

Prep standard elaborations — Australian Curriculum v9.0: Mathematics

Purpose

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

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

Structure

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

The Mathematics SEs have been organised using the Mathematical proficiencies. Performance across the five-point scale is frequently described in terms of complexity and familiarity of the standards descriptor being assessed. Across the standards elaborations in Prep to Year 2, this is described using: applying (AP) — unfamiliar, making connections (MC) — complex familiar, working with (WW) — simple familiar, exploring (EX) — some simple familiar, becoming aware (BA) — isolated and obvious.

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



Prep Australian Curriculum: Mathematics achievement standard

By the end of Foundation¹ year, students make connections between number names, numerals and position in the sequence of numbers from zero to at least 20. They use subitising and counting strategies to quantify collections. Students compare the size of collections to at least 20. They partition and combine collections up to 10 in different ways, representing these with numbers. Students represent practical situations that involve quantifying, equal sharing, adding to and taking away from collections to at least 10. They copy and continue repeating patterns.

Students identify the attributes of mass, capacity, length and duration, and use direct comparison strategies to compare objects and events. They sequence and connect familiar events to the time of day. Students name, create and sort familiar shapes and give their reasoning. They describe the position and the location of themselves and objects in relation to other objects and people within a familiar space.

Students collect, sort and compare data in response to questions in familiar contexts.

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum Version 9.0 Mathematics for Foundation–10*
<https://v9.australiancurriculum.edu.au/f-10-curriculum/learning-areas/mathematics/foundation-year?view=quick&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=1&strands-start-index=0&subjects-start-index=0>

Note: The Mathematics SEs are organised by the Mathematical proficiencies. The proficiencies represent the actions students demonstrate when working mathematically. The proficiencies are embedded as verbs in the achievement standard and related content descriptions. For further information about the connections between the achievement standard aspects and the standard elaborations see Table 1 on page 5.

¹ Prep in Queensland is the Foundation year of the Australian Curriculum and refers to the year before Year 1.

Prep Mathematics standard elaborations

		Applying (AP)	Making connections (MC)	Working with (WW)	Exploring (EX)	Becoming aware (BA)
The folio of student work contains evidence of the following:						
Mathematical proficiencies	Understanding	accurately and <u>consistently</u> identifying, representing, describing and connecting mathematical concepts and relationships in <u>unfamiliar</u> , complex familiar and simple familiar situations	<u>accurately</u> identifying, representing, describing and connecting mathematical concepts and relationships in <u>complex familiar</u> and simple familiar situations	identifying, representing, describing and connecting mathematical concepts and relationships in simple familiar situations	<u>partially</u> identifying, representing and describing mathematical concepts and relationships in <u>some</u> simple familiar situations	<u>in a fragmented manner</u> , identifying, representing and describing mathematical concepts and relationships in <u>isolated and obvious</u> situations
	Fluency	choosing, using and applying <u>comprehensive</u> facts, definitions, and procedures to find solutions in <u>unfamiliar</u> , complex familiar and simple familiar situations	choosing, using and applying <u>effective</u> facts, definitions, and procedures to find solutions in <u>complex familiar</u> and simple familiar situations	choosing, using and applying facts, definitions, and procedures to find solutions in simple familiar situations	choosing and using <u>partial</u> facts, definitions, and procedures to find solutions in <u>some</u> simple familiar situations	choosing and using <u>fragmented</u> facts, definitions, and procedures to find solutions in <u>isolated and obvious</u> situations
	Reasoning	<u>comprehensively</u> explaining of mathematical thinking, strategies used, and conclusions reached in <u>unfamiliar</u> , complex familiar, and simple familiar situations	<u>with detail</u> explaining of mathematical thinking, strategies used, and conclusions reached in <u>complex familiar</u> and simple familiar situations	explaining of mathematical thinking, strategies used, and conclusions reached in simple familiar situations	<u>partially</u> explaining mathematical thinking, strategies used, and conclusions reached in <u>some</u> simple familiar situations	<u>in a fragmented manner</u> , explaining mathematical thinking, strategies used, and conclusions reached in <u>isolated and obvious</u> situations
Problem-solving	<p>Problem-solving is critical across all content strands in Mathematics.</p> <p>In Prep, the proficiency of Problem-solving is not explicitly identified in the achievement standard. However, there are opportunities within the Prep Mathematics curriculum to enrich and strengthen students' learning through problem-solving.</p>					

Key	Shading identifies the qualities or discernible differences in the AP–BA descriptors:
AP	Applies the curriculum content; demonstrates a thorough understanding of the required knowledge; demonstrates a high level of skill that can be transferred to new situations
MC	Makes connections using the curriculum content; demonstrates a clear understanding of the required knowledge; applies a high level of skill in situations familiar to them, and begins to transfer skills to new situations
WW	Works with the curriculum content; demonstrates understanding of the required knowledge; applies skills in situations familiar to them
EX	Explores the curriculum content; demonstrates understanding of aspects of the required knowledge; uses a varying level of skills in situations familiar to them
BA	Becomes aware of the curriculum content; demonstrates a basic understanding of aspects of required knowledge; begins to use skills in situations familiar to them

Notes

The SEs for Mathematics are organised using the Mathematical proficiencies. The Mathematical proficiencies include Understanding, Fluency, Reasoning and Problem-solving. The Mathematical proficiencies represent the valued features or assessable elements.

For a specific assessment task, the standards elaboration description (in the previous table) can be modified to include task-specific content. Task-specific content can be drawn from an aspect of the achievement standard and the related content description/s which are aligned to the Mathematical proficiencies being assessed. Table 1 provides examples of how content can be related to the standard elaborations valued features for task-specific marking guides at a WW standard.

Table 2 helps clarify key terms from the standard descriptors in the Mathematics SEs and should be used in conjunction with the ACARA Australian Curriculum Mathematics glossary:

<https://v9.australiancurriculum.edu.au/content/dam/en/curriculum/ac-version-9/downloads/mathematics/mathematics-glossary-v9.docx>

Table 1: Examples of how content can be related to the SE valued features for task-specific marking guides at a working with (WW) standard

Aspect of the achievement standard	Related content description/s	SE valued features (Mathematical proficiencies)	Examples of how content can be related to the SE valued features
Students make connections between number names, numerals and position in the sequence of numbers from zero to at least 20.	Number name, represent and order numbers including zero to at least 20, using physical and virtual materials and numerals AC9MFN01	Understanding	<ul style="list-style-type: none"> making connections between number names, numerals and position in the sequence of numbers from zero to at least 20
They use subitising and counting strategies to quantify collections.	Number <ul style="list-style-type: none"> recognise and name the number of objects within a collection up to 5 using subitising AC9MFN02 quantify and compare collections to at least 20 using counting and explain or demonstrate reasoning AC9MFN03 partition and combine collections up to 10 using part-part-whole relationships and subitising to recognise and name the parts AC9MFN04 represent practical situations involving addition, subtraction and quantification with physical and virtual materials and use counting or subitising strategies AC9MFN05 	Fluency	<ul style="list-style-type: none"> using subitising and counting strategies to quantify collections

Aspect of the achievement standard	Related content description/s	SE valued features (Mathematical proficiencies)	Examples of how content can be related to the SE valued features
Students compare the size of collections to at least 20.	<p>Number</p> <ul style="list-style-type: none"> quantify and compare collections to at least 20 using counting and explain or demonstrate reasoning AC9MFN03 	Reasoning	<ul style="list-style-type: none"> comparing the size of collections to at least 20
They partition and combine collections up to 10 in different ways, representing these with numbers.	<p>Number</p> <ul style="list-style-type: none"> recognise and name the number of objects within a collection up to 5 using subitising AC9MFN02 partition and combine collections up to 10 using part-part-whole relationships and subitising to recognise and name the parts AC9MFN04 	Fluency	<ul style="list-style-type: none"> partitioning and combining collections up to 10 in different ways, representing these with numbers
Students represent practical situations that involve quantifying, equal sharing, adding to and taking away from collections to at least 10.	<p>Number</p> <ul style="list-style-type: none"> quantify and compare collections to at least 20 using counting and explain or demonstrate reasoning AC9MFN03 represent practical situations involving addition, subtraction and quantification with physical and virtual materials and use counting or subitising strategies AC9MFN05 represent practical situations that involve equal sharing and grouping with physical and virtual materials and use counting or subitising strategies AC9MFN06 	Understanding	<ul style="list-style-type: none"> representing practical situations that involve <ul style="list-style-type: none"> quantifying equal sharing adding to taking away from collections to at least 10
They copy and continue repeating patterns.	<p>Algebra</p> <ul style="list-style-type: none"> recognise, copy and continue repeating patterns represented in different ways AC9MFA01 	Fluency	<ul style="list-style-type: none"> copying repeating patterns continuing repeating patterns
Students identify the attributes of mass, capacity, length and duration, and use direct comparison strategies to compare objects and events.	<p>Measurement</p> <ul style="list-style-type: none"> identify and compare attributes of objects and events, including length, capacity, mass and duration, using direct comparisons and communicating reasoning AC9MFM01 	Understanding	<ul style="list-style-type: none"> identifying the attributes of <ul style="list-style-type: none"> mass capacity length duration
		Reasoning	<ul style="list-style-type: none"> comparing objects using direct comparison strategies

Aspect of the achievement standard	Related content description/s	SE valued features (Mathematical proficiencies)	Examples of how content can be related to the SE valued features
			<ul style="list-style-type: none"> comparing events using direct comparison strategies
They sequence and connect familiar events to the time of day.	Measurement <ul style="list-style-type: none"> sequence days of the week and times of the day including morning, lunchtime, afternoon and nighttime, and connect them to familiar events and actions AC9MFM02 	Understanding	<ul style="list-style-type: none"> connecting familiar events to the time of day
		Fluency	<ul style="list-style-type: none"> sequencing familiar events to the time of day
Students name, create and sort familiar shapes and give their reasoning.	Space <ul style="list-style-type: none"> sort, name and create familiar shapes; recognise and describe familiar shapes within objects in the environment, giving reasons AC9MFSP01 	Understanding	<ul style="list-style-type: none"> creating familiar shapes
		Fluency	<ul style="list-style-type: none"> naming familiar shapes sorting familiar shapes
		Reasoning	<ul style="list-style-type: none"> giving reasons for naming, creating and sorting familiar shapes
They describe the position and the location of themselves and objects in relation to other objects and people within a familiar space.	Space <ul style="list-style-type: none"> describe the position and location of themselves and objects in relation to other people and objects within a familiar space AC9MFSP02 	Understanding	<ul style="list-style-type: none"> describing the position and the location of themselves and objects in relation to other objects and people within a familiar space
Students collect, sort and compare data in response to questions in familiar contexts.	Statistics <ul style="list-style-type: none"> collect, sort and compare data represented by objects and images in response to given investigative questions that relate to familiar situations AC9MFST01 	Fluency	<ul style="list-style-type: none"> collecting data in response to questions in familiar contexts sorting data in response to questions in familiar contexts
		Reasoning	<ul style="list-style-type: none"> comparing data in response to questions in familiar contexts

Table 2: Key terms used in Mathematics SEs

Term	Description
Simple familiar	<p>Problems of this degree of difficulty require students to demonstrate knowledge and understanding of the subject matter and application of skills in a situation where:</p> <ul style="list-style-type: none"> relationships and interactions are obvious and have few elements; and all of the information to solve the problem is identifiable; that is <ul style="list-style-type: none"> the required procedure is clear from the way the problem is posed, or in a context that has been a focus of prior learning. <p>Students are not required to interpret, clarify and analyse problems to develop responses.</p>
Complex familiar	<p>Problems of this degree of difficulty require students to demonstrate knowledge and understanding of the subject matter and application of skills in a situation where:</p> <ul style="list-style-type: none"> relationships and interactions have a number of elements, such that connections are made with subject matter within and/or across the strands of mathematics; and all of the information to solve the problem is identifiable; that is <ul style="list-style-type: none"> the required procedure is clear from the way the problem is posed, or in a context that has been a focus of prior learning. <p>Some interpretation, clarification and analysis will be required to develop responses.</p> <p>Creating complex familiar examples may consist in making changes to any of the following, including the:</p> <ul style="list-style-type: none"> number of steps required to solve the problem/situation changes to increments, benchmarks or scale number of attributes considered.
Unfamiliar	<p>Problems of this degree of difficulty require students to demonstrate knowledge and understanding of the subject matter and application of skills in a situation where:</p> <ul style="list-style-type: none"> relationships and interactions have a number of elements, such that connections are made with subject matter within and/or across the strands of mathematics; and all the information to solve the problem is not immediately identifiable; that is <ul style="list-style-type: none"> the required procedure is not clear from the way the problem is posed, and in a context in which students have had limited prior experience. <p>Students interpret, clarify and analyse problems to develop responses.</p> <p>Creating unfamiliar examples may consist in making changes to any of the following, including the:</p> <ul style="list-style-type: none"> context for application, e.g. financial, measurement, spatial or statistical type of representation, e.g. physical, visual or symbolic orientation of representation, e.g. horizontal or vertical merge of subject matter/concepts from across different strands.



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