

Year 4 standard elaborations — Australian Curriculum: Mathematics

- Purpose** The standard elaborations (SEs) provide additional clarity when using the Australian Curriculum achievement standard to make judgments on a five-point scale. They promote and support:
- aligning curriculum, assessment and reporting, connecting curriculum and evidence in assessment, so that what is assessed relates directly to what students have had the opportunity to learn
 - continuing skill development from one year of schooling to another
 - making judgments on a five-point scale based on evidence of learning in a folio of student work
 - developing task-specific standards and grading guides.

Structure The SEs are developed using the **Australian Curriculum achievement standard**. In Prep* to Year 6, the Mathematics SEs have been organised using the **content and proficiency strands**. Performance is frequently represented in terms of complexity and familiarity of the standard being assessed. Across the elaborations this is described according to: A — unfamiliar, B — complex familiar, C — simple familiar, D — some simple familiar, E — partial, isolated and obvious.

The Mathematics achievement standard describes the learning expected of students at each year level. Teachers use the achievement standard during and at the end of a period of teaching to make on-balance judgments about the quality of learning students demonstrate.

In Queensland the achievement standard represents the **C standard** — a sound level of knowledge and understanding of the content, and application of skills. The SEs are presented in a **matrix**. The discernible differences or degrees of quality associated with the five-point scale are highlighted to identify the characteristics of student work on which teacher judgments are made. Terms are described in the Notes section following the matrix.

Year 4 Australian Curriculum: Mathematics achievement standard

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify and explain strategies for finding unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness.

Students use the properties of odd and even numbers. They recall multiplication facts to 10 x 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Source Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum Version 8 Mathematics for Foundation–10*, www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10

* Prep in Queensland is the Foundation Year of the Australian Curriculum and refers to the year before Year 1. Children beginning Prep in January must be five years of age by 30 June.

Year 4 Mathematics standard elaborations

		A	B	C	D	E
The folio of a student's work has the following characteristics:						
Number and Algebra	Understanding	making of connections between fraction and decimal notations up to two decimal places <u>in unfamiliar situations</u>	making of connections between fraction and decimal notations up to two decimal places <u>in complex familiar situations</u>	making of connections between fraction and decimal notations up to two decimal places	making of connections between <u>aspects of</u> fraction and decimal notations	making of <u>statements about aspects of</u> fraction and decimal notations
		location <u>and representation</u> of fractions, <u>including mixed numerals</u> , on a number line	location <u>and representation</u> of familiar fractions on a number line	location of familiar fractions on a number line	location of familiar <u>unit</u> fractions	<u>directed</u> location of familiar <u>unit</u> fractions
		description of number patterns resulting from multiplication <u>in unfamiliar situations</u>	description of number patterns resulting from multiplication <u>in complex familiar situations</u>	description of number patterns resulting from multiplication	description of <u>aspects of</u> number patterns resulting from multiplication	<u>directed</u> description of <u>aspects of</u> number patterns resulting from multiplication
	Fluency	recognition <u>and representation</u> of common equivalent fractions <u>in unfamiliar situations</u>	recognition <u>and representation</u> of common equivalent fractions <u>in complex familiar situations</u>	recognition of common equivalent fractions in familiar contexts	recognition of <u>simple</u> common equivalent fractions in familiar contexts	<u>directed identification</u> of <u>simple</u> common equivalent fractions in familiar contexts
		use of the properties of odd and even numbers <u>in unfamiliar situations</u>	use of the properties of odd and even numbers <u>in complex familiar situations</u>	use of the properties of odd and even numbers	use of <u>aspects of</u> the properties of odd and even numbers	<u>directed</u> use of the properties of odd and even numbers
		recollection of multiplication and related division facts to 10 x 10 <u>and use of these to calculate other multiplication and division facts</u>	recollection of multiplication and related division facts to 10 x 10 <u>and use of these to calculate other multiplication facts</u>	recollection of multiplication and related division facts to 10 x 10	<u>partial</u> recollection of multiplication facts to 10 x 10 and related division facts	<u>directed</u> recollection of multiplication facts to 10 x 10 and related division facts

		A	B	C	D	E
Number and Algebra	Problem-solving	solving of simple purchasing problems <u>in unfamiliar situations</u>	solving of simple purchasing problems <u>in complex familiar situations</u>	solving of simple purchasing problems	solving of <u>aspects of</u> simple purchasing problems	<u>directed</u> solving of simple purchasing problems
		continuation of number sequences involving multiples of single-digit numbers <u>in unfamiliar situations</u>	continuation of number sequences involving multiples of single-digit numbers <u>in complex familiar situations</u>	continuation of number sequences involving multiples of single-digit numbers	continuation of <u>simple</u> number sequences	<u>directed</u> continuation of <u>simple</u> number sequences
	Reasoning	choice of appropriate strategies for calculations involving multiplication and division <u>and reasoned explanation of choices made</u>	choice of appropriate strategies for calculations involving multiplication and division <u>and explanation of choices made</u>	choice of appropriate strategies for calculations involving multiplication and division	choice of strategies for calculations involving multiplication and/or division	<u>directed use</u> of strategies <u>to work towards</u> calculations involving multiplication and/or division
		identification and explanation of strategies for finding unknown quantities in number sentences, and <u>identification and explanation of equivalent number sentences for addition and subtraction</u>	identification and explanation of strategies for finding unknown quantities in number sentences <u>and identification of equivalent number sentences for addition and subtraction</u>	identification and explanation of strategies for finding unknown quantities in number sentences	identification of strategies for finding unknown quantities in number sentences	<u>guided</u> identification of strategies for finding unknown quantities in number sentences
Measurement and Geometry	Understanding	conversion between units of time <u>in unfamiliar situations</u>	conversion between units of time <u>in complex familiar situations</u>	conversion between units of time	conversion between <u>aspects of simple</u> units of time	<u>directed</u> conversion between <u>aspects of</u> units of time
		creation of symmetrical shapes and patterns <u>and justification of why the created shapes and patterns are symmetrical</u>	creation <u>and description</u> of symmetrical shapes and patterns	creation of symmetrical shapes and patterns	<u>partial</u> creation of symmetrical shapes and patterns	<u>directed</u> creation of symmetrical shapes and patterns

		A	B	C	D	E
Measurement and Geometry	Fluency	use of scaled instruments to measure <u>and compare</u> temperatures, lengths, shapes and objects <u>in unfamiliar situations</u>	use of scaled instruments to measure <u>and compare</u> temperatures, lengths, shapes and objects	use of scaled instruments to measure temperatures, lengths, shapes and objects	use of scaled instruments to measure <u>aspects of</u> temperatures, lengths, shapes and objects	<u>directed</u> use of scaled instruments to measure <u>aspects of</u> temperatures, lengths, shapes and objects
	Problem-solving	comparison of areas of regular and irregular shapes using informal units <u>in unfamiliar situations</u>	comparison of areas of regular and irregular shapes using informal units <u>in complex familiar situations</u>	comparison of areas of regular and irregular shapes using informal units	<u>guided</u> comparison of areas of regular and irregular shapes using informal units	<u>directed</u> comparison of areas of shapes using informal units
		solving problems involving time duration <u>in unfamiliar situations</u>	solving problems involving time duration <u>in complex familiar situations</u>	solving problems involving time duration	<u>guided use of strategies to partially solve</u> problems involving time duration	<u>directed use of strategies to work towards</u> solving problems involving time duration
	Reasoning	interpretation of information contained in maps <u>in unfamiliar situations</u>	interpretation of information contained in maps <u>in complex familiar situations</u>	interpretation of information contained in maps	interpretation of <u>aspects of</u> information contained in maps	<u>directed</u> interpretation of <u>aspects of</u> information contained in maps
		classification of angles in relation to a right angle <u>in unfamiliar situations and explanation of reasons for classification</u>	classification of angles in relation to a right angle <u>and explanation of reasons for classification</u>	classification of angles in relation to a right angle	<u>guided</u> classification of angles in relation to a right angle	<u>directed</u> classification of angles in relation to a right angle
	Statistics and Probability	Understanding	identification of dependent and independent events <u>in unfamiliar situations</u>	identification of dependent and independent events <u>in complex familiar situations</u>	identification of dependent and independent events	identification of <u>aspects of</u> dependent and independent events
construction of data displays from <u>unfamiliar data sets and representations</u>			construction of data displays from <u>complex familiar data sets and representations</u>	construction of data displays from given or collected data	<u>partial</u> construction of data displays from given or collected data	<u>directed</u> construction of data displays from given or collected data

		A	B	C	D	E
Statistics and Probability	Fluency	description of the probability of everyday events and ordering of their chances of occurring	description of the probability of everyday events	listing of the probability of everyday events	listing of the probability of aspects of everyday events	directed listing of the probability of aspects of everyday events
	Problem-solving	<p><i>Problem-solving</i> is critical across all content strands in Mathematics. In Year 4, problem-solving of statistics and probability is not explicitly identified in the achievement standard. It appears in the content descriptions so there are opportunities to strengthen student problem-solving.</p>				
	Reasoning	description of different methods for data collection and representation and evaluation of their effectiveness to determine the most appropriate method in an unfamiliar situation	description of different methods for data collection and representation and evaluation of their effectiveness to determine the most appropriate method in a complex familiar situation	description of different methods for data collection and representation and evaluation of their effectiveness	identification of different methods for data collection and representation and evaluation of aspects of their effectiveness.	directed identification of different methods for data collection and representation
Key		shading emphasises the qualities that discriminate between A–E descriptors				

Notes

Australian Curriculum common dimensions

The SEs describe the qualities of achievement in the two dimensions common to all Australian Curriculum learning area achievement standards — understanding and skills.

Dimension	Description
understanding	the concepts underpinning and connecting knowledge in a learning area, related to a student's ability to appropriately select and apply knowledge to solve problems in that learning area
skills	the specific techniques, strategies and processes in a learning area

Terms used in Year 4 Mathematics SEs

The following terms are used in the Year 4 Mathematics SEs. Definitions are drawn from the ACARA Australian Curriculum Mathematics glossary (www.australiancurriculum.edu.au/f-10-curriculum/mathematics/glossary) and from other sources to ensure consistent understanding.

Term	Description
aspects	particular parts or features
complex familiar	students are required to choose and apply procedures in a situation involving a number of elements, components or steps in a context that has been a focus of prior learning
description; descriptive; describe	give an account of characteristics or features
directed; direction	following the instructions of the facilitator
effective	meeting the assigned purpose in a considered and/or efficient manner to produce a desired or intended result
explanation; explanatory; explain	provide additional information that demonstrates understanding of reasoning and/or application; in mathematics this could include showing working to justify a response
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; in Year 4, <i>fluency</i> includes such things as recalling multiplication tables, communicating sequences of simple fractions, using instruments to measure accurately, creating patterns with shapes and their transformations, and collecting and recording data
guided; guidance	visual and/or verbal prompts to facilitate or support independent action
identification; identify	establish or indicate who or what someone or something is

Term	Description
interpretation; interpret	explaining the meaning of information or actions; in the context of Mathematics, this involves giving meaning to information presented in various forms, e.g. words, symbols, diagrams, graphs
partial	incomplete, half-done, unfinished
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; in Year 4, <i>problem-solving</i> includes such things as formulating, modelling and recording authentic situations involving operations, comparing large numbers with each other, comparing time durations and using properties of numbers to continue patterns
range	covers the scope of relevant situations or elements
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; in Year 4, <i>reasoning</i> includes such things as generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks, comparing angles, communicating information using graphical displays and evaluating the appropriateness of different displays
reasons; reasoned	logical and sound; presented with justification
represent	use words, images, symbols or signs to convey meaning
statement; state	a sentence or assertion
thorough	demonstrating depth and breadth, inclusive of relevant detail
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; in Year 4, <i>understanding</i> includes such things as making connections between representations of numbers, partitioning and combining numbers flexibly, extending place value to decimals, using appropriate language to communicate times and describing properties of symmetrical shapes
unfamiliar	students are required to choose and apply procedures in a situation involving a number of elements, components or steps in a context in which students have had limited prior experience
use; use of	to operate or put into effect