NSW Education Standards Authority

Mathematics K–2 Syllabus

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Contents

Background

Curriculum review

The Masters review (2020) of the NSW school curriculum concluded with several recommendations related to building strong foundations in the early years.

The review recommended that:

- the early years of school focus on providing every child with solid foundations in the basics
- priority learning focus on oral language skills, early reading and writing skills, and early mathematical knowledge and skills
- new syllabuses include evidence-based teaching advice to support teachers to identify and respond to children's development and learning needs.

The NSW Government supported the following recommendations that related to mathematics specifically:

- 4.1 | Make explicit in the curriculum that … early mathematical skills are top priorities in the early years of school, particularly for children who are less advanced in these areas, and that these take precedence over other aspects of learning.
- 4.3 | Structure the early mathematics curriculum to support teachers to establish the points children have reached in their mathematics learning, including by diagnosing conceptual gaps and skills deficits, and provide accompanying evidence-based teaching advice as part of new syllabuses in mathematics.

Syllabus outcomes and content are intended to be inclusive of the learning needs of all students, including:

- Aboriginal students
- students with disability
- gifted and talented students
- students learning English as an additional language or dialect (EAL/D).

Evidence base

The syllabus for Mathematics K–2 is based on evidence that highlights the importance of:

- understanding the symbols that represent quantity[1]
- learning the sequence of counting words and making the association between the words and quantities[2]
- learning different ways of representing quantity – objects, words and symbols – as well as understanding that ten (10), for example, is not only a word or symbol but a combination of different number pairs, such as 5 and 5, 4 and 6, or 3 and 7[3]
- knowing how to use 10 and 100 as units[4]
- identifying links between measurement, space and number[5]
- understanding how structures are organised and related[6]
- being able to provide the reasoning behind the solution to a problem.[7]

Reforms evident in the syllabus

The Mathematics K–2 syllabus includes:

- a new structure that highlights foundational numeracy skills
- new outcomes and content that are informed by evidence and identify skills needed by all students to develop competence in mathematics
- a greater emphasis on the development of reasoning for students to support a deep understanding of mathematical concepts.

Guidance and feedback were received during the development of the syllabus from:

- syllabus writers, comprising experienced classroom teachers recommended by stakeholders, including sectors, unions and professional associations
- sector subject matter experts
- technical advisors, comprising academics from a variety of educational settings.

[1] Bartelet D, Vaessen A, Blomert L, and Ansari D (2013) 'What basic number processing measures in kindergarten explain unique variability in first-grade arithmetic proficiency?', *Journal of Experimental Child Psychology*, 117:12–28, doi:10.1016/j.jecp.2013.08.010.
[2] Gould P (2012) 'What number knowledge do children have when starting Kindergarten in NSW?', *Australasian Journal of Early Childhood*, 37(3):105–110, doi:10.1177/183693911203700314.
[3] De Smedt B, Noël MP, Gilmore C, and Ansari D (2013) 'How do symbolic and non-symbolic numerical magnitude processing skills relate to individual differences in children's mathematical skills? A review of evidence from brain and behavior', *Trends in Neuroscience and Education*, 2(2):48–55, doi:10.1016/j.tine.2013.06.001.
[4] Tabor PD (2008) An investigation of instruction in two-digit addition and subtraction using a classroom teaching experiment methodology, design research, and multilevel modeling, [unpublished doctoral dissertation], Southern Cross University.
[5] Lowrie T, Logan T, and Scriven B (2012) 'Perspectives on Geometry and Measurement in the Australian Curriculum: Mathematics', in Atweh B, Goos M, Jorgensen R, and Siemon D (eds*) Engaging the Australian National Curriculum: Mathematics – Perspectives from the Field*, Mathematics Education Research Group of Australasia, Online Publication.
[6] Mulligan J and Mitchelmore M (2009) 'Awareness of pattern and structure in early mathematical development'*, Mathematics Education Research Journal*, 21(2):33–49, doi:10.1007/BF03217544.
[7] Nunes T, Bryant P, Barros R and Sylva K (2012) 'The relative importance of two different mathematical abilities to mathematical achievement', *The British Journal of Educational Psychology*, 82(1): 136–156, doi:10.1111/j.2044-8279.2011.02033.x.

Curriculum framework

An important part of the framework is a streamlined syllabus structure. Teachers will find a level of familiarity with the retention of syllabus rationale, aim, outcomes and content.

Learning across the curriculum (LAC)

Literacy and numeracy are the focus capabilities of the English and Mathematics K–2 syllabuses. LAC will be mapped across other learning areas and Stages and embedded in syllabus content where relevant and appropriate.

The Australian Curriculum

The *F–10 Australian Curriculum: Mathematics* is currently under review by the Australian Curriculum, Assessment and Reporting Authority (ACARA). NSW takes an ‘adopt and adapt’ approach to incorporating Australian Curriculum content into NSW syllabuses. NESA anticipates the new syllabuses will be aligned to the revised Australian Curriculum.

National Numeracy Learning Progression

The content is tagged with Version 3 of the National Numeracy Learning Progression on the digital version.

Prior-to-school learning

Students bring to school a range of knowledge, skills and understanding developed in home and prior-to-school settings. The movement into Early Stage 1 should be seen as a continuum of learning and planned for appropriately.

The *Early Years Learning Framework for Australia* describes a range of opportunities for students to learn and develop a foundation for future success in learning.

The *Early Years Learning Framework for Australia* has 5 learning outcomes that reflect contemporary theories and research evidence concerning children’s learning. The outcomes are used to guide planning and to assist all children to make progress.

The outcomes are:

1. Children have a strong sense of identity
2. Children are connected with and contribute to their world
3. Children have a strong sense of wellbeing
4. Children are confident and involved learners
5. Children are effective communicators.

Teachers need to acknowledge the learning that children bring to school, and plan appropriate learning experiences that make connections with existing language and literacy development, including language used at home.

Teaching advice

The NSW Government supported recommendation 4.3, for 'evidence-based teaching advice' to accompany new syllabuses in mathematics. This teaching advice is designed to support teachers in implementing the syllabus.

The importance of number in the early years of school

Children's earliest number skills form the foundation for later mathematics learning and predict later mathematics performance in both primary and secondary school (Duncan et al[8]., 2007; Watts et al[9]., 2014).

Patterning is also associated with numerical ability in young children (Wijns et al[10]., 2019). Indeed, spatial skills contribute to mathematics performance and are associated with success in Science, Technology, Engineering and Mathematics (STEM) domains (Gilligan et al.[11], 2017). However, it is knowledge of numerical magnitude that is predictive of and causally related to other crucial aspects of mathematics, including overall mathematics achievement (Siegler[12], 2016).

[8] Duncan GJ, Dowsett CJ, Claessens A, Magnuson K, Huston AC, Klebanov P, Pagani LS, Feinstein L, Engel M, Brooks-Gunn J, Sexton H, Duckworth K, and Japel C (2007) 'School readiness and later achievement', *Developmental Psychology*, 43(6):1428–1446, doi:10.1037/0012-1649.43.6.1428.
[9] Watts TW, Duncan GJ, Siegler RS, and Davis-Kean PE (2014) 'What's past is prologue: relations between early mathematics knowledge and high school achievement', *Educational Researcher*, 43:352–360, doi:10.3102/0013189X14553660.
[10] Wijns N, Torbeyns J, Bakker M, De Smedt B and Verschaffel L (2019) 'Four-year olds' understanding of repeating and growing patterns and its association with early numerical ability', *Early Childhood Research Quarterly*, 49:152-163, doi:10.1016/j.ecresq.2019.06.004.
[11] Gilligan KA, Flouri E, and Farran EK (2017) 'The contribution of spatial ability to mathematics achievement in middle childhood', *Journal of Experimental Child Psychology*, 163:107-125, doi:10.1016/j.jecp.2017.04.016.
[12] Siegler RS (2016) 'Magnitude knowledge: The common core of numerical development', *Developmental Science*, 19(3):341–361, doi:10.1111/desc.12395.

Overview of the new structure

The diagram below (Figure 1) shows the organisation of the outcomes and content for Mathematics K–2, illustrating the important role working mathematically plays across all areas of mathematics.

Evidence highlights the need to strengthen connections between concepts in mathematics. The new organisational structure reflects this.

Content structure

Outcomes and their related content are organised in:

- Number and algebra
- Measurement and space
- Statistics and probability.

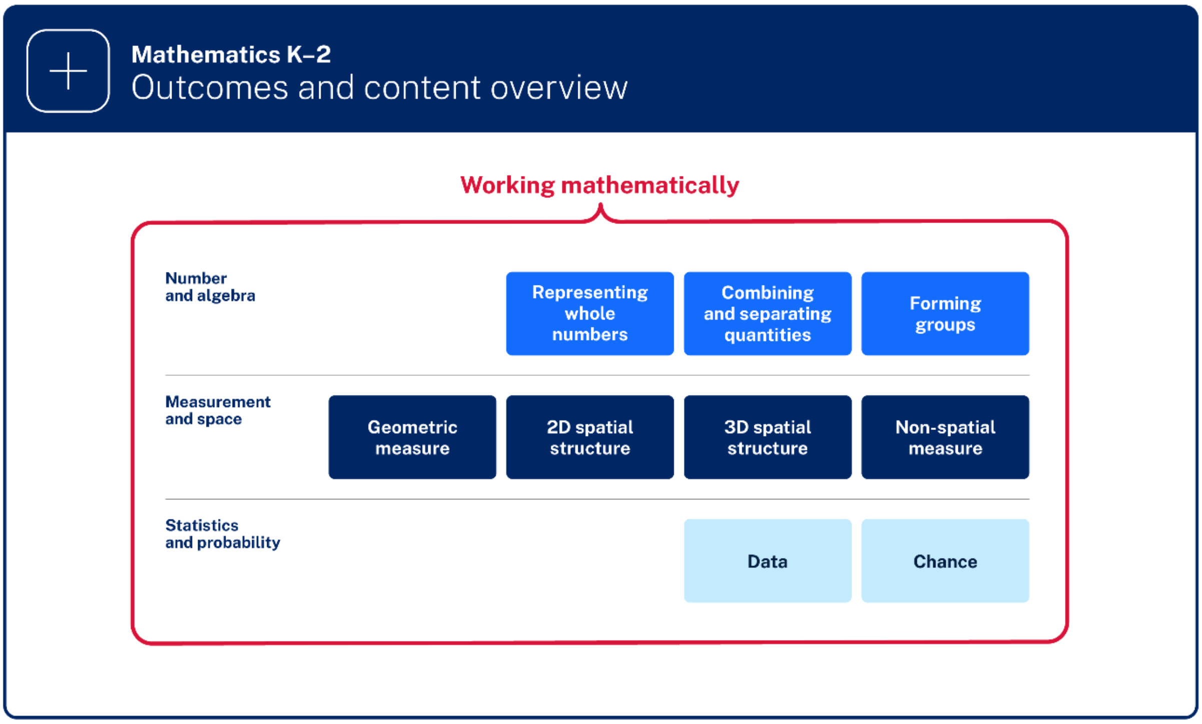

Figure 1: Overview of the syllabus structure.

Working at different Stages

The content presented in a Stage represents the typical knowledge, skills and understanding that students learn throughout the Stage. It is acknowledged that students develop at different rates and in different ways. Not all content for a particular stage may be relevant to a student in that stage.

For example, some students will achieve Stage 1 outcomes during Year 1, while the majority will achieve them by the end of Year 2. Other students might not develop the same knowledge, skills and understanding until Year 3 or later.

The syllabus is written with the flexibility to enable students to work at different Stages in different strands. For example, students in Early Stage 1 could be working on Stage 1 content in the Number and Algebra strand, while working on Early Stage 1 content in the Measurement and Geometry strand. Teachers are best placed to make decisions about when students need to work at, above or below Stage level. This recognises that outcomes may be achieved by students at different times across Early Stage 1 and Stage 1.

Balance of content

The amount of content associated with an outcome may not be indicative of the time required with that outcome. Teachers determine instructional priorities and the time needed for students to achieve expected outcomes based on student needs and abilities.

The content groups are not intended to be hierarchical. They describe in more detail how the outcomes are to be interpreted and used, and the intended learning appropriate for the Stage. They support teachers to diagnose where students are in their learning.

In considering the intended learning, teachers make decisions about the sequence and emphasis to be given to particular groups of content and make necessary adjustments to their teaching, based on the needs, interests and abilities of their students.

Parts A and B

To assist programming, the content in Stage 1 is presented in two parts: A and B, for example ‘Representing whole numbers A’ and ‘Representing whole numbers B’:

- Part A typically focuses on early concept development.
- Part B builds on these earlier concepts.

The content across parts A and B relate to the same stage-based outcomes. Teachers can choose which content, from part A and/or part B, to address based on students’ prior learning, needs and abilities.

In Stage 1, part A does not apply to Year 1 only. For example, when teaching a Year 2 class the teacher may need to address or consolidate some concepts within part A prior to addressing concepts in part B. Similarly, when teaching a Year 1 class, the teacher may decide to address concepts in part B based on the students’ prior learning, needs and abilities.

The part A and part B structure of the content:

- provides flexibility for teachers in planning teaching and learning programs based on the current needs and abilities of students
- helps better visualise the progression and growth of concepts within a Stage of learning

- makes clear how content builds to support deep understanding in each substrand.

Teachers and schools need to decide how to program the two parts of these substrands within a Stage.

Discussion between teachers about what content has been addressed within each year of teaching will be an important part of planning and programming. Teachers should consider:

- when students may have learnt some concepts from part B content in the first year of a Stage, consolidation of these concepts in the second year of a Stage may be needed
- revisiting concepts regularly to build deeper understanding of mathematical concepts
- providing extension of certain concepts based on students' needs and abilities.

Making connections through related content

Many connections exist between areas of mathematics. Mathematical concepts are often interrelated or interdependent on the development of each other; for example, the concepts of area and multiplication. Where appropriate, examples have been included of related outcomes and content that could be addressed in parallel. The suggested connections are not an exhaustive list of the ways that mathematical concepts are related or could be taught.

Working mathematically

The working mathematically processes in the NSW Mathematics syllabus are:

- communicating
- understanding and fluency
- reasoning
- problem-solving.

Students learn to work mathematically by using these processes in an interconnected way. The coordinated development of these processes results in students becoming mathematically proficient.

When students are working mathematically it is important to help them to reflect on how they have used their thinking to solve problems. This assists students to develop *mathematical habits of mind.*[13]

Students need many experiences that require them to relate their knowledge to the vocabulary and conceptual frameworks of mathematics.

Elaborating the processes

In becoming proficient[14] users of mathematics, students must make connections between mathematical ideas. For example, the connections students make between spatial and numerical representations of quantity support the development of their understanding of measurement.

Working mathematically usually involves using one or more processes. Solving problems in mathematics requires understanding of concepts and relations as well as the capacity to communicate the reasoning.

To highlight how these processes are interrelated, in Mathematics K–2 there is one overarching working mathematically outcome.

Working mathematically requires students to:

- explore and connect mathematical concepts [understanding/fluency]
- choose and apply efficient techniques to solve problems [fluency/problem-solving]
- communicate their thinking and reasoning coherently and clearly [communicating/reasoning].

The working mathematically outcome describes the thinking and doing of mathematics. In doing so, the outcome indicates the breadth of mathematical actions that teachers need to emphasise.

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[13] Cuoco A, Goldenberg EP and Mark J (2010) 'Contemporary Curriculum Issues: Organizing a Curriculum around Mathematical Habits of Mind', *The Mathematics Teacher MT*, 103(9):682-688, doi:10.5951/MT.103.9.0682.
[14] National Research Council (2001) *Adding it up: Helping children learn mathematics*, Kilpatrick J, Swafford J, and Findell B (eds), National Academies Press, Washington, D.C., doi:10.17226/9822.

Embedding the processes

As in the Australian Curriculum, the following processes are embedded within the outcomes and content:

- communicating
- understanding and fluency
- problem-solving
- reasoning.

The nature of each working mathematically process, and its place in the syllabus, is briefly described below.

Communicating

Students need knowledge of mathematical content and how to express their ideas about mathematics so that others can understand them.

The ongoing interaction with mathematical vocabulary helps to reinforce students' understanding, not only of the words themselves, but also of the mathematical ideas the words express.

Students are communicating mathematically when they describe, represent, explain and reason about mathematical situations, concepts, methods and solutions.

Students communicate through a variety of representations: in written, oral, graphical or symbolic form, through actions, gestures or signing. Making connections between representations, known as representational fluency, supports understanding of mathematics.[15]

Encouraging students to reflect on and discuss the strategies they used and the knowledge and skills they required assists them to learn to work mathematically. Students learn to think more deeply by:

- reflecting on what they have done
- organising their thoughts
- deciding how to express those thoughts.

They need opportunities to assess their own understanding, make connections and compare ideas.

Understanding and fluency

Understanding involves making cognitive connections between some new material or some new experience and our existing ideas.

[15] Fonger NL (2019) Meaningfulness in representational fluency: An analytic lens for students' creations, interpretations, and connections', The Journal of Mathematical Behavior, 54:100678, doi:10.1016/j.jmathb.2018.10.003.

Students demonstrate conceptual understanding when they:

- connect related ideas
- represent concepts in different ways
- identify commonalities and differences between aspects of content
- describe their thinking mathematically
- use concepts to solve new and unfamiliar problems.

Conceptual understanding supports retention. Because facts and methods learnt with understanding are connected, they are easier to remember and use, and they can be reconstructed when forgotten.

Students' communication of their understanding reveals their mathematical fluency. Mathematical fluency is developed when students[16]:

- choose and use appropriate strategies
- carry out procedures flexibly, accurately and efficiently
- recall factual knowledge and concepts to solve problems
- use known facts, and reason about relationships to find solutions.

Problem-solving

Some problems in mathematics can be readily solved based on past experience. When confronted with a routine mathematics problem, the student is able to apply a known correct solution method. In contrast, non-routine problems are problems for which the student does not immediately know a usable solution method. Non-routine problems require productive thinking because the student needs to invent a way to understand and solve the problem. Students need experience with both routine and non-routine mathematics problems.

In becoming proficient mathematics problem-solvers, students:

- learn how to form mental representations of problems
- apply mathematical relationships
- devise novel solution methods when needed.

A fundamental characteristic needed throughout the process of solving problems in mathematics is flexibility. Flexibility develops through the broadening of knowledge required for solving non-routine problems rather than just routine problems.

Reasoning

'Reasoning is the glue that holds everything together, the lodestar that guides learning.' (National Research Council, 2001, p. 129).

Mathematics is a reasoning and creative activity. Mathematical reasoning is thinking logically about quantitative and spatial relationships. It is key to later achievement in mathematics.[17]

[16] Watson A and Sullivan P (2008), 'Teachers learning about tasks and lessons', in Tirosh D and Wood T (eds), *Tools and processes in mathematics teacher education*, Sense Publishers, Rotterdam, Netherlands.
[17] Nunes T, Bryant P, Evans D, Bell D, Gardner S, Gardner A, and Carraher JN (2007), 'The contribution of logical reasoning to the learning of mathematics in primary school', *British Journal of Developmental Psychology*, 25:147-166, doi:10.1348/026151006X153127.

As mathematical reasoning develops, students appreciate that mathematics makes sense, and can be understood. They develop an increasingly sophisticated capacity for logical thought and actions.

Reasoning has been embedded within the outcomes and content. The syllabus also identifies useful opportunities to develop mathematical reasoning in the content. In particular, the syllabus highlights reasoning about:

- quantity
- relations
- patterns
- spatial relations
- spatial structure.

This is not an exhaustive list of when and how students may reason about mathematical ideas and concepts. The highlights assist teachers in knowing the kind of reasoning students have the opportunity to apply.

What might reasoning look like?

Students need to become aware of how they are using mathematics to reason about familiar problems. This gives them a sense of how their developing mathematical knowledge and skills can be applied in a range of situations.

Spatial reasoning in a Kindergarten class

Transcript from classroom example:

> A group of children is working with pattern blocks. They started working independently, making patterns, pictures, models and quite abstract designs.
>
> One of the students notices the resemblance between the yellow blocks and the picture of a honeycomb in a book open on the bench nearby.
>
> *We could make that* [pointing] *with these yellow blocks. Let's see how big we can make it!*
>
> They begin and soon use up all the yellow blocks.
>
> *There aren't any more yellow blocks.*
>
> *Let's use some of the red ones, or even some of the green ones to make a yellow one. They would fit, wouldn't they?*
>
> *Let's try them.*
>
> After a short while they reflect on their work with satisfaction.
>
> The teacher, who has been supervising groups scattered around the room, observes this achievement.
>
> *What made you think of making that design?* she asks. *How did you know you could use the red and the green blocks when you ran out of the yellow ones?*

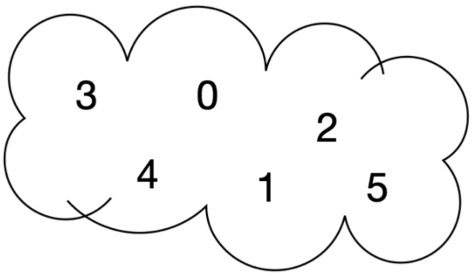
Without being conscious of it, these students have been involved in using processes of working mathematically.

Process	Example
Classifying	The colours and shapes of the blocks.
Comparing	Noticing the similarities between the yellow blocks and the picture of the honeycomb.
Inferring	'We could make that with these yellow blocks.'
Estimating/predicting	'These would fit, wouldn't they?'
Verifying	'Let's try them.'
Spatial reasoning	'Let's use some of the red ones, or even some of the green ones to make a yellow one. They would fit, wouldn't they?'
Patterning	Tessellating the blocks.
Understanding spatial relations	How shapes fit together to form other shapes (two red shapes can form the shape of the yellow block).
Representing	The honeycomb structure modelled with pattern blocks.
Communicating/ Reasoning	Responding to the teacher's questions 'How did you know you could use the red and the green blocks when you ran out of the yellow ones?'

Reasoning about Number in a Year 1/2 class

The following is an example of part of a lesson from a primary classroom. The purpose of the activity is to provide opportunity for students to demonstrate their reasoning as they solve a problem. It should be noted that this can be done using a variety of activities and resources, including concrete, visual and digital resources.

The teacher (Ms L) displayed a drawing of a cloud with the numerals 0, 1, 2, 3, 4, 5 scattered throughout the cloud.



She then asked if anyone could identify two numbers in the cloud that add together to make 6. One student quickly answered 4 and 2. Ms L then asked if anyone had a different answer. Another student responded 1 and 5, and the other students indicated that they agreed.

Ms L asked if anyone could identify two numbers in the cloud that add together to make 2. One student answered 0 and 2. Again Ms L asked if anyone had a different answer. This time the students thought a little longer before stating that no other answers were possible.

The following is a transcript from the classroom discussion:

Ms L: *How do you know?*

Student: … [Thinking…]

Two is only a small number, so you cannot use 3, 4 or 5.

Ms L: [Crosses out 3, 4 and 5]

Student: *If you use 2 you must use 0.*

If you don't use 2, … 0 and 1 are too small.

The student reasons about the relationships between the numbers. 'Two is only a small number', so if you are adding together whole numbers chosen from 0 to 5, they cannot be bigger than 2.

Ms L: *On your desks are six sticky notes. I want you to write each of the numbers from the cloud on the sticky notes.*

You have six sticky notes but you only need the numbers to five. What is the reason?

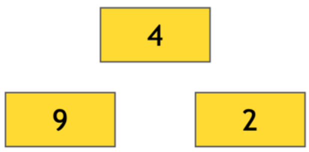
Student: *Because zero is a number that you have. Zero counts as a number.*

What is in the envelopes?

The teacher shows the students a set of small digit cards 0 to 5 and lets the students identify that these are the same as the numbers in the cloud.

With an air of mystery, Ms L puts a pair of the digit cards into each of three envelopes without letting the students know which numbers are on the cards.

The teacher checks the cards in each envelope before sealing it and writing the total of the two cards on the front.



On your desks I have placed three envelopes the same as those I just made.

Each envelope contains two different digit cards inside, 0 to 5, with the total written on the envelope.

Using your sticky notes, can you work out which numbers must be inside each envelope? I want you to work in pairs.

Some students appear uncertain of how to start.

Ms L: *Two numbers together that add up to the total on the front.*

It is your job to work out which numbers are inside those envelopes.

Think about what you know about numbers and how they go together.

Student: *It could be 2 there or 2 there*… [Lots of discussion]

Ms L: [Walks around the room and finds a pair of students who are yet to start.]

What number do you want to start with?

Which number do you think is easiest to start with?

Student: [Indicates 2]

Ms L: *Can you tell me two numbers that add together to make 2?*

Student: *One and one.*

Ms L: *Yes, but you only have one 1 there*.

Student: *Zero and two.* [Places the sticky notes with 2 and 0 on the envelope showing 2.]

Ms L: *Which one next? Do you want to choose the 9 or the 4?*

Student: *9*

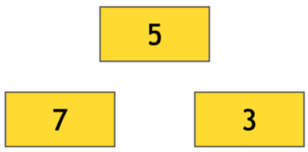
Ms L: *What goes to make 9?*

Student: [Makes 9 on her fingers.] *4 and 5* [Reading the finger pattern.]

All of the students place pairs of sticky notes on the envelopes at their tables. When they are asked to check with other teams, they find the answers are the same.

Checking against the numbers in the envelopes produces widespread celebration.

For the next mystery envelopes challenge the students work in groups of four.



The students quickly set to work and begin to find an answer to the problem.

Some groups look pleased that they have the answer. However, at one group the discussion is ongoing.

Student 1: *I know, 5 and 0*.

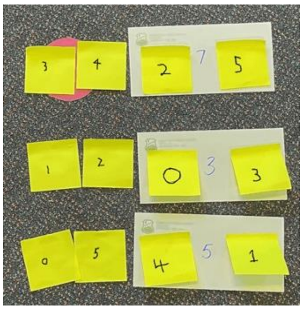
Student 2: *It can be, but it doesn't have to be!*

It could be 4 and 1.

Student 3: *But if you use 4 there, how do you make 7?*

Student 2: *You could use 2 and 5 for 7, couldn't you?*

And so they continued until they had two distinct solutions to the problem.



In the class discussion that followed, it was agreed that there were two possible answers to what was in the envelopes.

In reasoning about pairs of numbers that form specific totals, these students found that the problem conditions admit two distinct solutions.

It can be, but it doesn't have to be!

Syllabus

Rationale

Mathematical ideas have evolved and continue to develop across cultures, and have been practised in Australia by Aboriginal and Torres Strait Islander Peoples for thousands of years. Through the study of mathematics, students apply their knowledge and skills to deepen their understanding of the world.

Mathematics is a reasoning and creative activity, integral to scientific and technological advances across many fields of endeavour. The symbolic nature of mathematics provides a powerful and precise means of communication.

Making connections across mathematical concepts and other subject areas enhances students' ability to understand the purpose of learning mathematics and to develop a deeper conceptual understanding. This helps students to recognise its role in solving problems in the world around them, applying their understanding to familiar and unfamiliar situations.

By studying mathematics, students develop essential numeracy skills and fluency, while nurturing the ability to think logically, critically and creatively. They learn about patterns and reason about relationships, creating opportunities to generalise their solutions and to solve non-routine problems.

When students enjoy learning mathematics, they develop a positive self-concept and become self-motivated learners through active participation in appropriately challenging tasks. This can enhance their resilience in solving mathematical problems relevant to further education and their everyday lives.

Aim

The aim of Mathematics K–10 is to enable students to become confident users of mathematics, learning and applying the language of mathematics to communicate efficiently and effectively. They develop an increasingly sophisticated understanding of mathematical concepts and fluency with mathematical processes that helps them to interpret and solve problems. Students make connections within mathematics and connect mathematical concepts with the world around them. They learn to understand and appreciate how mathematics is a relevant part of their lives.

Table of outcomes

Working mathematically overarching outcome

A student develops understanding and fluency in mathematics through:

- exploring and connecting mathematical concepts
- choosing and applying mathematical techniques to solve problems
- communicating their thinking and reasoning coherently and clearly.

Number and algebra

	Early Stage 1 outcomes A student:	Stage 1 outcomes A student:
Representing whole numbers	▪ demonstrates an understanding of how whole numbers indicate quantity **MAE-RWN-01** ▪ reads numerals and represents whole numbers to at least 20 **MAE-RWN-02**	▪ applies an understanding of place value and the role of zero to read, write and order two- and three-digit numbers **MA1-RWN-01** ▪ reasons about representations of whole numbers to 1000, partitioning numbers to use and record quantity values **MA1-RWN-02**
Combining and separating quantities	▪ reasons about number relations to model addition and subtraction by combining and separating, and comparing collections **MAE-CSQ-01** ▪ represents the relations between the parts that form the whole, with numbers up to 10 **MAE-CSQ-02**	▪ uses number bonds and the relationship between addition and subtraction to solve problems involving partitioning **MA1-CSQ-01**
Forming groups	▪ recognises, describes and continues repeating patterns **MAE-FG-01** ▪ forms equal groups by sharing and counting collections of objects **MAE-FG-02**	▪ uses the structure of equal groups to solve multiplication problems, and shares or groups to solve division problems **MA1-FG-01**

Measurement and space

	Early Stage 1 outcomes A student:	**Stage 1 outcomes** A student:
Geometric measure	▪ describes position and gives and follows simple directions **MAE-GM-01** ▪ describes and compares lengths **MAE-GM-02** ▪ identifies half the length and the halfway point **MAE-GM-03**	▪ represents and describes the positions of objects in familiar locations **MA1-GM-01** ▪ measures, records, compares and estimates lengths and distances using uniform informal units, as well as metres and centimetres **MA1-GM-02** ▪ creates and recognises halves, quarters and eighths as part measures of a whole length **MA1-GM-03**
Two-dimensional (2D) spatial structure	▪ sorts, describes, names and makes two-dimensional shapes, including triangles, circles, squares and rectangles **MAE-2DS-01** ▪ describes and compares areas of similar shapes **MAE-2DS-02**	▪ recognises, describes and represents shapes including quadrilaterals and other common polygons **MA1-2DS-01** ▪ measures and compares areas using uniform informal units in rows and columns **MA1-2DS-02**
Three-dimensional (3D) spatial structure	▪ manipulates, describes and sorts familiar three-dimensional objects **MAE-3DS-01** ▪ describes and compares volumes **MAE-3DS-02**	▪ recognises, describes and represents familiar three-dimensional objects **MA1-3DS-01** ▪ measures, records, compares and estimates internal volumes (capacities) and volumes using uniform informal units **MA1-3DS-02**
Non-spatial measure	▪ describes and compares the masses of objects **MAE-NSM-01** ▪ sequences events and reads hour time on clocks **MAE-NSM-02**	▪ measures, records, compares and estimates the masses of objects using uniform informal units **MA1-NSM-01** ▪ describes, compares and orders durations of events, and reads half- and quarter-hour time **MA1-NSM-02**

Statistics and probability

	Early Stage 1 outcomes A student:	Stage 1 outcomes A student:
Data	▪ contributes to collecting data and interprets data displays made from objects **MAE-DATA-01**	▪ gathers and organises data, displays data in lists, tables and picture graphs **MA1-DATA-01** ▪ reasons about representations of data to describe and interpret the results **MA1-DATA-02**
Chance	▪ No Early Stage 1 outcome	▪ recognises and describes the element of chance in everyday events **MA1-CHAN-01**

Early Stage 1: Number and algebra

Representing whole numbers

Outcomes

A student:

- demonstrates an understanding of how whole numbers indicate quantity **MAE-RWN-01**
- reads numerals and represents whole numbers to at least 20. **MAE-RWN-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Content related to Representing whole numbers can be addressed in parallel with a range of other outcomes.

Instantly name the number of objects within small collections

Students:

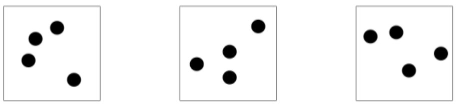
- instantly recognise (subitise) the number of items in small groups of up to four items[18] without counting
- identify the number of items in different arrangements.[19]

Use the counting sequence of ones flexibly

Students:

- count forwards to at least 30 and state the number after or before a given number, without needing to count from one
- identify and distinguish the 'teen' numbers from multiples of ten with the same initial sounds[20]
- count backwards from a given number 20 or less
- identify the number before as 'one less' and the number after as 'one more' than a given number.

Examples



[18] Examples of groups of four random dots.
[19] For example, natural arrangements, classroom items.
[20] For example, 13 from 30, 14 from 40.

Recognise number patterns

Students:

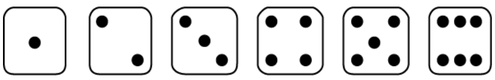
- recognise dice[21] and domino dot patterns
- recognise different finger patterns for the same number.

Connect counting and numerals to quantities

Students:

- count with one-to-one correspondence, recognising that the last number name represents the total number in the collection
- count out a specified number of objects[22] (from 5 to 20) from a larger collection, keeping track of the count
- make correspondences between collections[23] (Reasons about quantity)
- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- compare and order numbers to 20
- use the term 'is the same as'[24] to express equality of groups (Reasons about quantity).

Examples

[21] Examples of dice dot patterns. 

[22] For example, using counters, pebbles, pencils or items collected on-Country.

[23] For example, counting and comparing collections of light coins to determine which has more.

[24] Or similar terms such as 'is equal to'.

Combining and separating quantities

Outcomes

A student:

- reasons about number relations to model addition and subtraction by combining and separating, and comparing collections **MAE-CSQ-01**
- represents the relations between the parts that form the whole, with numbers up to 10. **MAE-CSQ-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Model additive relations and compare quantities

Students:

- identify situations in which addition and subtraction may be applied
- combine two or more groups of objects to model addition, identifying the relationship between the parts and the whole
- separate and take away part of a group of objects to model subtraction
- use concrete materials or fingers to model and solve addition and subtraction questions, counting forwards or backwards by ones as necessary
- compare two groups of objects to determine how many more (Reasons about quantity).

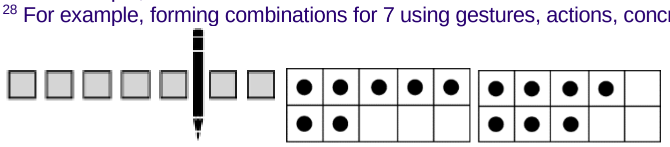
Identify part–whole relationships in numbers up to 10

Students:

- use visual representations[25] of numbers to assist with combining and separating quantities, identifying the relationship between the quantities
- describe the action of combining, separating and comparing[26]
- use five as a reference in forming numbers from six to ten[27]
- create, model and recognise combinations[28] for numbers up to ten (Reasons about relations)
- count by ones to find the total or difference
- use drawings, words and numerals to record addition and subtraction, and explain their thinking (Reasons about relations).

Examples

[25] For example, identifies ten as five and five on a ten frame or two hands as ten.
[26] Example actions include *makes, joins, combines with*, *take away, altogether, how many more?*
[27] For example, six is one more than five.
[28] For example, forming combinations for 7 using gestures, actions, concrete materials or ten frames.



Forming groups

Outcomes

A student:

- recognises, describes and continues repeating patterns **MAE-FG-01**
- forms equal groups by sharing and counting collections of objects. **MAE-FG-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Content related to Forming groups can be addressed in parallel with 2D shapes.

Copy, continue and create patterns

Students:

- copy and continue repeating patterns using sounds and/or actions[29]
- copy, continue and create repeating patterns using shapes, objects, images or pictures[30] (Reasons about patterns).

Investigate and form equal groups by sharing

Students:

- distribute a group of familiar objects into smaller groups and recognise whether the number in each group is equal or not
- group and share concrete materials by distributing objects one by one or using another method.[31]

Record grouping and sharing

Students:

- label the number of objects in a group
- record grouping and sharing using drawings, words and numerals, and explain their thinking (Reasons about relations).

Examples

[29] For example, copy and continue dance or music patterns.

[30] For example:  …

[31] For example, students may distribute items one at a time or in groups of two.

Early Stage 1: Measurement and space

Geometric measure

Outcomes

A student:

- describes position and gives and follows simple directions **MAE-GM-01**
- describes and compares lengths **MAE-GM-02**
- identifies half the length and the halfway point. **MAE-GM-03**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Position

Content related to Position can be addressed in parallel with 3D objects.

Describe position and movement of oneself

Students:

- give and follow simple directions to position themselves or objects
- describe the position of an object in relation to another object, such as *in*, *on*, *under* as well as the directions *up* and *down*
- describe the position of an object using proximity terms[32] and referring to frames of reference[33]
- use the ordinal names to at least *third* to describe order of position
- begin to describe the positions of objects in relation to themselves using the terms 'left' and 'right'.[34]

Examples

[32] For example, proximity terms such as 'near', 'between', 'next to'.
[33] For example, frames of reference such as 'in front of', 'behind'.
[34] For example, by referencing their dominant hand or foot.

Length

Content related to Length can be addressed in parallel with Representing whole numbers.

Use direct and indirect comparisons to decide which is longer

Students:

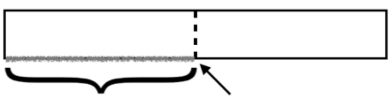
- identify the attribute of 'length' as the measure of an object from end to end
- use comparative language to describe length[35]
- compare lengths directly by placing objects side by side and aligning the ends
- explain why the length of a piece of string remains unchanged whether placed in a straight line or a curve
- compare lengths indirectly by copying a length.[36] (Reasons about relations)

Create half a length

Students:

- divide a length[37] into two equal parts (Reasons about relations)
- distinguish between the halfway point and half a length[38]
- describe positions as 'about halfway', 'more than halfway' or 'less than halfway'.

Examples

[35] For example, comparative language includes 'longer than', 'shorter than', 'the same as'.
[36] For example, using the same strip of paper to compare lengths.
[37] For example, cutting a piece of ribbon into halves.
[38] For example, 

Two-dimensional spatial structure

Outcomes

A student:

- sorts, describes, names and makes two-dimensional shapes, including triangles, circles, squares and rectangles **MAE-2DS-01**
- describes and compares areas of similar shapes. **MAE-2DS-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

2D shapes

Content related to 2D shapes can be addressed in parallel with Area.

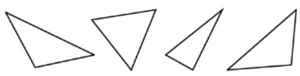
Sort, describe and name familiar shapes

Students:

- identify familiar shapes in a range of contexts[39]
- sort shapes according to features such as size and shape
- recognise and explain how a group of shapes has been sorted (Reasons about spatial relations)
- describe shapes,[40] including circles, squares, triangles and rectangles
- ask and respond to questions that help identify and name a particular shape
- distinguish examples of triangles[41] from non-examples.[42]

Examples

[39] For example, shapes in the school or local environment or during learning activities, such as handball squares.
[40] For example, a handball square has four sides.

[41] Examples: 

[42] Non-examples: 

Represent shapes

Students:

- manipulate circles, squares, triangles and rectangles, and describe their features[43]
- turn shapes to fit into or match a given space (Reasons about spatial relations)
- make representations of shapes in a variety of ways, using paint, paper, movements or technology
- make pictures and designs using a selection of shapes[44]
- make two-dimensional shapes by tracing around the faces of three-dimensional objects
- identify and draw lines and curves.

Area

Content related to Area can be addressed in parallel with 2D shapes.

Identify and compare area

Students:

- make closed shapes and identify the attribute of *area* as the measure of the amount of surface[45]
- use comparative language[46] to describe areas
- predict which of two surfaces will have the larger area and justify the answer (Reasons about spatial relations)
- compare areas of two similar shapes[47] directly by drawing, tracing, or cutting and pasting.

Examples

[43] For example, a square has four sides.
[44] For example, using two rectangles and a circle to represent the Aboriginal flag, making a house from a square and a triangle
[45] For example, a student recognises that area is the inside part of a shape.
[46] Example of comparative language includes ‘bigger than’, ‘smaller than’, ‘the same as’.
[47] For example, two rectangles of different sizes.

Three-dimensional spatial structure

Outcomes

A student:

- manipulates, describes and sorts three-dimensional objects **MAE-3DS-01**
- describes and compares volumes. **MAE-3DS-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

3D objects

Content related to 3D objects can be addressed in parallel with Volume.

Explore familiar three-dimensional objects

Students:

- describe the features[48] of familiar objects
- sort objects and identify the attribute[49] used to sort them
- make and describe a variety of three-dimensional models[50]
- predict the stacking capabilities of various three-dimensional objects (Reasons about spatial relations).

Volume

Content related to Volume can be addressed in parallel with 3D objects.

Compare internal volume by filling and packing

Students:

- fill and empty containers using materials such as water or sand
- use the terms ‘full’, ‘empty’ and ‘about half full’[51]
- compare the internal volumes (capacities) of two containers directly by filling one and pouring into the other
- compare the internal volumes of two containers indirectly by pouring their contents into two other identical containers and observing the level reached in each
- establish that containers of different shapes may hold the same amount[52]
- stack and pack blocks into defined spaces.

Examples

[48] Example words describing objects include ‘flat’, ‘round’, ‘curved’.
[49] Example words describing how objects were sorted include ‘size’, ‘shape’, ‘function’.
[50] For example, ‘make a model of a robot using a ball and some blocks’.
[51] For example, in describing contents of containers or when recounting a method used.
[52] For example, a tall narrow container may hold the same amount as a short wide container.

Compare volume by building

Students:

- identify the attribute of *volume* as the amount of space an object or substance occupies
- compare the volumes of two objects made from blocks or connecting cubes directly by deconstructing one object and using its parts to construct a copy of the other object
- use comparative language[53] to describe volume.

Example

[53] Example of comparative language includes ‘takes up more space’.

Non-spatial measure

Outcomes

A student:

- describes and compares the masses of objects **MAE-NSM-01**
- sequences events and reads hour time on clocks. **MAE-NSM-02**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Mass

Content related to Mass can be addressed in parallel with 3D objects.

Identify and compare mass using weight

Students:

- identify that objects can be heavy or light
- compare two masses directly by hefting
- predict which object would be heavier than, lighter than, or have about the same weight as another object and explain reasons for this prediction (Reasons about relations).

Time

Content related to Time can be addressed in parallel with Representing whole numbers.

Compare and order the duration of events using the language of time

Students:

- use terms such as daytime, night-time, morning, afternoon, today, tomorrow, yesterday, before, after and next[54]
- sequence events in time[55]
- compare the duration of two events.[56]

Examples

[54] For example, when storytelling, describing classroom routines or during learning activities.
[55] For example, ordering daily events, recounting experiences or cultural experiences or creating narratives.
[56] For example, compare the time taken to eat lunch with the time taken to brush teeth.

Connect days of the week to familiar events and actions

Students:

- recall that there are seven days in a week
- name and order the days of the week
- identify events that occur daily and relate events to a particular day or time of day.[57]

Tell time on the hour on analog and digital clocks

Students:

- create the layout of an analog clock[58]
- read analog and digital clocks to the hour using the term ‘o'clock’
- describe the position of the hour and minute hands on an analog clock when reading hour time[59].

Example

[57] For example, weekday routines, class schedules or sports training.
[58] For example, draw a clockface or position numeral cards around a hoop.
[59] For example, recognise that the numbers on the clock represent hours.

Early Stage 1: Statistics and probability

Data

Outcomes

A student:

- contributes to collecting data and interprets data displays made from objects. **MAE-DATA-01**

Content

Access content points are available to support students with significant intellectual disability who are working towards this content.

Content related to Data can be addressed in parallel with Representing whole numbers.

Respond to questions, collect information and discuss possible outcomes of activities

Students:

- predict possible responses to a question[60]
- collect information from their peers and about their environment[61]
- pose and respond to questions about the information collected.[62]

Examples

[60] For example, what is your favourite colour?
[61] For example, asking peers to respond to a question or making observations about the classroom or school environment.
[62] For example, did anyone in our class have green as their favourite colour?

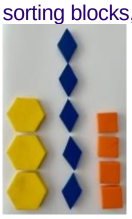
Organise objects into simple data displays and interpret the displays

Students:

- group objects according to characteristics[63]
- compare the sizes of groups of objects by counting (Reasons about relations)
- arrange objects according to a characteristic to form a data display[64]
- interpret information presented in a data display to answer questions[65] (Reasons about quantity).

Examples

[63] For example, sorting blocks, counters or collected items according to colour, size, shape or texture. 

[64] For example, 

[65] For example, How many students in our class have red as their favourite colour?

Stage 1: Number and algebra

Representing whole numbers A

Outcomes

A student:

- applies an understanding of place value and the role of zero to read, write and order two- and three-digit numbers **MA1-RWN-01**
- reasons about representations of whole numbers to 1000, partitioning numbers to use and record quantity values. **MA1-RWN-02**

Content

Content related to Representing whole numbers A can be addressed in parallel with a range of other outcomes.

Use counting sequences of ones with two-digit numbers and beyond

Students:

- identify the number before and after a given two-digit number
- count forwards and backwards by ones from a given number to at least 120.

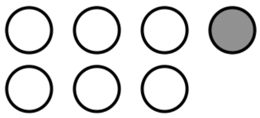
Continue and create number patterns

Students:

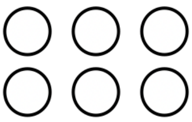
- model and describe ‘odd’[66] and ‘even’[67] numbers using items paired in two rows
- count forwards and backwards by twos from any starting point.[68]

Examples

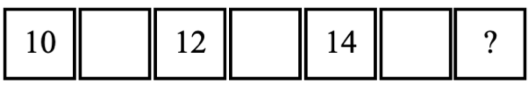
[66] For example, an odd number of items (7) with the odd item in grey.



[67] For example, an even number of items (6).



[68] For example, using a numeral track.



Represent numbers on a line

Students:

- sequence numbers and arrange them on a line[69] by considering the order and size of those numbers
- locate the approximate position of multiples of 10 on a model of a number line from 0 to 100.

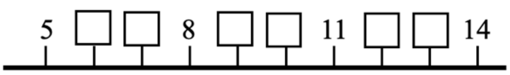
Represent the structure of groups of ten in whole numbers

Students:

- recognise that ten ones is the same as one ten
- use 10 as a reference in forming numbers from 11 to 20[70]
- count large sets of objects by systematically grouping in tens[71]
- partition two-digit numbers to show quantity values[72]
- use number lines and number charts to assist with locating the nearest ten to a number
- estimate, to the nearest ten, the number of objects in a collection[73] and check by counting in groups of ten (Reasons about quantity).

Examples

[69] For example, using a number line with missing values.



[70] For example, 'Thirteen is 1 group of ten and 3 ones.'
[71] For example, bundling pop sticks or pencils in groups of ten.
[72] For example, showing 32 as 30 and 2.
[73] For example, estimating the number of children in a room to the nearest ten.

Representing whole numbers B

Outcomes

A student:

- applies an understanding of place value and the role of zero to read, write and order two- and three-digit numbers **MA1-RWN-01**
- reasons about representations of whole numbers to 1000, partitioning numbers to use and record quantity values. **MA1-RWN-02**

Content

Content related to Representing whole numbers B can be addressed in parallel with a range of other outcomes.

Use counting sequences of ones and tens flexibly

Students:

- identify the number before and after a given three-digit number
- count forwards and backwards by tens, on[74] and off[75] the decade, with two- and three-digit numbers
- identify how many more to the next multiple of ten within two- and three-digit numbers.[76]

Form, regroup and rename three-digit numbers

Students:

- count and represent large sets of objects by systematically grouping in tens and hundreds
- use models such as base 10 material and interlocking cubes to represent and explain grouping
- state the quantity value of digits[77] in numbers of up to three digits (Reasons about quantity)
- identify the nearest hundred to a number
- recognise units of 100[78]
- use place value to partition and rename three-digit numbers in different ways[79] (Reasons about relations)
- estimate, to the nearest hundred, the number of objects in a collection and check by grouping and counting.

Examples

[74] For example, on the decade counting back by ten, *40, 30, 20, …*
[75] For example, off the decade counting by ten, *427, 437, 447, …*
[76] For example, needing 3 more to get from 27 to 30, or from 127 to 130.
[77] For example, in the number 583, the 5 represents 500 or 5 hundreds.
[78] For example, 100 cents in $1 or ten 10c coins, 3 groups of 100 in 326, 10 groups of 100 in 1000.
[79] For example, 326 as 3 groups of one hundred, 2 groups of ten and 6 ones, or 32 groups of ten and 6 ones.

Combining and separating quantities A

Outcomes

A student:

- uses number bonds and the relationship between addition and subtraction to solve problems involving partitioning. **MA1-CSQ-01**

Content

Content related to Combining and separating quantities A and B can be addressed in parallel with Geometric measure A and B: Length.

Use advanced count-by-one strategies to solve addition and subtraction problems

Students:

- apply the terms ‘add’, ‘plus’, ‘equals’, ‘is equal to’, ‘is the same as’, ‘take away’, ‘minus’ and ‘the difference between’ to describe combining and separating quantities
- recognise and use the symbols for plus (+), minus (–) and equals (=)
- record number sentences in a variety of ways using drawings, words, numerals and symbols[80]
- fluently use advanced count-by-one strategies including counting on and counting back to solve addition and subtraction problems involving one- and two-digit numbers (Reasons about relations).

Recognise and recall number bonds up to ten

Students:

- recognise, recall and record combinations of two numbers that add up or bond to form 10[81]
- model and record patterns for individual numbers up to ten by making all possible whole-number combinations (Reasons about patterns)[82]
- create, recall and recognise combinations of two numbers that add up to numbers less than 10[83]
- describe combinations for numbers using words such as *more than*, *less than* and *double*[84] (Reasons about relations).

Examples

[80] For example, to represent a mathematical story.
[81] For example, using a ten frame or other structured models.
[82] For example, 5 + 0 = 5
4 + 1 = 5
3 + 2 = 5
2 + 3 = 5
1 + 4 = 5
0 + 5 = 5
[83] For example, two numbers add together to give 8, what could they be?
[84] For example, 5 as ‘one more than four’, ‘three combined with two’, ‘double two and one more’ and ‘one less than six’.

Use flexible strategies to solve addition and subtraction problems

Students:

- use non-count-by-one strategies such as using doubles for near doubles[85] and combining numbers that add to ten[86]
- represent addition and subtraction using structured materials such as a bead string or similar model[87]
- select and apply strategies using number bonds to solve addition and subtraction problems with one- and two-digit numbers by partitioning numbers using quantity value[88] and bridging to 10[89] (Reasons about relations).

Represent equality

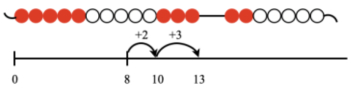
Students:

- use the equals sign to record equivalent number sentences involving addition, and to mean 'is the same as', rather than as an indication to perform an operation[90] (Reasons about relations)
- model the commutative property for addition and apply it to aid the recall of addition facts[91] (Reasons about relations)
- recall related addition and subtraction facts for numbers to at least 10[92] (Reasons about relations).

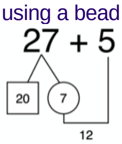
Examples

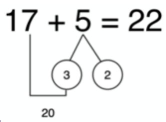
[85] For example, to find 5 + 7, double 5 and add 2.
[86] For example, to find 4 + 7 + 8 + 6 + 3 first combine 4 and 6, and 7 and 3, then add 8.

[87] For example, using a bead string to represent 8 + 5 linked to an empty number line.



[88] For example:





[89] For example, 3 can be used to bridge 17 to the next ten (20).
[90] For example, 5 + 2 = 3 + 4
[91] For example, 4 + 5 = 5 + 4
[92] For example, 8 = 5 + 3, so 8 – 3 = 5 and 8 – 5 = 3

Combining and separating quantities B

Outcomes

A student:

- uses number bonds and the relationship between addition and subtraction to solve problems involving partitioning. **MA1-CSQ-01**

Content

Content related to Combining and separating quantities A and B can be addressed in parallel with Geometric measure A and B: Length.

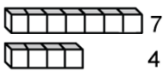
Represent and reason about additive relations

Students:

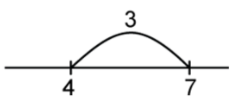
- create, record and recognise combinations of two numbers that add to numbers from 11 up to and including 20[93]
- create, model and solve word problems, using number sentences
- represent the difference between two numbers using concrete materials[94] and diagrams[95]
- represent a constant difference[96] between pairs of numbers
- model how addition and subtraction are inverse operations using concrete materials, drawings and diagrams[97]
- recall and use related addition and subtraction number facts to at least 20.[98]

Examples

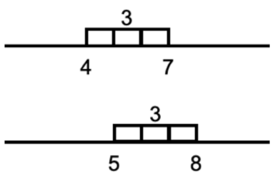
[93] For example, two different numbers add to give 11, what could they be?



[94] For example, the difference between 7 and 4 represented by blocks.



[95] For example, the difference between 4 and 7 shown as a 'jump' of 3.



[96] For example, the difference between 4 and 7 is the same as the difference between 5 and 8.

[97] For example:

8	?
15	

[98] For example 15 + 3 = 18
so 18 – 3 = 15
and 18 – 15 = 3

Form multiples of ten when adding and subtracting two-digit numbers

Students:

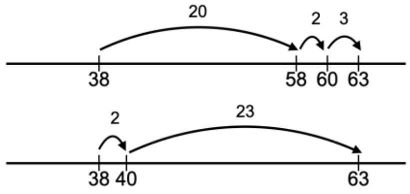
- add two-digit numbers by building to multiples of ten[99]
- add and subtract from a two-digit number and record on an empty number line[100]
- use quantity values to separate tens and ones for addition (only)[101]
- use an inverse strategy to turn a subtraction into an addition[102] (Reasons about relations).

Use knowledge of equality to solve related problems

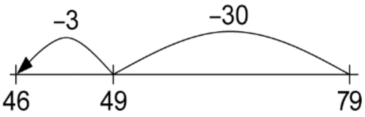
Students:

- use number bonds to determine a missing number[103]
- use number knowledge to solve related problems (Reasons about relations)[104]
- use a variety of ways of writing number sentences[105]
- use number bonds to solve equality problems.[106]

Examples



[99] For example, two ways of modelling 38 + 25, 'resting on 60' and 'resting on 40'.



[100] For example, modelling the jump strategy for 79 – 33.
[101] For example, 37 + 45 is the same as 30 + 40 = 70, and 7 + 5 = 12 so 37 + 45 = 82.
[102] For example, the shopkeeper's method of giving change. For $100 – $38: start at 38, adding 2 makes 40, then adding 60 makes 100, so the answer is $62.
[103] For example, solve 8 + _ = 20
[104] For example, uses 8 + 19 = 27 to solve 8 + _ = 17
[105] For example, 15 + _ = 18
_ =8 + 3
15 = _ + 6
[106] For example, 8 + _ = 10 + 5

Forming groups A

Outcomes

A student:

- uses the structure of equal groups to solve multiplication problems, and shares or groups to solve division problems. **MA1-FG-01**

Content

Content related to Forming groups A and B can be addressed in parallel with Two-dimensional spatial structure A and B: Area, and Three-dimensional spatial structure A and B: Volume.

Count in multiples using rhythmic and skip counting

Students:

- count by twos, threes, fives and tens using rhythmic counting and skip counting.[107]

Use skip counting patterns

Students:

- identify and describe patterns when skip counting forwards or backwards by twos, fives and tens
- determine a missing number in a number pattern with a constant difference[108]
- describe how the missing number in a number pattern was determined (Reasons about relations).

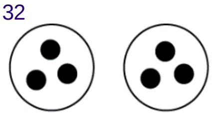
Model and use equal groups of objects to represent multiplication

Students:

- model and describe collections of objects as *groups of*[109]
- determine and distinguish between the *number of groups* and the *number in each group* when describing collections of objects (Reasons about relations)
- find the total number of objects using skip counting of equal groups of a known size.

Examples

[107] For example, rhythmic counting can be used to find the total of a collection of five-cent coins.
[108] For example, 2, 7, 12, __, 22, 27, 32
[109] For example, two groups of three.

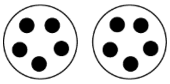


Recognise and represent division

Students:

- use concrete materials to model a half of a collection and show the relation between the half and the whole
- model sharing division by distributing a collection of objects equally into a given number of groups[110] to determine how many in each group[111]
- model grouping division by determining the number of groups of a given size that can be formed[112]
- describe the part left over when a collection cannot be distributed equally using the given group size.[113]

Examples

[110] For example, 10 objects split between two groups. 
[111] For example, determine the number in each group when 10 objects are shared between 2 people.
[112] For example, determine the number of groups when 20 objects are shared into groups of 4.
[113] For example, when 22 objects are shared into groups of 4, there are 5 groups of 4 and 2 objects left over.

Forming groups B

Outcomes

A student:

- uses the structure of equal groups to solve multiplication problems, and shares or groups to solve division problems. **MA1-FG-01**

Content

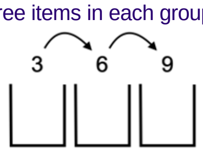
Content related to Forming groups A and B can be addressed in parallel with Two-dimensional spatial structure A and B: Area, and Three-dimensional spatial structure A and B: Volume.

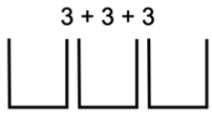
Represent and explain multiplication as the combining of equal groups

Students:

- use objects, diagrams, images or actions to model multiplication[114] as accumulating equal *groups*[115]
- solve multiplication problems using repeated addition[116]
- form arrays of equal rows and equal columns
- determine and distinguish between the *number of rows/columns* and the *number in each row/column* when describing collections of objects
- model the commutative property of multiplication, using an array[117] (Reasons about relations)
- model division by deconstructing an array equally into a given number of rows or columns.[118]

Examples

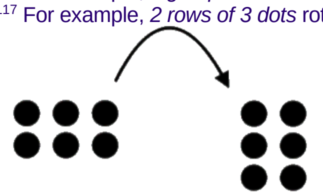
[114] For example, three groups with three items in each group visible  followed by a skip count of 3, then 6, then 9 when the items are not visible 

before using repeated addition, 3 + 3 + 3 is 9 

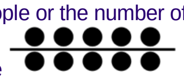
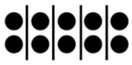
[115] For example, finding the total of 3 groups of 3, progresses from having the objects visible to using representations or markers of the groups accompanied by a skip count or repeated addition, to using number facts.

[116] For example, *3 groups of 4* is also *4 + 4 + 4*

[117] For example, *2 rows of 3 dots* rotated to show it is the same amount as *3 rows of 2 dots*.



'2 rows of 3' '2 columns of 3'

[118] For example, determine the number each person receives when 10 objects are shared between 2 people or the number of children, if there are 10 marbles and each child receives 2 marbles. 10 marbles shared between 2 people , 10 marbles and each child receives 2 marbles. 

Model doubling and halving with fractions

Students:

- model doubling and halving groups and the relation between the processes[119]
- re-create the whole given half[120]
- use concrete materials to model a half, a quarter or an eighth of a collection, and explain their thinking.[121]

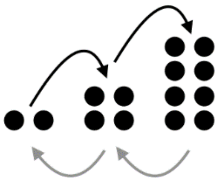
Represent multiplication and division problems

Students:

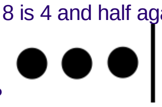
- solve multiplication and division problems using objects, diagrams, images and actions[122]
- record answers to multiplication and division problems (including those with remainders) using drawings, words and numerals.

Examples

[119] For example, double 2 is 4 and double 4 is 8, so half of 8 is 4 and half again is 2.



[120] For example, if half is 3 marbles, how many altogether?



[121] For example, recording the whole and quarters of a collection of 12.

[122] For example, involving movement and/or dance.

Stage 1: Measurement and space

Geometric measure A

Outcomes

A student:

- represents and describes the positions of objects in familiar locations **MA1-GM-01**
- measures, records, compares and estimates lengths and distances using uniform informal units, as well as metres and centimetres **MA1-GM-02**
- creates and recognises halves, quarters and eighths as part measures of a whole length. **MA1-GM-03**

Content

Position

Follow directions to familiar locations

Students:

- give and follow directions,[123] including directions involving turns to the left and right, to move between familiar locations[124]
- give and follow instructions to position objects in models and drawings
- describe the path from one location to another on drawings and diagrams.[125]

Examples

[123] For example, forward, back, turn.
[124] For example, within the classroom, school or from home to a familiar location.
[125] For example, of the school grounds,the local area or community.

Length

Content related to Length can be addressed in parallel with Representing whole numbers A and B, Combining and separating quantities A and B.

Measure the lengths of objects using uniform informal units

Students:

- use uniform informal units to measure lengths and distances by placing the units end to end without gaps or overlaps
- select appropriate uniform informal units to measure lengths and distances
- recognise and explain the relationship between the size of a unit and the number of units needed[126] (Reasons about relations)
- count informal units to measure lengths or distances and describe the part left over[127]
- record lengths and distances by referring to the number and type of unit used
- use a single informal unit repeatedly (iteratively) to measure length.[128]

Compare lengths using uniform informal units

Students:

- compare the lengths of two or more objects using appropriate uniform informal units and check by placing the objects side by side and aligning the ends
- explain why the length of an object remains constant when rearranged[129] (Reasons about relations)
- estimate lengths, indicating the number and type of unit used and check by measuring.

Examples

[126] For example, more paper clips than pop sticks will be needed to measure the length of the desk.
[127] For example, describes the part left over as about a half, less than a half, or more than a half.
[128] For example, use a single informal unit and the make, mark and move process to measure length.
[129] For example, explain why a piece of string remains the same length whether it is coiled or straight.

Subdivide lengths to find halves and quarters

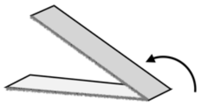
Students:

- use concrete materials to model[130] both half[131] and quarters[132] of a whole length, highlighting the length
- identify two equal parts and the relationship of the parts to the whole length, linking words and images
- recognise when lengths have or have not been divided into halves and quarters.[133]

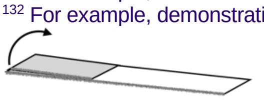
Examples

[130] For example, halving the length of the paper, then halving again to make quarters.

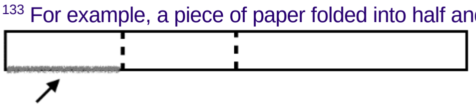
[131] For example, demonstrating half by folding a piece of paper in half (with the edge highlighted).



[132] For example, demonstrating quarters by folding a piece of paper in half and then folding it in half again.



[133] For example, a piece of paper folded into half and then one half folded in half again to form a quarter.



Geometric measure B

Outcomes

A student:

- represents and describes the positions of objects in familiar locations **MA1-GM-01**
- measures, records, compares and estimates lengths and distances using uniform informal units, as well as metres and centimetres **MA1-GM-02**
- creates and recognises halves, quarters and eighths as part measures of a whole length. **MA1-GM-03**

Content

Position

Explore simple maps of familiar locations

Students:

- make simple models from memory, photographs, drawings or descriptions[134]
- interpret simple maps by identifying objects in different locations[135]
- create a path from one location to another.

Length

Content related to Length can be addressed in parallel with Combining and separating quantities A and B.

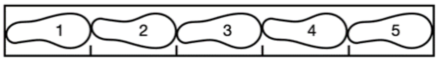
Compare and order lengths, using appropriate uniform informal units

Students:

- make and use a tape measure calibrated in uniform informal units[136]
- compare and order two or more shapes according to their lengths using an appropriate uniform informal unit
- compare the lengths of two or more objects that cannot be moved or aligned (Reasons about relations)
- record length comparisons using drawings, numerals and words, and by referring to the uniform informal unit used.

Examples

[134] For example, make a model of a familiar room.
[135] For example, explore Aboriginal mapping of Country, find a classroom on a school map.

[136] For example, calibrate a paper strip using footprints as the repeated unit. 

Recognise and use formal units to measure the lengths of objects

Students:

- recognise the need for formal units to measure lengths and distances
- use the metre as a unit to measure lengths and distances to the nearest metre or half-metre
- record lengths and distances using the abbreviation for metres (m)
- estimate lengths and distances to the nearest metre and check by measuring
- recognise the need for a formal unit smaller than the metre
- recognise that there are 100 centimetres in one metre
- measure lengths to the nearest centimetre, using a device with 1-cm markings[137]
- record lengths and distances using the abbreviation for centimetres (cm)
- estimate lengths and distances to the nearest centimetre and check by measuring.

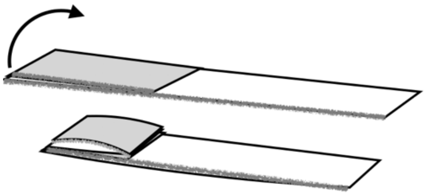
Repeatedly halve lengths to form eighths

Students:

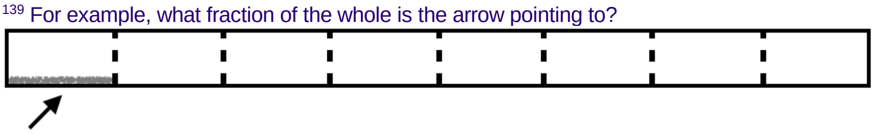
- use materials to model an eighth of a whole length, highlighting the length[138]
- recognise when a length is divided into eight equal parts.[139]

Examples

[137] For example, use a paper strip of length 10 cm, marked in centimetre units.
[138] For example, compare the results of successively halving a strip of paper 3 times with halving one-half of a half.



[139] For example, what fraction of the whole is the arrow pointing to?



Two-dimensional spatial structure A

Outcomes

A student:

- recognises, describes and represents shapes including quadrilaterals and other common polygons **MA1-2DS-01**
- measures and compares areas using uniform informal units in rows and columns. **MA1-2DS-02**

Content

2D shapes

Content related to 2D shapes and Area can be addressed in parallel.

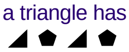
Recognise and classify shapes using obvious features

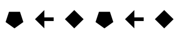
Students:

- explore, manipulate and describe features of polygons[140]
- use the terms 'side', 'vertex' and 'two-dimensional' to describe plane (flat) shapes
- create repeating linear patterns with shapes, including two-shape[141] and three-shape[142] patterns
- compare, sort and classify polygons according to the number of sides or vertices[143]
- select and name a shape from a description of its features, identifying triangles, quadrilaterals, pentagons, hexagons and octagons (Reasons about spatial relations)
- recognise that shapes with the same name may have sides of equal or different lengths (Reasons about spatial relations)
- identify shapes presented in different orientations.[144]

Examples

[140] For example, a triangle has three sides and three points.

[141] For example, 

[142] For example, 

[143] For example, classify rectangles and squares as quadrilaterals.

[144] For example, a square in different orientations is still a square. 

Transform shapes with slides and reflections

This content can also be addressed in parallel with Non-spatial measure A: Tell time to the half-hour.

Students:

- recognise that sliding or reflecting a shape does not change its size or features (Reasons about spatial relations)
- identify and create a slide (translation) or reflection of a single shape and use the terms ‘slide’ (translation) and ‘reflection’ to describe the movement of the shape
- make designs with symmetry from reflection using paper-folding, mirrors, drawings or paintings.

Area

Content related to Area can be addressed in parallel with 2D shapes and Forming groups A and B.

Indirectly compare area

Students:

- indirectly compare the areas of two surfaces that cannot be moved or superimposed[145]
- predict which of two similar shapes has the larger area and check by covering.[146]

Measure areas using uniform informal units

Students:

- explore area using uniform informal units to cover the surface in rows or columns without gaps or overlaps
- measure area by selecting and using appropriate uniform informal units (Reasons about relations)
- explain the relationship between the size of a unit and the number of units needed to measure an area[147] (Reasons about relations)
- explain why the area remains constant when units are rearranged[148] (Reasons about relations)
- record areas by referring to the number and type of uniform informal unit used[149]
- identify any parts of units left over when counting uniform informal units to measure area
- estimate areas by referring to the number and type of uniform informal unit used and check by measuring.

Examples

[145] For example, by cutting paper to cover one surface and superimposing the paper over the second surface.
[146] For example, when comparing the area of two desks check by covering with books or sheets of paper.
[147] For example, reason that more sticky notes than workbooks were needed to measure the area of the desktop.
[148] For example, the tiled area of a rectangle (2 x 8) can be rearranged to make a square (4 x 4).
[149] For example, the area of the surface is 20 sticky notes.

Two-dimensional spatial structure B

Outcomes

A student:

- recognises, describes and represents shapes including quadrilaterals and other common polygons **MA1-2DS-01**
- measures and compares areas using uniform informal units in rows and columns. **MA1-2DS-02**

Content

2D shapes

Content related to 2D shapes and Area can be addressed in parallel.

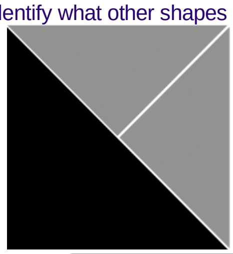
Represent, combine and separate two-dimensional shapes

Students:

- make representations of two-dimensional shapes and combinations of shapes in different orientations
- combine[150] and split single shapes and arrangements of shapes to form new shapes[151] [152] [153] (Reasons about spatial relations).

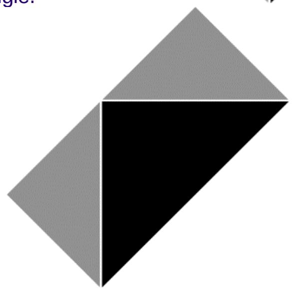
Examples

[150] For example, create a square from three triangles and identify what other shapes can be formed.



[151] For example, three triangles combined to form a square.

[152] For example, three triangles combined to form a larger triangle.



[153] For example, three triangles combined to form a rectangle.

Identify and describe the orientation of shapes using quarter turns

Students:

- identify full, half and quarter turns of a single shape and describe the movement of the shape
- identify and describe directions of turns as ‘left turn’, ‘right turn’, ‘clockwise’ or ‘anti-clockwise’
- connect the use of quarter and half turns to the turn of the minute hand on a clock for the passing of quarter and half-hours (Reasons about relations)
- perform full, half and quarter turns with a single shape
- describe the result of a turn of a shape[154]
- determine the repeating pattern formed by quarter turns.[155]

Area

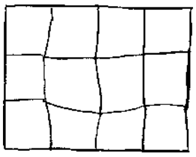
Content related to Area can be addressed in parallel with Forming groups A and B.

Compare rectangular areas using uniform square units of an appropriate size in rows and columns

Students:

- cover rectangular surfaces by creating repeated rows of square tiles
- use a single square to create the array structure of area in rows and columns[156]
- use the structure of repeated units to find the area of a rectangle
- explain how the grid structure of rows and columns helps to find the area (Reasons about spatial structure)
- compare the areas of two or more surfaces that cannot be moved, or superimposed, by measuring in uniform informal units
- record comparisons of area using drawings, numerals and words, and by referring to the uniform informal unit used.

Examples

[154] For example, when the shape does a half turn, it is the same but upside down.
[155] For example: ➡ ⬇ ⬅ ⬆ ➡ ⬇ ⬅ ⬆.
[156] For example, a drawing of squares covering a rectangle.


Three-dimensional spatial structure A

Outcomes

A student:

- recognises, describes and represents familiar three-dimensional objects **MA1-3DS-01**
- measures, records, compares and estimates internal volumes (capacities) and volumes using uniform informal units. **MA1-3DS-02**

Content

3D objects

Content related to 3D objects and Volume can be addressed in parallel.

Recognise familiar three-dimensional objects

Students:

- use the term 'three-dimensional' to describe a range of objects[157]
- distinguish between objects, which are *three-dimensional (3D)*[158] and shapes which are *two-dimensional (2D)*[159]
- identify and name familiar three-dimensional objects, including cubes, cylinders, spheres and rectangular prisms.

Sort and describe three-dimensional objects

Students:

- manipulate and describe familiar three-dimensional objects[160]
- use the term 'surface'[161] in describing familiar three-dimensional objects
- sort familiar three-dimensional objects according to obvious features[162]
- use the term 'face' to describe the flat surfaces of three-dimensional objects with straight edges
- select and name a familiar three-dimensional object from a description of its features.[163]

Examples

[157] For example, contexts include classroom, landforms and other outdoor spaces.
[158] For example, a sculpture is three-dimensional.
[159] For example, a photograph is two-dimensional.
[160] For example, familiar 3D objects include: blocks, yidaki, clapsticks, soccer balls, tissue boxes.
[161] For example, a cylinder has a 'curved surface' and two 'flat surfaces'.
[162] For example, group the objects with curved surfaces.
[163] For example, find an object with six square faces.

Volume

Content related to Volume and 3D objects can be addressed in parallel.

Measure and compare the internal volumes (capacities) of containers by filling

Students:

- use uniform informal units to measure how much a container will hold by counting the number of times a smaller container can be filled and emptied into the container being measured
- select appropriate informal units to measure the capacities of containers[164]
- recognise and explain the relationship between the size of a unit and the number of units needed[165] (Reasons about relations)
- compare the internal volumes of two or more containers using appropriate uniform informal units
- recognise and explain why containers of different shapes may have the same internal volume (Reasons about relations)
- estimate how much a container holds by referring to the number and type of uniform informal units used and check by measuring.

Measure the internal volume (capacity) of containers by packing

Students:

- pack cubic units (eg blocks) into rectangular containers so that there are no gaps
- recognise that cubes pack better than other objects in rectangular containers (Reasons about spatial structure)
- estimate and measure the internal volume of a container[166] by filling the container with uniform informal units and counting the number of units used
- explain that if there are gaps when packing and stacking, this will affect the accuracy of measuring the internal volume.

Examples

[164] For example, use cups rather than teaspoons to fill a bucket.
[165] For example, more cups than ice-cream containers will be needed to fill a bucket.
[166] For example, the number of blocks a box can hold.

Construct volumes using cubes

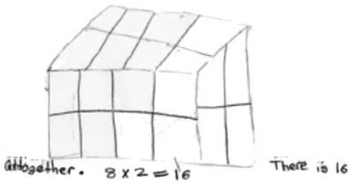
Content in Construct volumes using cubes can also be addressed in parallel with Forming groups A and B.

Students:

- explore different rectangular prisms that can be made from a given number of cubes
- devise and explain strategies for stacking and counting units to form a rectangular prism[167] (Reasons about spatial structure)
- record volumes, referring to the number and type of uniform informal unit used.[168]

Examples

[167] For example, make layers and ensure that there are no gaps between units.
[168] For example, a student determines the number of cubes in a prism 2 cubes high, 2 cubes wide and 4 cubes long.



Three-dimensional spatial structure B

Outcomes

A student:

- recognises, describes and represents familiar three-dimensional objects **MA1-3DS-01**
- measures, records, compares and estimates internal volumes (capacities) and volumes using uniform informal units. **MA1-3DS-02**

Content

3D objects

Content related to 3D objects and Volume can be addressed in parallel.

Describe the features of three-dimensional objects

Students:

- describe three-dimensional objects (prisms) using the terms 'face', 'edge' and 'vertex'
- represent three-dimensional objects by making simple models[169]
- recognise and name flat surfaces of three-dimensional objects as two-dimensional shapes.[170]

Volume

Content related to Volume and 3D objects can be addressed in parallel.

Compare containers based on internal volume (capacity) by filling and packing

Students:

- make and use a device for measuring internal volume (capacity) calibrated in uniform informal units[171]
- compare, order and record the internal volumes (capacities) of two or more containers by measuring each container in uniform informal units
- estimate internal volume (capacity) by referring to the number and type of uniform informal unit used.

Examples

[169] For example, a sphere made out of plasticine. 

[170] For example, faces of a cube are all squares.

[171] For example, calibrate a bottle by adding cups of water and marking the new level as each cup is added.

Compare volumes using uniform informal units

This content can also be addressed in parallel with Forming groups A and B.

Students:

- estimate the volumes of two or more models and check by counting the number of blocks used in each model
- compare models with different appearances, recognising when they have the same volume (Reasons about spatial structure)
- record the results of volume comparisons using drawings, numerals and words, referring to the units used
- explain that models made of the same number of units may have different volumes depending on the size of the units used (Reasons about spatial relations).

Non-spatial measure A

Outcomes

A student:

- measures, records, compares and estimates the masses of objects using uniform informal units **MA1-NSM-01**
- describes, compares and orders durations of events, and reads half- and quarter-hour time. **MA1-NSM-02**

Content

Mass

Content related to Mass can be addressed in parallel with Representing whole numbers A and B.

Investigate mass using an equal-arm balance

Students:

- place objects on either side of an equal-arm balance to obtain a level balance
- use an equal-arm balance to compare the masses of two objects and record, which is heavier or lighter
- predict the action of an equal-arm balance before placing particular objects in each pan (Reasons about relations)
- use a balance to find two collections of objects that have the same mass[172]
- compare and order the masses of two or more objects by hefting, and check using an equal-arm balance.

Time

Content related to Time can be addressed in parallel with Representing whole numbers A and B.

Name and order the cycle of months

Students:

- name and order the months of the year
- recall the number of days in each month
- identify a day and date using a Gregorian calendar[173]
- recognise monthly and annual cycles[174]

Examples

[172] For example, a collection of blocks and a collection of counters.
[173] For example, marking days of personal, cultural, religious/spiritual or community significance.
[174] For example, Aboriginal calendars, a school year, or Lunar calendar.

Tell time to the half-hour

This content can also be addressed in parallel with Two-dimensional spatial structure A: Transforms shapes with slides and reflections.

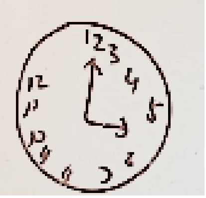
Students:

- read analog clocks to the half-hour using the terms ‘o'clock’ and ‘half past’
- describe the position of the hands on a clock for the half-hour
- connect the use of half turns to the turn of the minute hand for the passing of the half-hour
- explain why the hour hand on a clock is halfway between successive hour-markers when the minute hand shows the half-hour (Reasons about relations)
- describe everyday events with particular hour and half-hour times[175]
- record hour and half-hour time, making connections between analog[176] and digital clocks.

Examples

[175] For example, the bell rings at 3 o'clock.

[176] For example, a drawing of a clock face intended to show 3 o'clock.



Non-spatial measure B

Outcomes

A student:

- measures, records, compares and estimates the masses of objects using uniform informal units **MA1-NSM-01**
- describes, compares and orders durations of events, and reads half- and quarter-hour time. **MA1-NSM-02**

Content

Mass

Content related to Mass can be addressed in parallel with Representing whole numbers A and B.

Compare the masses of objects using an equal-arm balance

Students:

- use uniform informal units to measure the mass of an object by counting the number of units needed to obtain a level balance on an equal-arm balance
- select an appropriate uniform informal unit to measure the mass of an object and justify the choice (Reasons about relations)
- explain the relationship between the mass of a unit and the number of units needed[177] (Reasons about relations)
- compare the masses of two or more objects using the same informal units[178]
- estimate mass by referring to the number and type of uniform informal unit used and check by measuring[179]
- recognise that mass is conserved.[180]

Examples

[177] For example, recognise more toothpicks than pop sticks will be needed to balance the object.
[178] For example, the pencil has a mass of three blocks, and a pair of plastic scissors has a mass of six blocks, so the scissors are three blocks heavier than the pencil.
[179] For example, estimate the mass of a book as 10 blocks, but is 20 blocks when measured.
[180] For example, the mass of a lump of plasticine remains constant regardless of the shape it is moulded into or whether it is divided up into smaller pieces.

Time

Content related to Time can be addressed in parallel with Representing whole numbers A and B.

Describe duration using units of time

Students:

- use a calendar to calculate the number of months, weeks or days until an upcoming event
- estimate and measure the duration of an event using a repeated informal unit[181]
- compare and order the duration of events measured using a repeated informal unit
- use the terms ‘hour’, ‘minute’ and ‘second’
- compare the duration of standard time units[182]
- make predictions about the time remaining until a particular event starts or finishes[183] (Reasons about relations).

Tell time to the quarter-hour using the language of ‘past’ and ‘to’

This content can also be addressed in parallel with Two-dimensional spatial structure A: Transforms shapes with slides and reflections.

Students:

- read analog clocks to the quarter-hour using the terms ‘past’[184] and ‘to’ [185]
- describe the position of the hands on a clock for quarter past and quarter to and relate this to quarter turns
- identify which hour has just passed when the hour hand is not pointing to a numeral
- record quarter-past and quarter-to time on analog and digital clocks
- associate the numerals 3, 6 and 9 with 15, 30 and 45 minutes and with the terms ‘quarter past’, ‘half past’ and ‘quarter to', respectively.

Examples

[181] For example, the number of times you can clap your hands while the teacher writes your name.
[182] For example, an hour is longer than a minute.
[183] For example, the length of time until lunch begins.
[184] For example, it is a quarter past three.
[185] For example, it is a quarter to four.

Stage 1: Statistics and probability

Data A

Outcomes

A student:

- gathers and organises data, displays data in lists, tables and picture graphs **MA1-DATA-01**
- reasons about representations of data to describe and interpret the results. **MA1-DATA-02**

Content

Content related to Data A can be addressed in parallel with Chance A and B and Representing whole numbers A and B.

Ask questions and gather data

Students:

- investigate a topic of interest by choosing suitable questions to obtain appropriate data
- gather data and track what has been counted by using concrete materials, tally marks, lists or symbols.

Represent data with objects and drawings and describe the displays

Students:

- use concrete materials or pictures of objects as symbols to create data displays where one object or picture represents one data value[186]
- describe information presented in one-to-one data displays[187] (Reasons about relations)
- use comparative language to describe information presented in a display, such as 'more than'[188] and 'less than'
- interpret a data display and identify the biggest or smallest values.[189]

Examples

[186] For example, use different-coloured blocks of the same size to represent different-coloured cars.
[187] For example, weather charts.
[188] For example, there were more sunny days than cloudy days in a week.
[189] For example, the most popular fruit snack was an apple.

Data B

Outcomes

A student:

- gathers and organises data, displays data in lists, tables and picture graphs **MA1-DATA-01**
- reasons about representations of data to describe and interpret the results. **MA1-DATA-02**

Content

Content related to Data B can be addressed in parallel with Chance A and B and Representing whole numbers A and B.

Identify a question of interest and gather relevant data

Students:

- pose suitable questions where the answers form categories, and predict the likely responses [190]
- collect data on familiar topics[191]
- sort data into relevant categories.[192]

Create displays of data and interpret them

Students:

- organise collected data into lists and tables to display information
- represent data in a picture graph using a baseline, equal spacing and same-sized symbols
- give reasons why some representations of data are misleading[193] (Reasons about relations)
- interpret information presented in tables and picture graphs (Reasons about relations)
- record answers to questions using the information in tables and picture graphs.

Examples

[190] For example, which school sport is the most popular with class members?
[191] For example, through questioning,observation or feedback.
[192] For example, school sports.
[193] For example, where the symbol used to represent one item is shown in different sizes or where symbols are not equally spaced.

Chance A

Outcomes

A student:

- recognises and describes the element of chance in everyday events. **MA1-CHAN-01**

Content

Content related to Chance A can be addressed in parallel with Data A and B.

Identify and describe possible outcomes

Students:

- identify possible outcomes of familiar activities and events[194]
- describe the chance of possible outcomes for familiar activities and events.[195]

Examples

[194] For example, activities that might happen after lunch.
[195] Example words to describe possible outcomes include ‘will happen’, ‘might happen’, ‘won't happen’, ‘probably’, ‘maybe’.

Chance B

Outcomes

A student:

- recognises and describes the element of chance in everyday events. **MA1-CHAN-01**

Content

Content related to Chance B can be addressed in parallel with Data A and B.

Identify and describe activities that involve chance

Students:

- describe possible outcomes in everyday activities and events as being *likely* or *unlikely* to happen
- compare familiar activities and events and describe them as being *more* or *less* likely to happen (Reasoning about relations)
- describe familiar events as being *possible*.[196]

Examples

[196] For example, it is possible that it will rain today.

Access content points

Access content points have been developed to support students with significant intellectual disability who are working towards Early Stage 1 outcomes. These students may communicate using verbal and/or nonverbal forms. For each of the Early Stage 1 outcomes, access content points are provided to indicate content that students with significant intellectual disability may access in Early Stage 1 as they work towards the outcomes. Teachers will be able to choose to use the access content points on their own, or in combination with the rest of the content for each outcome. If students are able to access outcomes in the syllabus they should not require the access content points.

Access content points are provided for all Early Stage 1 outcomes.

Early Stage 1: Representing whole numbers

Instantly name the number of objects within small collections

Students:

- say 'one' or sign, gesture or point to one dot or numeral 1 when given or shown a single item
- look at or acknowledge small groups of objects.

Use the counting sequence of ones flexibly

Students:

- select numerals using eye contact, gesture or physical contact
- say, gesture or sign number words in sequence starting at one
- look at, point to or touch objects as they are being counted.

Connect counting and numerals to quantities

Students:

- say, gesture or sign 'one' in response to a single item or action[197]
- identify or move one, two or three item(s) from a group on request
- recognise 'two' and/or '2' as a quantity of two
- recognise 'three' and/or '3' as a quantity of three
- match groups of two or three with an equal dot pattern
- request 'more' of an item
- identify which of two groups of items is 'more'
- identify if two small groups are the 'same number' or different.

Examples

[197] For example, one biscuit, one bite, one clap, one head nod.

Early Stage 1: Combining and separating quantities

Model additive relations and compare quantities

Students:

- count across two small groups to a total within a counting range
- respond to changes to a group of objects[198]
- combine two small groups and count the total
- indicate that when items are added to a group the group is ‘more’[199]
- indicate that when items are removed from a group the group is ‘less’.

Identify part–whole relationships in numbers up to 10

Students:

- combine groups of items
- separate groups of items
- recognise combinations of small groups.[200]

Early Stage 1: Forming groups

Copy, continue and create patterns

Students:

- respond to a repeated pattern[201]
- copy a single action, sound or object
- match items in a repeating pattern[202]
- copy a repeating pattern.

Investigate and form equal groups by sharing

Students:

- look at, point to or touch objects as they are being distributed into smaller equal groups
- collect objects into a group when asked for one group of items within the range 1–5
- form a specified number of groups of a given size within the range 1–5.[203]

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[198] For example, look at, point to, touch, sign or name the group when asked which stack of cups one cup has been added to.
[199] For example, point to, select, sign or say ‘more’ after one or more pencils have been added to a box of pencils.
[200] For example, identify three dots when shown one dot and two dots.
[201] For example, look at, point to or move in response to a visual, auditory or physical pattern.
[202] For example, place blue blocks on top of blue blocks and red blocks on top of red blocks.
[203] For example, put 2 items in each of 2 hoops, put 1 item in each of 3 bowls.

Record grouping and sharing

Students:

- identify the number of groups[204]
- identify the number of objects in a group.[205]

Early Stage 1: Geometric measure

Position: Describe position and movement of oneself

Students:

- identify the position of a desired object[206]
- respond to simple instructions to demonstrate position or movement[207]
- respond to changes in direction.[208]

Length: Use direct and indirect comparisons to decide which is longer

Students:

- select objects with different lengths using eye contact, gesture or physical contact[209]
- label long and short items or objects from a given group[210]
- respond to terms relating to length[211]
- match items of a similar length[212]
- identify if the length of two items is the same or different
- group items by length[213]
- sort items into the same or not the same length.

Length: Create half a length

Students:

- identify half of a given length.[214]

Examples

[204] For example, look at, point to, touch, sign or say the number 3 when shown 3 groups of books; match the number 3 to an image of 3 groups of apples.
[205] For example, look at, point to, touch or match an equivalent dot card to five hats; sign or say the number 5 when shown 5 hats.
[206] For example, look at, point to, sign or name the position of a drink bottle.
[207] For example, sit 'on' your chair or put your water bottle 'in' the box.
[208] For example, follow the position of the teacher or peers with eye gaze or movement.
[209] For example, selecting the short string and the long string when given two pieces of string.
[210] For example, gesture, point to, use eye gaze, sign or name the long and short pieces of rope or ribbon
[211] For example, identifying someone with long or short hair
[212] For example, place together matching pairs of shoelaces when given shoelaces of different lengths
[213] For example, sorting toys such as cars, trucks and buses into long/short
[214] For example, looks at, points to, signs or names half a length of a piece of string

Early Stage 1: Two-dimensional spatial structure

2D shapes: Sort, describe and name familiar shapes

Students:

- select using eye gaze, point to or name a square, triangle, circle and/or rectangle in their environment[215]
- sort shapes into groups of like shapes.

2D shapes: Represent shapes

Students:

- select using eye gaze, point to or touch circles, squares, triangles or rectangles
- match circles, squares, triangles or rectangles[216]
- trace shapes, lines and curves.

Area: Identify and compare area

Students:

- respond to language to describe area[217]
- identify places or items with different areas[218]
- follow visual or verbal instructions to put a smaller object on top of a larger object.[219]

Early Stage 1: Three-dimensional spatial structure

3D objects: Explore familiar three-dimensional objects

Students:

- select using eye gaze, point to or touch objects as they are being named
- match objects to given shapes
- select and stack three-dimensional objects.[220]

Examples

[215] For example, recognise a window as a rectangle, or a wheel as a circle.
[216] For example, place one shape on top of another in any orientation..
[217] For example, sorting or labelling items as big or small
[218] For example, a table has a smaller area than the classroom, a book has a smaller area than a table..
[219] For example, stacking small plates on top of large plates
[220] For example, building blocks but not balls.

Volume: Compare internal volume by filling and packing

Students:

- respond to the terms ‘full’, ‘empty’ and/or ‘about half full’[221]
- identify the capacity limit of a container.[222]

Volume: Compare volume by building

Students:

- create objects from familiar materials[223]
- respond to terms to describe volume of three-dimensional objects[224]
- indicate the number of materials used to make an object.[225]

Early Stage 1: Non-spatial measure

Mass: Identify and compare mass using weight

Students:

- respond to terms relating to mass[226]
- identify items which have the same and/or similar mass.[227]

Time: Compare and order the duration of events using the language of time

Students:

- participate in activities with varying duration of time[228]
- demonstrate understanding of the order of routine events[229]
- identify events that happen at daytime or night-time[230]
- identify activities that are ‘now’ and ‘next’[231] follow a timer and relate this to duration of time.[232]

Examples

[221] For example, acknowledge when their cup is full or empty.
[222] For example, not overfilling a cup.
[223] For example, building objects with blocks or connecting cubes.
[224] For example, big or small space, for example select the biggest block in the group.
[225] For example, the number of blocks that make a model.
[226] For example, select the heavy object from a choice of two when asked, ‘which one is heavy?’
[227] For example, notice when a balance scale is equal (or close to).
[228] For example, participate in swimming for half an hour and participate in morning greetings for ten minutes.
[229] For example, pack away lunch box when finished eating; follow a visual timetable.
[230] For example, school and sleeping.
[231] For example, on a school schedule.
[232] For example, follow a timer to complete activities on a tablet for five minutes.

Time: Connect days of the week to familiar events and actions

Students:

- identify the day of a personally relevant event[233]
- respond to routine events[234]
- prepare for routine events.[235]

Time: Tell time on the hour on analog and digital clocks

Students:

- locate the hour hand and minute hand on an analog clock.

Early Stage 1: Data

Respond to questions, collect information and discuss possible outcomes of activities

Students:

- provide a yes/no response to questions for the purpose of collecting data[236]
- respond to a question from a choice of at least two options.

Organise objects into simple data displays and interpret the displays

Students:

- select using eye gaze, touch or point to sets of objects which are similar[237]
- match two items that are the same[238]
- represent collected data using pictures.[239]

Examples

[233] For example, going swimming on a Wednesday.
[234] For example, check off events as they are completed in task analysis, list or schedule.
[235] For example, collect a hat on the way to the playground; get swimming bag when swimming is the next scheduled activity.
[236] For example, gesture, point to, sign or say ‘yes’ or ‘no’ when asked if they have a pet.
[237] For example, to group all the green items or all the images of dogs.
[238] For example, match a picture of a cup with a cup.
[239] For example, use pictures of a dog to represent the category ‘dog’ on a graph.