of the Industrial Revolution and how it affected living and working conditions, including within Australia</td>
<td>the inter-war years between World War I and World War II, including the Treaty of Versailles, the Roaring Twenties and the Great Depression</td>
<td></td>
</tr>
<tr>
<td>the evidence for the emergence and establishment of ancient societies (including art, iconography, writing tools and pottery)</td>
<td>key features of the medieval world (feudalism, trade routes, voyages of discovery, contact and conflict)</td>
<td>the nature and extent of the movement of peoples in the period (slaves, convicts and settlers)</td>
<td>continuing efforts post-World War II to achieve lasting peace and security in the world, including Australia’s involvement in UN peacekeeping</td>
<td></td>
</tr>
<tr>
<td>key features of ancient societies (farming, trade, social classes, religion, rule of law)</td>
<td>the emergence of ideas about the world and the place of people in it by the end of the period (such as the Renaissance, the Scientific Revolution and the Enlightenment).</td>
<td>the extent of European imperial expansion and different responses, including in the Asian region</td>
<td>the major movements for rights and freedom in the world and the achievement of independence by former colonies</td>
<td></td>
</tr>
<tr>
<td><strong>Overview</strong></td>
<td>The depth studies for this year level include:</td>
<td>The depth studies for this year level include:</td>
<td>The depth studies for this year level include:</td>
<td>The depth studies for this year level include:</td>
</tr>
<tr>
<td>1. Investigating the ancient past</td>
<td>1. The Western and Islamic World (ONE of The Vikings, Renaissance Italy, Medieval Europe, The Ottoman Empire)</td>
<td>1. Making a Better World? (ONE of Progressive ideas and movements, The Industrial Revolution, Movement of peoples)</td>
<td>1. World War II</td>
<td></td>
</tr>
</tbody>
</table>

---

**Version 1.2**

8th March 2011