**Mathematics Stage 2 – sample scope and sequence**

Connections within and across strands

Contents

[Tasks 1](#_Toc57725481)

[Let’s talk 1](#_Toc57725482)

[Tangrams sequence of learning 1](#_Toc57725483)

[Possible connections across the year 2](#_Toc57725484)

[Example connections within Number and algebra 2](#_Toc57725485)

[Example connections within Measurement and geometry 3](#_Toc57725486)

[Example connections across strands 4](#_Toc57725487)

[Early Term 1 6](#_Toc57725488)

[Example connections within Number and algebra 6](#_Toc57725489)

[Example connections across strands 7](#_Toc57725490)

[Later Term 1 9](#_Toc57725491)

[Example connections within Number and algebra 9](#_Toc57725492)

[Example connections across strands 10](#_Toc57725493)

[Early Term 2 12](#_Toc57725494)

[Example connections within Number and algebra 12](#_Toc57725495)

[Example connections across strands 13](#_Toc57725496)

[Later Term 2 15](#_Toc57725497)

[Example connections within Number and algebra 15](#_Toc57725498)

[Example connections across strands 16](#_Toc57725499)

[Early Term 3 18](#_Toc57725500)

[Example connections within Number and algebra 18](#_Toc57725501)

[Example connections across strands 19](#_Toc57725502)

[Later Term 3 21](#_Toc57725503)

[Example connections within Number and algebra 21](#_Toc57725504)

[Example connections across strands 22](#_Toc57725505)

[Early Term 4 24](#_Toc57725506)

[Example connections within Number and algebra 24](#_Toc57725507)

[Example connections across strands 25](#_Toc57725508)

[Later Term 4 26](#_Toc57725509)

[Example connections within Number and algebra 26](#_Toc57725510)

[Example connections across strands 27](#_Toc57725511)

## Tasks

Examples of tasks that illustrate connections within and across syllabus strands

### Let’s talk

Video:

* [Let’s talk 2 (Stage 2)](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-2/targeted-teaching/lets-talk-2-s2)

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 5 nines you can think about it as 5 tens minus 5 ones, or 5 eights and 5 ones 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-2/targeted-teaching/tangrams-2-1-exploring-trapeziums)
* [Tangrams 2: investigating fractions](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-2/targeted-teaching/tangrams-2-2-investigating-fractions)
* [Tangrams 3: exploring halves](https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-2/targeted-teaching/tangrams-2-2-investigating-fractions)

**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.

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 numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections within Measurement and geometry

Three-dimensional space and two-dimensional space:

* Deconstruct everyday packages that are prisms (including cubes) to create nets, for example, cut up tissue boxes
* Investigate, make and identify the variety of nets that can be used to create a particular prism, such as the variety of nets that can be used to make a cube
* Represent three-dimensional objects in drawings attempting to show depth
* Sketch three-dimensional objects from different views

Volume and capacity and three-dimensional space:

* Compare volumes of objects by submerging each in water
* Identify, describe and compare features of prisms, pyramids, cylinders, cones and spheres including their volume and capacity

### Example connections across strands

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

* Length and whole numbers
	+ Measure, order and compare objects using familiar metric units of length (metres, centimetres, millimetres)
* Length, two-dimensional space and addition and subtraction
	+ Estimate and measure perimeters of two-dimensional shapes
* Length and multiplication and division
	+ Convert between metres, centimetres and millimetres
* Area and multiplication and division
	+ Use square centimetres and square metres to measure and estimate rectangular (and square) areas
	+ Measure and compare the areas of regular and irregular shapes using a square-centimetre grid
	+ Measure the areas of rectangles (including squares) in square centimetres
* Volume and capacity and multiplication and division
	+ Use the cubic centimetre as a unit to measure volumes
* Time and fractions and decimals
	+ Tell time to the minute and investigate the relationship between units of time
	+ Explain the relationship between the size of a unit and the number of units needed, for example, fewer hours than minutes will be needed to measure the same duration of time
* Two-dimensional space and fractions and decimals
	+ Record different combinations of common shapes that can be used to form a particular regular polygon or shapes formed by splitting regular polygons
	+ Apply and describe amounts of rotation, in both 'clockwise' and 'anti-clockwise' directions, including half-turns, quarter-turns and three-quarter-turns, when creating designs
* Three-dimensional space and multiplication and division
	+ Make models of three-dimensional objects
	+ Represent three-dimensional objects in drawings showing depth
* Position and multiplication and division
	+ Use scales involving multiples of 10 to calculate the distance between two points on maps and plans

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondenceto draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Early Term 1

Table 1 Early Term 1 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimalsPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-7NAMA2-8NA |
| Measurement and geometry | LengthTimeThree-dimensional space | MA2-9MGMA2-13MGMA2-14MG |
| Statistics and probability | DataChance | MA2-18SPMA2-19SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, ~~eg~~ 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra :

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

Length and whole numbers:

* Measure, order and compare objects using familiar metric units of length (metres, centimetres, millimetres)

Length, two-dimensional space and addition and subtraction:

* Estimate and measure perimeters of two-dimensional shapes

Length and multiplication and division:

* Convert between metres, centimetres and millimetres

Time and fractions and decimals:

* Tell time to the minute and investigate the relationship between units of time
* Explain the relationship between the size of a unit and the number of units needed, for example, fewer hours than minutes will be needed to measure the same duration of time

Three-dimensional space and multiplication and division:

* + Make models of three-dimensional objects
	+ Represent three-dimensional objects in drawings showing depth

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
* Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Later Term 1

Table 2 Later Term 1 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra  | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimals | MA2-4NAMA2-5NAMA2-6NAMA2-7NA |
| Measurement and Geometry | LengthAreaTwo-dimensional space | MA2-9MGMA2-10MGMA2-15MG |
| Statistics and probability | DataChance | MA2-18SPMA2-19SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

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

* Length and whole numbers
	+ Measure, order and compare objects using familiar metric units of length (metres, centimetres, millimetres)
* Length, two-dimensional space and addition and subtraction
	+ Estimate and measure perimeters of two-dimensional shapes
* Length and multiplication and division
	+ Convert between metres, centimetres and millimetres
* Area and multiplication and division
	+ Use square centimetres and square metres to measure and estimate rectangular (and square) areas
	+ Measure and compare the areas of regular and irregular shapes using a square-centimetre grid
	+ Measure the areas of rectangles (including squares) in square centimetres
* Two-dimensional space and fractions and decimals
	+ Record different combinations of common shapes that can be used to form a particular regular polygon or shapes formed by splitting regular polygons
	+ Apply and describe amounts of rotation, in both 'clockwise' and 'anti-clockwise' directions, including half-turns, quarter-turns and three-quarter-turns, when creating designs

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers:
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Early Term 2

Table 3 Early Term 2 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimalsPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-7NAMA2-8NA |
| Measurement and geometry | Volume and capacityTimeTwo-dimensional spaceAngles | MA2-11MGMA2-13MGMA2-15MGMA2-16MG |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

* Volume and capacity and multiplication and division
	+ Use the cubic centimetre as a unit to measure volumes
* Time and fractions and decimals
	+ Tell time to the minute and investigate the relationship between units of time
	+ Explain the relationship between the size of a unit and the number of units needed, for example, fewer hours than minutes will be needed to measure the same duration of time
* Two-dimensional space and fractions and decimals
	+ Record different combinations of common shapes that can be used to form a particular regular polygon or shapes formed by splitting regular polygons
	+ Apply and describe amounts of rotation, in both 'clockwise' and 'anti-clockwise' directions, including half-turns, quarter-turns and three-quarter-turns, when creating designs

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Later Term 2

Table 4 Later Term 2 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimalsPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-7NAMA2-8NA |
| Measurement and geometry | Volume and capacityMassThree-dimensional spacePosition | MA2-11MGMA2-12MGMA2-14MGMA2-17MG |
| Statistics and Probability | Data | MA2-18SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

* Volume and capacity and multiplication and division
	+ Use the cubic centimetre as a unit to measure volumes
* Three-dimensional space and multiplication and division
	+ Make models of three-dimensional objects
	+ Represent three-dimensional objects in drawings showing depth
* Position and multiplication and division
	+ Use scales involving multiples of 10 to calculate the distance between two points on maps and plans

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Early Term 3

Table 5 Early Term 3 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-8NA |
| Measurement and geometry | LengthTimeTwo-dimensional spacePosition | MA2-9MGMA2-13MGMA2-15MGMA2-17MG |
| Statistics and probability | DataChance | MA2-18SPMA2-19SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra :

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

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

* Length and whole numbers
	+ Measure, order and compare objects using familiar metric units of length (metres, centimetres, millimetres)
* Length, two-dimensional space and addition and subtraction
	+ Estimate and measure perimeters of two-dimensional shapes
* Length and multiplication and division
	+ Convert between metres, centimetres and millimetres
* Time and fractions and decimals
	+ Tell time to the minute and investigate the relationship between units of time
	+ Explain the relationship between the size of a unit and the number of units needed, for example, fewer hours than minutes will be needed to measure the same duration of time
* Two-dimensional space and fractions and decimals
	+ Record different combinations of common shapes that can be used to form a particular regular polygon or shapes formed by splitting regular polygons
	+ Apply and describe amounts of rotation, in both 'clockwise' and 'anti-clockwise' directions, including half-turns, quarter-turns and three-quarter-turns, when creating designs
* Position and multiplication and division
	+ Use scales involving multiples of 10 to calculate the distance between two points on maps and plans

**Statistics and probability – Number and algebra**

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Later Term 3

Table 6 Later Term 3 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimals | MA2-4NAMA2-5NAMA2-6NA,MA2-7NA |
| Measurement and geometry | LengthAreaVolume and capacityAngles | MA2-9MGMA2-10MGMA2-11MGMA2-16MG |
| Statistics and probability | Data | MA1-18SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

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

* Length and whole numbers
	+ Measure, order and compare objects using familiar metric units of length (metres, centimetres, millimetres)
* Length, two-dimensional space and addition and subtraction
	+ Estimate and measure perimeters of two-dimensional shapes
* Length and multiplication and division
	+ Convert between metres, centimetres and millimetres
* Area and multiplication and division
	+ Use square centimetres and square metres to measure and estimate rectangular (and square) areas
	+ Measure and compare the areas of regular and irregular shapes using a square-centimetre grid
	+ Measure the areas of rectangles (including squares) in square centimetres
* Volume and capacity and multiplication and division
	+ Use the cubic centimetre as a unit to measure volumes

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

* **Data and whole numbers**
	+ Collect data, organise it into categories, and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies
	+ Construct vertical and horizontal column graphs and picture graphs that represent data using one-to-one correspondence
	+ Discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used, for example,  = 10 people, if there are 200 data values
	+ Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws

## Early Term 4

Table 7 Early Term 4 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimalsPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-7NAMA2-8NA |
| Measurement and geometry | Volume and capacityThree-dimensional spaceTwo-dimensional spaceAngles | MA2-11MGMA2-14MGMA2-15MGMA2-16MG |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra :

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

* Volume and capacity and multiplication and division
	+ Use the cubic centimetre as a unit to measure volumes
* Two-dimensional space and fractions and decimals
	+ Record different combinations of common shapes that can be used to form a particular regular polygon or shapes formed by splitting regular polygons
	+ Apply and describe amounts of rotation, in both 'clockwise' and 'anti-clockwise' directions, including half-turns, quarter-turns and three-quarter-turns, when creating designs
* Three-dimensional space and multiplication and division
	+ Make models of three-dimensional objects
	+ Represent three-dimensional objects in drawings showing depth

## Later Term 4

Table 8 Later Term 4 outcomes

|  |  |  |
| --- | --- | --- |
| Strand | Substrand focus | Outcomes |
| Number and algebra | Whole numbersAddition and subtractionMultiplication and divisionFractions and decimalsPatterns and algebra | MA2-4NAMA2-5NAMA2-6NAMA2-7NAMA2-8NA |
| Measurement and geometry | MassTimePosition | MA2-12MGMA2-13MGMA2-17MG |
| Statistics and probability | Chance | MA2-19SP |

### Example connections within Number and algebra

**Whole numbers and addition and subtraction:**

* Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems
* Apply part-part-whole knowledge of numbers and known single-digit addition and subtraction facts to mental strategies for addition and subtraction of two-, three- and four-digit numbers
* Use and record a range of mental strategies for addition and subtraction of two-, three- and four-digit numbers

Whole number, addition and subtraction and patterns and algebra:

* Use the equals sign to record equivalent number sentences involving addition and subtraction, for example, 32 – 13 = 30 – 11
* Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign
* Model and apply the associative property of addition to aid mental computation, for example, 2 + 3 + 8 = 2 + 8 + 3 = 10 + 3 = 13
* Count forwards and backwards by tens and hundreds on and off the decade
* Recognise and explain the connection between addition and subtraction

Addition and subtraction and patterns and algebra:

* Describe, continue and create number patterns resulting from performing addition or subtraction

Addition and subtraction and fractions and decimals:

* Perform calculations with money, including calculating equivalent amounts using different denominations
* Model, compare and represent decimals with one and two decimal places

Whole numbers and multiplication and division:

* Recall multiplication facts of two, three, five and ten and related division facts

Whole numbers and patterns and algebra:

* Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way

Multiplication and division and fractions and decimals:

* Determine multiples and factors of whole numbers
* Model, compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; and 5, 10 and 100

Multiplication and division and patterns and algebra:

* Recognise, continue and describe number patterns resulting from performing multiplication and division
* Find missing numbers in number sentences involving one operation of multiplication or division

### Example connections across strands

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

* Time and fractions and decimals
	+ Tell time to the minute and investigate the relationship between units of time
	+ Explain the relationship between the size of a unit and the number of units needed, for example, fewer hours than minutes will be needed to measure the same duration of time
* Position and multiplication and division
	+ Use scales involving multiples of 10 to calculate the distance between two points on maps and plans

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

* Chance and whole numbers
	+ Explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws