Mathematics Stage 3 – sample scope and sequence

**Connections within and across strands**

Contents

[Mathematics Stage 3 – sample scope and sequence 0](#_Toc71543405)

[Tasks 0](#_Toc71543406)

[Let’s talk 2 0](#_Toc71543407)

[Tangrams sequence of learning 1](#_Toc71543408)

[Possible connections across the year 1](#_Toc71543409)

[Example connections within Number and algebra 1](#_Toc71543410)

[Example connections within Measurement and geometry 3](#_Toc71543411)

[Example connections across strands 3](#_Toc71543412)

[Early Term 1 5](#_Toc71543413)

[Example connections within Number and algebra 5](#_Toc71543414)

[Example connections within Measurement and geometry 6](#_Toc71543415)

[Example connections across strands 7](#_Toc71543416)

[Later Term 1 8](#_Toc71543417)

[Example connections within Number and algebra 8](#_Toc71543418)

[Example connections within Measurement and geometry 9](#_Toc71543419)

[Example connections across strands 9](#_Toc71543420)

[Early Term 2 10](#_Toc71543421)

[Example connections within Number and algebra 10](#_Toc71543422)

[Example connections within Measurement and geometry 12](#_Toc71543423)

[Example connections between strands 12](#_Toc71543424)

[Later Term 2 14](#_Toc71543425)

[Example connections within Number and algebra 14](#_Toc71543426)

[Example connections within measurement and geometry 15](#_Toc71543427)

[Example connections across strands 15](#_Toc71543428)

[Early Term 3 17](#_Toc71543429)

[Example connections within Number and algebra 17](#_Toc71543430)

[Example connections within Measurement and geometry 18](#_Toc71543431)

[Example connections across strands 19](#_Toc71543432)

[Later Term 3 20](#_Toc71543433)

[Example connections within Number and algebra 20](#_Toc71543434)

[Example connections across strands 21](#_Toc71543435)

[Early Term 4 23](#_Toc71543436)

[Example connections within Number and algebra 23](#_Toc71543437)

[Example connections within Measurement and geometry 24](#_Toc71543438)

[Example connections across strands 24](#_Toc71543439)

[Later Term 4 25](#_Toc71543440)

[Example connections within Number and algebra 25](#_Toc71543441)

[Example connections within measurement and geometry 27](#_Toc71543442)

[Example connections across strands 27](#_Toc71543443)

## Tasks

Examples of tasks that illustrate connections within and across syllabus strands

### Let’s talk 2

Video:

* [Let’s talk 2 (Stage 3)](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/lets-talk-2-s3)

**Syllabus content areas:**

* Multiplication and division
* Patterns and algebra
* Whole number

Some of the mathematics:

* As a mathematician, you can think flexibly about numbers and situations, for example, when you see 15 nines, you can think about:
  + 15 tens minus 15 ones
  + 15 eights plus 15 ones
  + 10 nines and 5 nines more
* You can use different strategies to solve the same problem.
* Mathematicians look to the context of a problem and make decisions about what strategies to use.

### Tangrams sequence of learning

Videos:

* [Tangrams 1: exploring trapeziums](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/tangrams-3-1-exploring-trapeziums)
* [Tangrams 2: investigating fractions](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/tangrams-3-2-investigating-fractions)
* [Tangrams 3: reimagining wholes](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-3/targeted-teaching/tangrams-3-3-reimagining-wholes)

**Syllabus content areas:**

* Area
* Two-dimensional space
* Fractions and decimals

Some of the mathematics:

* You can combine two-dimensional shapes to form other shapes, which means that you can also decompose or partition or break apart two-dimensional shapes to form other shapes.
* This reminds us of how numbers work that inside bigger numbers are smaller numbers, just like inside bigger shapes are smaller shapes.
* Shapes can look different but have some important characteristics that allow them to be classified in the same way.
* Shapes can look different but have the same area.
* You can reimagine or redefine the whole. When you do this, you change the fractional value of the parts.

For more rich tasks which connect understanding across content areas, go to the [Task catalogue](https://education.nsw.gov.au/teaching-and-learning/curriculum/key-learning-areas/primary/stage-1-resources/thinking-mathematically-resource)

## Possible connections across the year

To assist planning, the following activities are examples of ‘connections’ that may help students to transfer knowledge, understanding and skills between mathematical concepts.

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Length and two-dimensional space:

* Investigate and find the perimeter of shapes
* Classify and draw regular and irregular two-dimensional shapes from descriptions of their features
* Describe and compare the properties of prisms and pyramids in terms of their faces

Area and two-dimensional space:

* Investigating the area of shapes

Volume and capacity and three-dimensional space:

* Investigate strategies to find the volumes of rectangular prisms
* Describe and compare the properties of prisms and pyramids in terms of their faces, vertices and edges

Three-dimensional space and two-dimensional space:

* Name prisms and pyramids according to the shape of their base
* Describe and compare properties of prisms and pyramids in terms of their faces, vertices and edges
* Visualise and sketch nets for given three-dimensional objects and match objects to their net

Angles and two-dimensional space:

* Identify, name and draw right-angled, equilateral, isosceles and scalene triangles
* Describe angle size in degrees for each angle classification
* Construct, measure, compare and estimate angles in degrees (up to 360°)

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Length and addition and subtraction
  + Find perimeters of common two-dimensional shapes and record the strategy
  + Solve problems involving length and perimeter
* Length, whole numbers and fractions and decimals
  + Convert between kilometres, metres, centimetres and millimetres to compare lengths and distances
  + Find perimeters of common two-dimensional shapes and record the strategy
  + Solve problems involving length and perimeter
* Area and multiplication and division
  + Investigate strategies to find areas of rectangles (including squares) and record the strategy
  + Investigate and explain the relationship between the area of triangles and the area of rectangles
* Volume and capacity, whole numbers and fractions and decimals
  + Convert between millilitres and litres
* Volume and capacity and multiplication and division
  + Investigate strategies to find volumes of rectangular prisms
* Mass, whole number and addition and subtraction
  + Convert between kilograms and grams and between kilograms and tonnes
* Time and whole numbers
  + Draw and interpret timelines using a given scale
* Two-dimensional space and patterns and algebra
  + Continue, create, record and describe geometric and number patterns in words
* Position and patterns and algebra
  + Identify and record the coordinates of given points in all four quadrants of the number plane (Cartesian plane)

**Number and algebra – Statistics and probability:**

* Data and whole numbers
  + Pose questions and collect categorical or numerical data by observation or survey
* Chance and fractions and decimals
  + List outcomes of chance experiments involving equally likely outcomes
  + Represent probabilities using fractions
  + Recognise that probabilities range from 0 to 1
  + Represent probabilities using fractions, decimals and percentages

## Early Term 1

~~Table 1~~ Early Term 1 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbers  Addition and subtraction  Multiplication and division  Fractions and decimals  Patterns and algebra | MA3-4NA  MA3-5NA  MA3-6NA  MA3-7NA  MA3-8NA |
| Measurement and geometry | Length  Three-dimensional space  Angles | MA3-9MG  MA3-14MG  MA3-16MG |
| Statistics and probability | Data | MA3-18SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Three-dimensional space and two-dimensional space:

* Name prisms and pyramids according to the shape of their base
* Describe and compare properties of prisms and pyramids in terms of their faces, vertices and edges
* Visualise and sketch nets for given three-dimensional objects and match objects to their net

Angles and two-dimensional space:

* Identify, name and draw right-angled, equilateral, isosceles and scalene triangles.
* Describe angle size in degrees for each angle classification
* Construct, measure, compare and estimate angles in degrees (up to 360°)

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Length, whole numbers and fractions and decimals
  + Convert between kilometres, metres, centimetres and millimetres to compare lengths and distances
  + Find perimeters of common two-dimensional shapes and record the strategy
  + Solve problems involving length and perimeter

**Number and algebra – Statistics and probability:**

* Data and whole numbers
  + Pose questions and collect categorical or numerical data by observation or survey

## Later Term 1

Table 2 Later Term 1 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbers  Addition and subtraction  Multiplication and division  Fractions and decimals | MA3-4NA  MA3-5NA  MA3-6NA  MA3-7NA |
| Measurement and geometry | Area  Time  Two-dimensional space  Position | MA3-10MG  MA3-13MG  MA3-15MG  MA3-17MG |
| Statistics and probability | Data | MA3-18SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Area and two-dimensional space:

* Investigating the area of shapes

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Area and multiplication and division
  + Investigate strategies to find areas of rectangles (including squares) and record the strategy
  + Investigate and explain the relationship between the area of triangles and the area of rectangles
* Time and whole numbers
  + Draw and interpret timelines using a given scale
* Two-dimensional space and patterns and algebra
  + Continue, create, record and describe geometric and number patterns in words
* Position and patterns and algebra
  + Identify and record the coordinates of given points in all four quadrants of the number plane (Cartesian plane)

**Numbers and algebra – Statistics and probability:**

* Data and whole numbers
  + **Pose questions and collect categorical or numerical data by observation or survey**

## Early Term 2

Table 3 Early Term 2 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Addition and subtraction  Multiplication and division  Fractions and decimals  Patterns and algebra | MA3-5NA  MA3-6NA  MA3-7NA  MA3-8NA |
| Measurement and geometry | Length  Volume and capacity  Three-dimensional  Two-dimensional space | MA3-9MG  MA3-11MG  MA3-14MG  MA3-15MG |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Length and two-dimensional space:

* Investigate and find the perimeter of shapes
* Classify and draw regular and irregular two-dimensional shapes from descriptions of their features
* Describe and compare the properties of prisms and pyramids in terms of their faces

Volume and capacity and three-dimensional space:

* Investigate strategies to find the volumes of rectangular prisms
* Describe and compare the properties of prisms and pyramids in terms of their faces, vertices and edges

Three-dimensional space and two-dimensional space:

* Name prisms and pyramids according to the shape of their base
* Describe and compare properties of prisms and pyramids in terms of their faces, vertices and edges
* Visualise and sketch nets for given three-dimensional objects and match objects to their net

### Example connections between strands

**Measurement and geometry – Number and algebra:**

* Length, whole numbers and fractions and decimals
  + Convert between kilometres, metres, centimetres and millimetres to compare lengths and distances
* Length and addition and subtraction
  + Find perimeters of common two-dimensional shapes and record the strategy
  + Solve problems involving length and perimeter
* Volume and capacity, whole numbers and fractions and decimals
  + Convert between millilitres and litres
* Volume and capacity and multiplication and division
  + Investigate strategies to find volumes of rectangular prisms

## Later Term 2

Table 4 Later Term 2 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and Algebra | Whole numbers  Addition and subtraction  Multiplication and division  Fractions and decimals | MA3-4NA  MA3-5NA  MA3-6NA  MA3-7NA |
| Measurement and Geometry | Mass  Two-dimensional space  Angles | MA3-12MG  MA3-15MG  MA3-16MG |
| Statistics and Probability | Data  Chance | MA3-18SP  MA3-19SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within measurement and geometry

Two-dimensional space and angles:

* Identify, name and draw right-angled, equilateral, isosceles and scalene triangles
* Describe angle size in degrees for each angle classification
* Construct, measure, compare and estimate angles in degrees (up to 360°)

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Mass, whole number and addition and subtraction
  + Convert between kilograms and grams and between kilograms and tonnes

**Number and algebra – Statistics and probability:**

* Data and whole numbers
  + Pose questions and collect categorical or numerical data by observation or survey
* Chance and fractions and decimals
  + List outcomes of chance experiments involving equally likely outcomes
  + Represent probabilities using fractions
  + Recognise that probabilities range from 0 to 1
  + Represent probabilities using fractions, decimals and percentages

## Early Term 3

Table 5 Early Term 3 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbers  Addition and subtraction  Multiplication and division  Fractions and decimals  Patterns and algebra | MA3-4NA  MA3-5NA  MA3-6NA  MA3-7NA  MA3-8NA |
| Measurement and geometry | Length  Time  Two-dimensional space  Angles | MA3-9MG  MA3-13MG  MA3-15MG  MA3-16MG |
| Statistics and probability | Chance | MA3-19SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Length and two-dimensional space:

* Investigate and find the perimeter of shapes
* Classify and draw regular and irregular two-dimensional shapes from descriptions of their features

Two-dimensional space and angles:

* Identify, name and draw right-angled, equilateral, isosceles and scalene triangles
* Describe angle size in degrees for each angle classification
* Construct, measure, compare and estimate angles in degrees (up to 360°)

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Length, whole numbers and fractions and decimals
  + Convert between kilometres, metres, centimetres and millimetres to compare lengths and distances
* Length and addition and subtraction
  + Find perimeters of common two-dimensional shapes and record the strategy
  + Solve problems involving length and perimeter
* Time and whole numbers
  + Draw and interpret timelines using a given scale

**Statistics and probability Number and algebra:**

* Chance and fractions and decimals
  + List outcomes of chance experiments involving equally likely outcomes
  + Represent probabilities using fractions
  + Recognise that probabilities range from 0 to 1
  + Represent probabilities using fractions, decimals and percentages

## Later Term 3

Table 6 Later Term 3 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Addition and subtraction  Multiplication and division  Fractions and decimals  Patterns and algebra | MA3-5NA  MA3-6NA  MA3-7NA  MA3-8NA |
| Measurement and geometry | Area  Position | MA3-10MG  MA3-17MG |
| Statistics and probability | Data | MA3-18SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Area and multiplication and division
  + Investigate strategies to find areas of rectangles (including squares) and record the strategy
  + Investigate and explain the relationship between the area of triangles and the area of rectangles
  + Using an area model
* Position and patterns and algebra
  + Identify and record the coordinates of given points in all four quadrants of the number plane (Cartesian plane)

**Number and algebra – Statistics and probability:**

* Data and whole numbers
  + Pose questions and collect categorical or numerical data by observation or survey

## Early Term 4

Table 7 Early Term 4 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbers  Multiplication and division  Fractions and decimals | MA3-4NA  MA3-6NA  MA2-7NA |
| Measurement and geometry | Volume and capacity  Time  Three-dimensional space | MA3-11MG  MA3-13MG  MA3-14MG |
| Statistics and probability | Data  Chance | MA3-18SP  MA3-19SP |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within Measurement and geometry

Volume and capacity and three-dimensional space:

* Investigate strategies to find the volumes of rectangular prisms
* Describe and compare the properties of prisms and pyramids in terms of their faces, vertices and edges

### Example connections across strands

**Measurement and geometry – Number and algebra:**

* Volume and capacity, whole numbers and fractions and decimals
  + Convert between millilitres and litres
* Volume and capacity and multiplication and division and volume
  + Investigate strategies to find volumes of rectangular prisms
* Time and whole numbers
  + Draw and interpret timelines using a given scale

**Number and algebra – Statistics and probability:**

* Data and whole numbers
  + Pose questions and collect categorical or numerical data by observation or survey
* Chance and factions and decimals
  + List outcomes of chance experiments involving equally likely outcomes
  + Represent probabilities using fractions
  + Recognise that probabilities range from 0 to 1
  + Represent probabilities using fractions, decimals and percentages

## Later Term 4

Table 8 Later Term 4 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Addition and subtraction  Multiplication and division  Fractions and decimals  Patterns and algebra | MA3-5NA  MA3-6NA  MA3-7NA  MA3-8NA |
| Measurement and geometry | Mass  Two-dimensional space  Angles | MA3-12MG  MA3-15MG  MA3-16MG |

### Example connections within Number and algebra

Whole number and addition and subtraction:

* Partition numbers of any size in non-standard forms to aid mental calculation

Whole numbers and multiplication and division:

* Use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers
* Partition numbers of any size in non-standard forms to aid mental calculation

Whole number and patterns and algebra:

* Identify and describe factors and multiples of whole numbers and use them to solve problems
* Model, identify and describe properties of prime, composite, square and triangular numbers
* Recognise the location of negative whole numbers in relation to zero and place them on a number line

Addition and subtraction and multiplication and division:

* Explore the use of brackets and the order of operations when reading and writing number sentences
* Create a simple budget

Addition and subtraction and fractions and decimals:

* Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator
* Add and subtract fractions, including mixed numerals, where one denominator is the same as, or a multiple of, the other
* Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers
* Investigate and calculate simple percentages of quantities including discounts of 10%, 25% and 50% on sale items

Addition and subtraction, patterns and algebra and fractions and decimals:

* Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction

Multiplication and division and fractions and decimals:

* Multiply fractions by whole numbers
* Use mental, written and calculator strategies to divide decimals by one-digit whole numbers
* Multiply and divide decimals by 10, 100 and 1000

Multiplication and division and patterns and algebra:

* Find missing numbers in number sentences involving multiplication or division on one or both sides of the equals sign

### Example connections within measurement and geometry

Angles and two-dimensional space:

* Identify, name and draw right-angled, equilateral, isosceles and scalene triangles
* Describe angle size in degrees for each angle classification
* Construct, measure, compare and estimate angles in degrees (up to 360°)

### Example connections across strands

**Measurement and geometry – Number and algebra ~~:~~**~~Table 9Early Term 1 outcomes~~

* Two-dimensional space and patterns and algebra
  + Continue, create, record and describe geometric and number patterns using words
* Mass, whole numbers and addition and subtraction
  + Convert between kilograms and grams and between kilograms and tonnes