

Year 5 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 5 Australian Curriculum: Mathematics achievement standard

By the end of Year 5, students solve simple problems involving the four operations using a range of strategies. They check the reasonableness of answers using estimation and rounding. Students identify and describe factors and multiples. They identify and explain strategies for finding unknown quantities in number sentences involving the four operations. They explain plans for simple budgets. Students connect three-dimensional objects with their two-dimensional representations. They describe transformations of two-dimensional shapes and identify line and rotational symmetry. Students interpret different data sets.

Students order decimals and unit fractions and locate them on number lines. They add and subtract fractions with the same denominator. Students continue patterns by adding and subtracting fractions and decimals. They use appropriate units of measurement for length, area, volume, capacity and mass, and calculate perimeter and area of rectangles. They convert between 12- and 24-hour time. Students use a grid reference system to locate landmarks. They measure and construct different angles. Students list outcomes of chance experiments with equally likely outcomes and assign probabilities between 0 and 1. Students pose questions to gather data, and construct data displays appropriate for the 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 5 Mathematics standard elaborations

		A	B	C	D	E
The folio of a student's work has the following characteristics:						
Number and algebra	Understanding	identification and description of factors and multiples <u>in unfamiliar situations</u>	identification and description of factors and multiples <u>in complex familiar situations</u>	identification and description of factors and multiples	identification and description of <u>aspects of</u> factors and multiples	<u>statements</u> about factors <u>and/or</u> multiples
		ordering, <u>comparison and representation</u> of decimals and unit fractions	ordering <u>and comparison</u> of decimals and unit fractions	ordering of decimals and unit fractions	ordering of <u>aspects of</u> decimals and <u>aspects of</u> unit fractions	<u>directed</u> ordering of <u>aspects of</u> unit fractions
		location of decimals and fractions on an <u>open number line</u> and explanation of placement	location of decimals and fractions on a number line <u>and explanation of placement</u>	location of decimals and unit fractions on a number line	location of <u>aspects of</u> decimals and <u>aspects of</u> unit fractions on a number line	<u>directed</u> location of <u>aspects of</u> unit fractions on a number line
	Fluency	<p><i>Fluency</i> is critical across all content strands in Mathematics.</p> <p>In Year 5, fluency of number and algebra is not explicitly identified in the achievement standard. It appears in the content descriptions so there are opportunities to strengthen student fluency.</p>				
Number and algebra	Problem-solving	use of a range of <u>efficient</u> strategies to solve problems involving the four operations <u>in unfamiliar situations</u>	use of a range of <u>efficient</u> strategies to solve problems involving the four operations <u>in complex familiar situations</u>	use of a range of strategies to solve simple problems involving the four operations	use of strategies to solve <u>aspects of</u> simple problems involving the four operations	<u>directed</u> use of strategies to solve <u>aspects of</u> simple problems involving the four operations
		<u>creation and</u> explanation of plans for <u>simple</u> budgets in <u>unfamiliar situations</u>	<u>creation and</u> explanation of plans for simple budgets	explanation of plans for simple budgets	<u>partial</u> explanation of plans for simple budgets	<u>statements about aspects of</u> plans for simple budgets
		addition and subtraction of fractions with the same denominator <u>in unfamiliar situations</u>	addition and subtraction of fractions with the same denominator <u>in complex familiar situations</u>	addition and subtraction of fractions with the same denominator	addition and subtraction of <u>some simple familiar</u> fractions with the same denominator	<u>directed</u> addition <u>and/or</u> subtraction of <u>some simple familiar</u> fractions with the same denominator

		A	B	C	D	E
Number and algebra	Reasoning	identification and explanation of strategies for finding unknown quantities in number sentences involving the four operations <u>and identification of equivalent number sentences in unfamiliar situations</u>	identification and explanation of strategies for finding unknown quantities in number sentences involving the four operations <u>and identification of equivalent number sentences</u>	identification and explanation of strategies for finding unknown quantities in number sentences involving the four operations	identification of strategies for finding unknown quantities in number sentences	<u>directed</u> identification of <u>a strategy</u> for finding an unknown quantity in number sentences
		use of <u>efficient strategies</u> for estimation and rounding to check the reasonableness of answers	use of <u>a range of strategies for</u> estimation and rounding to check the reasonableness of answers	use of estimation and rounding to check the reasonableness of answers	use of <u>aspects of</u> rounding to make an estimation	<u>directed</u> use of <u>aspects of</u> rounding to make an estimation
		continuation of patterns of fractions and decimals by addition and subtraction <u>in unfamiliar contexts and description of the rule</u>	continuation of patterns of fractions and decimals by addition and subtraction <u>and description of the rule</u>	continuation of patterns of fractions and decimals by addition and subtraction	continuation of <u>aspects of</u> patterns of fractions and decimals by addition and subtraction	<u>directed</u> continuation of <u>aspects of</u> patterns by addition and subtraction
Measurement and geometry	Understanding	<u>explanation of key features that connect</u> three-dimensional objects with their two-dimensional representations	<u>description of key features that connect</u> three-dimensional objects with their two-dimensional representations	connection of three-dimensional objects with their two-dimensional representations	connection of <u>a limited number of</u> three-dimensional objects with their two-dimensional representations	<u>directed</u> connection of <u>a limited number of</u> three-dimensional objects with their two-dimensional representations
		description of transformations of two-dimensional shapes <u>in unfamiliar situations</u>	description of transformations of two-dimensional shapes <u>in complex familiar situations</u>	description of transformations of two-dimensional shapes	description of <u>aspects of</u> transformations of two-dimensional shapes	<u>statements about aspects of</u> transformations of two-dimensional shapes
		identification <u>and explanation of</u> line and rotational symmetry <u>in unfamiliar situations</u>	identification <u>and explanation of</u> line and rotational symmetry <u>in complex familiar situations</u>	identification of line and rotational symmetry	identification of <u>aspects of</u> line and rotational symmetry	<u>directed</u> identification of <u>aspects of</u> line and rotational symmetry
		conversion between 12- and 24-hour time <u>in unfamiliar situations</u>	conversion between 12- and 24-hour time <u>in complex familiar situations</u>	conversion between 12- and 24-hour time	conversion between <u>aspects of</u> 12- and 24-hour time	<u>directed</u> conversion between <u>aspects of</u> 12- and 24-hour time

		A	B	C	D	E
Measurement and geometry	Fluency	use of <u>and explanation of</u> appropriate units of measurement for length, area, volume, capacity and mass <u>in unfamiliar situations</u>	use of <u>and explanation of</u> appropriate units of measurement for length, area, volume, capacity and mass	use of appropriate units of measurement for length, area, volume, capacity and mass	<u>partial</u> use of appropriate units of measurement	<u>directed</u> use of appropriate units of measurement
		use of a grid reference system <u>in unfamiliar situations</u> to locate landmarks <u>and describe routes</u>	use of a grid reference system to locate landmarks <u>and describe routes</u>	use of a grid reference system to locate landmarks	<u>partial</u> use of a grid reference system to locate landmarks	<u>directed</u> use of a grid reference system to locate landmarks
		measurement and construction of different angles <u>in unfamiliar situations</u>	measurement and construction of different angles <u>in complex familiar situations</u>	measurement and construction of different angles	measurement and construction of <u>aspects of</u> different angles	measurement of <u>aspects of</u> different angles
	Problem-solving	use of efficient strategies for calculation of perimeter and area of rectangles <u>in unfamiliar situations</u>	<u>use of efficient strategies for</u> calculation of perimeter and area of rectangles <u>in complex familiar situations</u>	calculation of perimeter and area of rectangles	calculation of <u>aspects of</u> perimeter and area of rectangles	<u>directed</u> calculation of <u>aspects of</u> perimeter and area of rectangles
Reasoning	<p><i>Reasoning</i> is critical across all content strands in Mathematics.</p> <p>In Year 5, reasoning of measurement and geometry is not explicitly identified in the achievement standard. It appears in the content descriptions so there are opportunities to strengthen student reasoning.</p>					

		A	B	C	D	E
Statistics and probability	Understanding	listing of outcomes of chance experiments with equally likely outcomes, and assignment of probabilities between 0 and 1 <u>in unfamiliar situations</u>	listing of outcomes of chance experiments with equally likely outcomes, and assignment of probabilities between 0 and 1 <u>in complex familiar situations</u>	listing of outcomes of chance experiments with equally likely outcomes, and assignment of probabilities between 0 and 1	<u>partial identification of</u> outcomes of chance experiments with equally likely outcomes	<u>statements about</u> outcomes of chance experiments with equally likely outcomes
	Fluency	<i>Fluency is critical across all content strands in Mathematics.</i> In Year 5, fluency 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 fluency.				
	Problem-solving	construction of data displays appropriate for the data <u>and justification of choice of representations</u>	construction of data displays appropriate for the data <u>and explanation of choice of representations</u>	construction of data displays appropriate for the data	construction of data displays	construction of <u>aspects of</u> data displays
	Reasoning	interpretation <u>and comparison of</u> different data sets <u>to draw conclusions</u>	interpretation <u>and comparison of</u> different data sets	interpretation of different data sets	<u>partial</u> interpretation of different data sets	<u>statements about</u> data sets
		posing of <u>effective</u> questions to gather data <u>in unfamiliar situations</u>	posing of <u>effective</u> questions to gather data <u>in complex familiar situations</u>	posing of questions to gather data	<u>guided</u> posing of questions to gather data	<u>use of provided</u> questions to gather data
Key	<u>shading</u> emphasises the <u>qualities that discriminate between A–E descriptors</u>					

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 5 Mathematics SEs

The following terms are used in the Year 5 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
comparison; compare	estimate, measure or note how things are similar or dissimilar
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
effectively; effective	meeting the assigned purpose in a considered and/or efficient manner to produce a desired or intended result
efficient	in a well-organised and competent way; in the context of Mathematics, this means solving a problem using minimal steps
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 5, <i>fluency</i> includes such things as choosing appropriate units of measurement for calculation of perimeter and area, using estimation to check the reasonableness of answers to calculations and using instruments to measure angles
guided; guidance	visual and/or verbal prompts to facilitate or support independent action

Term	Description
identification; identify	establish or indicate who or what someone or something is
informed	having relevant knowledge; being conversant with the topic; in the context of Mathematics, <i>informed</i> means referring to mathematical background knowledge and/or observations
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 5, <i>problem-solving</i> includes such things as formulating and solving authentic problems using whole numbers and measurements and creating financial plans
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 5, <i>reasoning</i> includes such things as investigating strategies to perform calculations efficiently, continuing patterns involving fractions and decimals, interpreting results of chance experiments, posing appropriate questions for data investigations and interpreting data sets
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 5, <i>understanding</i> includes such things as making connections between representations of numbers, using fractions to represent probabilities, comparing and ordering fractions and decimals and representing them in various ways, describing transformations and identifying line and rotational symmetry

Term	Description
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