



# Scope & Sequence Overview - Stage 3, Year 5



## Whole Number 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- orders, reads and represents integers of any size and describes properties of whole numbers - MA3-4NA

### Vocabulary

ascending order, descending order, zero, ones, tens, hundreds, thousands, tens of thousands, hundreds of thousands, millions, digit, place value, expanded notation, round to, whole number, factor, highest common factor (HCF), multiple, lowest common multiple (LCM), number line, whole number, positive number, negative number, integer, prime number, composite number, factor, square number, triangular number.

T1	T2	T3	T4
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### Recognise, represent and order numbers to at least tens of millions

• apply an understanding of place value and the role of zero to read and write numbers of any size (up to 5 digits)				
• state the place value of digits in numbers of any size (up to 5 digits)				
• arrange numbers of any size in ascending and descending order (up to 5 digits)				
• record numbers of any size using expanded notation, e.g. $1\ 63\ 480 = 100\ 000 + 60\ 000 + 3000 + 400 + 80$				
• use numbers of any size in real-life situations, including in money problems (up to 5 digits)				
• recognise different abbreviations of numbers used in everyday contexts, e.g. \$350 K represents \$350 000				MR
• round numbers to a specified place value, e.g. round 5 461 883 to the nearest million (nearest ten thousand)				

### Identify and describe factors and multiples of whole numbers and use them to solve problems

• determine all 'factors' of a given whole number, e.g. 36 has factors 1, 2, 3, 4, 6, 9, 12, 18 and 36				
• determine 'multiples' of a given whole number, e.g. multiples of 7 are 7, 14, 21, 28, ...				
• determine whether a particular number is a factor of a given number using digital technologies				

## Addition & Subtraction 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and applies appropriate strategies for addition and subtraction with counting numbers of any size - MA3-5NA

### Vocabulary

plus, sum, add, addition, increase, minus, the difference between, subtract, subtraction, decrease, equals, is equal to, empty number line, strategy, digit, estimate, round to, budget, operation.

T1	T2	T3	T4
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### Use efficient mental and written strategies and apply appropriate digital technologies to solve problems

• use the term 'sum' to describe the result of adding two or more numbers, e.g. 'The sum of 7 and 5 is 12'	MR			
• add three or more numbers with different numbers of digits, with and without the use of digital technologies, e.g. $42\ 000 + 5123 + 246$				
• select and apply efficient mental, written and calculator strategies to solve addition and subtraction word problems, including problems involving money				
• record the strategy used to solve addition and subtraction word problems				
• check solutions to problems, including by using the inverse operation				

### Use estimation and rounding to check the reasonableness of answers to calculations

• round numbers appropriately when obtaining estimates to numerical calculations				
• use estimation to check the reasonableness of answers to addition and subtraction calculations, e.g. $1\ 438 + 129$ is about $1\ 440 + 130$				

## Multiplication & Division 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation - MA3-6NA

## Vocabulary

multiply, multiplied by, product, multiplication, multiplication facts, area, thousands, hundreds, tens, ones, double, multiple, factor, divide, divided by, quotient, division, halve, remainder, fraction, decimal, equals, strategy, digit, estimate, round to, speed, per, operations, order of operations, grouping symbols, brackets, number sentence, is the same as.

T1 T2 T3 T4

### Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental and written strategies and appropriate digital technologies

<ul style="list-style-type: none"> <li>use mental and written strategies to multiply three- and four-digit numbers by one-digit numbers, including               <ul style="list-style-type: none"> <li>– multiplying the thousands, then the hundreds, then the tens and then the ones</li> <li>– using an area model</li> <li>– using the formal algorithm</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>use mental and written strategies to multiply two- and three-digit numbers by two-digit numbers               <ul style="list-style-type: none"> <li>– using an area model for two-digit by two-digit multiplication, e.g. <math>25 \times 26</math></li> <li>– factorising the numbers, e.g. <math>12 \times 25 = 3 \times 4 \times 25 = 3 \times 100 = 300</math></li> <li>– using the extended form (long multiplication) of the formal algorithm</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>use digital technologies to multiply numbers of up to four digits</li> </ul>				
<ul style="list-style-type: none"> <li>apply appropriate mental and written strategies, and digital technologies, to solve multiplication word problems</li> </ul>				
<ul style="list-style-type: none"> <li>record the strategy used to solve multiplication word problems</li> </ul>				

### Solve problems involving division by a one-digit number, including those that result in a remainder

<ul style="list-style-type: none"> <li>use the term 'quotient' to describe the result of a division calculation, e.g. 'The quotient when 30 is divided by 6 is 5'</li> </ul>		MR		
<ul style="list-style-type: none"> <li>recognise and use different notations to indicate division, e.g. <math>25 \div 4</math>, <math>4 \overline{)25}</math>, <math>\frac{25}{4}</math></li> </ul>				
<ul style="list-style-type: none"> <li>use mental and written strategies to divide a number with three or more digits by a one-digit divisor where there is no remainder, including:               <ul style="list-style-type: none"> <li>• dividing the hundreds, then the tens, and then the ones (split strategy)</li> <li>• using the formal algorithm</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>use mental and written strategies to divide a number with three or more digits by a one-digit divisor where there is a remainder, including:               <ul style="list-style-type: none"> <li>• dividing the tens, and then the ones (split strategy)</li> <li>• using the formal algorithm</li> </ul> </li> </ul>				
<ul style="list-style-type: none"> <li>show the connection between division and multiplication, including where there is a remainder, e.g. <math>25 \div 4 = 6</math> remainder 1, so <math>25 = 4 \times 6 + 1</math></li> </ul>				
<ul style="list-style-type: none"> <li>use digital technologies to divide whole numbers by one- and two-digit divisors</li> </ul>				
<ul style="list-style-type: none"> <li>apply appropriate mental and written strategies, and digital technologies, to solve division word problems</li> </ul>				
<ul style="list-style-type: none"> <li>use and interpret remainders in solutions to division problems, e.g. recognise when it is appropriate to round up an answer, such as 'How many 5-seater cars are required to take 47 people to the beach?'</li> </ul>				
<ul style="list-style-type: none"> <li>record the strategy used to solve division word problems</li> </ul>				

### Use estimation and rounding to check the reasonableness of answers to calculations

<ul style="list-style-type: none"> <li>round numbers appropriately when obtaining estimates to numerical calculations</li> </ul>				
<ul style="list-style-type: none"> <li>use estimation to check the reasonableness of answers to multiplication and division calculations, e.g. '<math>32 \times 253</math> will be about, but more than, <math>30 \times 250</math>'</li> </ul>				

## Multiplication & Division 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation - MA3-6NA

### Vocabulary

multiply, multiplied by, product, multiplication, multiplication facts, area, thousands, hundreds, tens, ones, double, multiple, factor, divide, divided by, quotient, division, halve, remainder, fraction, decimal, equals, strategy, digit, estimate, round to, speed, per, operations, order of operations, grouping symbols, brackets, number sentence, is the same as.

T1 T2 T3 T4

### Select and apply efficient mental and written strategies, and appropriate digital technologies, to solve problems involving multiplication and division with whole numbers

<ul style="list-style-type: none"> <li>use mental strategies to multiply and divide numbers by 10, 100, 1000 and their multiples</li> </ul>		MR		
<ul style="list-style-type: none"> <li>solve word problems involving multiplication and division, e.g. 'A recipe requires 3 cups of flour for 10 people. How many cups of flour are required for 40 people?'</li> </ul>				
<ul style="list-style-type: none"> <li>recognise symbols used to record speed in kilometres per hour, e.g. 80 km/h</li> </ul>				
<ul style="list-style-type: none"> <li>solve simple problems involving speed, e.g. 'How long would it take to travel 600 km if the average speed for the trip is 75 km/h?'</li> </ul>				


## Fractions & Decimals 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- compares, orders and calculates with fractions, decimals and percentages - MA3-7NA

### Vocabulary

whole, equal parts, half, quarter, eighth, third, sixth, twelfth, fifth, tenth, hundredth, thousandth, one-thousandth, fraction, numerator, denominator, mixed numeral, whole number, number line, proper fraction, improper fraction, decimal, decimal point, digit, place value, decimal places, equivalent, ascending order, descending order, simplest form, best buy, percent, percentage, discount, sale price, is equal to, equivalent, ascending order, descending order, simplest form, round to, dollars, cents.

	T1	T2	T3	T4
<b>Compare and order common unit fractions and locate and represent them on a number line</b>				
place fractions with denominators of 2, 3, 4, 5, 6, 8, 10 and 12 on a number line between 0 and 1				
compare and order unit fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100				
<b>Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator</b>				
identify and describe 'proper fractions' as fractions in which the numerator is less than the denominator				
identify and describe 'improper fractions' as fractions in which the numerator is greater than the denominator				
express mixed numerals as improper fractions and vice versa, through the use of diagrams and number lines, leading to a mental strategy				
model and represent strategies, including using diagrams, to add proper fractions with the same denominator, where the result may be a mixed numeral				
model and represent a whole number added to a proper fraction, e.g. $2 + \frac{3}{4} = 2\frac{3}{4}$				
use diagrams, and mental and written strategies, to subtract a unit fraction from any whole number including 1				
solve word problems that involve addition and subtraction of fractions with the same denominator				
model and represent strategies, including using diagrams, to add mixed numerals with the same denominator, eg 				
subtract a proper fraction from another proper fraction with the same denominator, eg $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$				
<b>Recognise that the place value system can be extended beyond hundredths</b>				
express thousandths as decimals				
interpret decimal notation for thousandths, e.g. $0.123 = \frac{123}{1000}$				
state the place value of digits in decimal numbers of up to three decimal places				
<b>Compare, order and represent decimals</b>				
compare and order decimal numbers of up to three decimal places, e.g. 0.5, 0.125, 0.25				
interpret zero digit(s) at the end of a decimal, e.g. 0.170 has the same value as 0.17				
place decimal numbers of up to three decimal places on a number line between 0 and 1				

## Fractions & Decimals 2

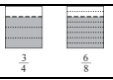
### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- compares, orders and calculates with fractions, decimals and percentages - MA3-7NA

### Vocabulary

whole, equal parts, half, quarter, eighth, third, sixth, twelfth, fifth, tenth, hundredth, thousandth, one-thousandth, fraction, numerator, denominator, mixed numeral, whole number, number line, proper fraction, improper fraction, decimal, decimal point, digit, place value, decimal places, equivalent, ascending order, descending order, simplest form, best buy, percent, percentage, discount, sale price, is equal to, equivalent, ascending order, descending order, simplest form, round to, dollars, cents.

	T1	T2	T3	T4
<b>Compare fractions with related denominators and locate and represent them on a number line</b>				
model, compare and represent fractions with denominator of 2, 3, 4, 5, 6, 8, 10, 12 and 100 of a whole object, a whole shape and a collection of objects				
compare and order simple fractions with related denominators using strategies such as diagrams, the number line, or equivalent fractions, e.g. write $\frac{3}{5}$ , $\frac{3}{10}$ , $1\frac{1}{10}$ , $\frac{4}{5}$ or $\frac{7}{10}$ in ascending order				

<ul style="list-style-type: none"> <li>find equivalent fractions by re-dividing the whole, using diagrams and number lines, e.g. </li> </ul>				
<ul style="list-style-type: none"> <li>record equivalent fractions using diagrams and numerals</li> </ul>				
<ul style="list-style-type: none"> <li>develop mental strategies for generating equivalent fractions, such as multiplying or dividing the numerator and the denominator by the same number, e.g. <math>\frac{1}{4} = \frac{1 \times 2}{4 \times 2} = \frac{1 \times 3}{4 \times 3} = \frac{1 \times 4}{4 \times 4} = \dots</math>, i.e. <math>\frac{1}{4} = \frac{2}{8} = \frac{3}{12} = \frac{4}{16} = \dots</math></li> </ul>				
<b>Add and subtract decimals, with and without the use of digital technologies, and use estimation and rounding to check the reasonableness of answers</b>				
<ul style="list-style-type: none"> <li>add and subtract decimals with the same number of decimal places, with and without the use of digital technologies</li> </ul>				
<ul style="list-style-type: none"> <li>add and subtract decimals with a different number of decimal places, with and without the use of digital technologies</li> </ul>				
<ul style="list-style-type: none"> <li>round a number of up to three decimal places to the nearest whole number</li> </ul>				
<ul style="list-style-type: none"> <li>use estimation and rounding to check the reasonableness of answers when adding and subtracting decimals</li> </ul>				
<ul style="list-style-type: none"> <li>solve word problems involving the addition and subtraction of decimals, with and without the use of digital technologies, including those involving money</li> </ul>				
<b>Multiply and divide decimals by powers of 10</b>				
<ul style="list-style-type: none"> <li>recognise the number patterns formed when decimals are multiplied and divided by 10, 100 and 1000</li> </ul>				MR
<ul style="list-style-type: none"> <li>multiply and divide decimals by 10, 100 and 1000</li> </ul>				MR
<b>Make connections between equivalent fractions, decimals and percentages</b>				
<ul style="list-style-type: none"> <li>recognise that the symbol % means 'percent'</li> </ul>				
<ul style="list-style-type: none"> <li>represent common percentages as fractions and decimals, e.g. '25% means 25 out of 100 or <math>\frac{1}{4}</math> or 0.25'</li> </ul>				
<ul style="list-style-type: none"> <li>represent simple fractions as decimals and as percentages</li> </ul>				

## Patterns & Algebra 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane - MA3-8NA

### Vocabulary

pattern, increase, decrease, missing number, number sentence, number line, value, table of values, rule, position in pattern, value of term, number plane (Cartesian plane), horizontal axis (x-axis), vertical axis (y-axis), axes, quadrant, intersect, point of intersection, right angles, origin, coordinates, point, plot, term.

T1 T2 T3 T4

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

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|--|--|--|--|--|
| <ul style="list-style-type: none"> <li>identify, continue and create simple number patterns involving addition and subtraction</li> </ul>  |  |  |  |  |
| <ul style="list-style-type: none"> <li>describe patterns using the terms 'increase' and 'decrease', e.g. for the pattern 48, 41, 34, 27, ..., 'The terms decrease by seven'</li> </ul> |  |  |  |  |

### Use equivalent number sentences involving multiplication and division to find unknown quantities

- |   |  |  |  |  |
|---|--|--|--|--|
| <ul style="list-style-type: none"> <li>complete number sentences that involve more than one operation by calculating missing numbers, e.g. <math>5 \times \square = 4 \times 10</math>, <math>5 \times \square = 30 - 10</math></li> </ul>        |  |  |  |  |
| <ul style="list-style-type: none"> <li>identify and use inverse operations to assist with the solution of number sentences, e.g. <math>125 \div 5 = \square</math> becomes <math>\square \times 5 = 125</math></li> </ul>                         |  |  |  |  |
| <ul style="list-style-type: none"> <li>complete number sentences to match word problems that require finding a missing number, e.g. 'I am thinking of a number that when I double it and add 5, the answer is 13. What is the number?'</li> </ul> |  |  |  |  |

## Patterns & Algebra 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane - MA3-8NA

### Vocabulary

pattern, increase, decrease, missing number, number sentence, number line, value, table of values, rule, position in pattern, value of term, number plane (Cartesian plane), horizontal axis (x-axis), vertical axis (y-axis), axes, quadrant, intersect, point of intersection, right angles, origin, coordinates, point, plot, term.

**Continue and create sequences involving whole numbers, fractions and decimals; describe the rule used to create the sequence**

<ul style="list-style-type: none"> <li>create simple geometric patterns using concrete materials, e.g. <math>\Delta</math>, <math>\Delta\Delta</math>, <math>\Delta\Delta\Delta</math>, <math>\Delta\Delta\Delta\Delta</math>, ...</li> </ul>																		
<ul style="list-style-type: none"> <li>complete a table of values for a geometric pattern and describe the pattern in words, e.g.  <math>\square</math>, <math>\square\square</math>, <math>\square\square\square</math>, <math>\square\square\square\square</math>, ...</li> </ul> <table border="1" style="font-size: small;"> <tr> <td>number of squares</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>...</td> <td>100</td> </tr> <tr> <td>number of matches</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>...</td> <td></td> </tr> </table>	number of squares	1	2	3	4	...	100	number of matches	4	8	12	16	...					
number of squares	1	2	3	4	...	100												
number of matches	4	8	12	16	...													

## Length 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length - MA3-9MG

### Vocabulary

length, distance, kilometre, metre, centimetre, millimetre, measure, measuring device, ruler, tape measure, trundle wheel, estimate, perimeter, dimensions, width.

**Choose appropriate units of measurement for length**

<ul style="list-style-type: none"> <li>recognise the need for a formal unit longer than the metre for measuring distance</li> </ul>				
<ul style="list-style-type: none"> <li>recognise that there are 1000 metres in one kilometre, i.e. 1000 metres = 1 kilometre</li> </ul>				
<ul style="list-style-type: none"> <li>measure a kilometre and a half-kilometre</li> </ul>				
<ul style="list-style-type: none"> <li>record distances using the abbreviation for kilometres (km)</li> </ul>				
<ul style="list-style-type: none"> <li>select and use the appropriate unit and measuring device to measure lengths and distances</li> </ul>				
<ul style="list-style-type: none"> <li>estimate lengths and distances using an appropriate unit and check by measuring</li> </ul>				
<ul style="list-style-type: none"> <li>record lengths and distances using combinations of millimetres, centimetres, metres and kilometres, e.g. 1 km 200 m</li> </ul>				

**Calculate the perimeters of rectangles using familiar metric units**

<ul style="list-style-type: none"> <li>use the term 'dimensions' to describe the 'lengths' and 'widths' of rectangles</li> </ul>				
<ul style="list-style-type: none"> <li>measure and calculate the perimeter of a large rectangular section of the school, e.g. a playground, netball courts</li> </ul>				
<ul style="list-style-type: none"> <li>calculate perimeters of common two-dimensional shapes, including squares, rectangles, triangles and regular polygons with more than four sides (i.e. regular polygons other than equilateral triangles and squares)</li> </ul>				
<ul style="list-style-type: none"> <li>record calculations used to find the perimeters of two-dimensional shapes</li> </ul>				

## Length 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length - MA3-9MG

### Vocabulary

length, distance, kilometre, metre, centimetre, millimetre, measure, measuring device, ruler, tape measure, trundle wheel, estimate, perimeter, dimensions, width.

**Connect decimal representations to the metric system**

<ul style="list-style-type: none"> <li>recognise the equivalence of whole-number and decimal representations of measurements of length, e.g. 165 cm is the same as 1.65 m</li> </ul>				
<ul style="list-style-type: none"> <li>interpret decimal notation for lengths and distances, e.g. 13.5 cm is 13 centimetres and 5 millimetres</li> </ul>				
<ul style="list-style-type: none"> <li>record lengths and distances using decimal notation to three decimal places, e.g. 2.753 km</li> </ul>				

**Convert between common metric units of length**

<ul style="list-style-type: none"> <li>convert between metres and kilometres</li> </ul>				
<ul style="list-style-type: none"> <li>convert between millimetres, centimetres and metres to compare lengths and distances</li> </ul>				

## Area 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and uses the appropriate unit to calculate areas, including areas of squares, rectangles and triangles – MA3-10MG

### Vocabulary

area, measure, square centimetre, square metre, square kilometre, hectare, dimensions, length, width, base (of triangle), perpendicular height, dimensions.

T1 T2 T3 T4

#### Choose appropriate units of measurement for area

recognise the need for a formal unit larger than the square metre	Y			
identify situations where square kilometres are used for measuring area, e.g. a suburb	Y			
recognise and explain the need for a more convenient unit than the square kilometre			T3	
recognise that there are 10 000 square metres in one hectare, i.e. 10 000 square metres = 1 hectare			T3	
record areas using the abbreviations for square kilometres (km <sup>2</sup> ) and hectares (ha)			T3	

#### Calculate the areas of rectangles using familiar metric units

establish the relationship between the lengths, widths and areas of rectangles (including squares)				R
record, using words, the method for finding the area of any rectangle, e.g. 'Area of rectangle = length × width'				R
calculate areas of rectangles (including squares) in square centimetres and square metres				R
record calculations used to find the areas of rectangles (including squares)				R
apply measurement skills to solve problems involving the areas of rectangles (including squares) in everyday situations, e.g. determine the area of a basketball court				R
measure the dimensions of a large rectangular piece of land in metres and calculate its area in hectares, e.g. the local park				R

## Volume & Capacity 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities, and converts between units of capacity - MA3-11MG

### Vocabulary

capacity, container, volume, layers, cubic centimetre, cubic metre, measure, estimate, dimensions, length, width, height, litre, millilitre.

T1 T2 T3 T4

#### Choose appropriate units of measurement for volume and capacity

select and use appropriate units to measure the capacities of a variety of containers, e.g. millilitres for a drinking glass, litres for a water urn		MR		
measure the volumes of rectangular containers by packing them with cubic-centimetre blocks	Y			
recognise the need for a formal unit larger than the cubic centimetre			T3	
construct and use the cubic metre as a unit to measure larger volumes			T3	
record volumes using the abbreviation for cubic metres (m <sup>3</sup> )			T3	
estimate the size of a cubic metre, half a cubic metre and two cubic metres			T3	
select and use appropriate units to estimate the volumes of a variety of objects, e.g. cubic centimetres for a lolly jar, cubic metres for the classroom				MR

## Volume & Capacity 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities, and converts between units of capacity - MA3-11MG

### Vocabulary

capacity, container, volume, layers, cubic centimetre, cubic metre, measure, estimate, dimensions, length, width, height, litre, millilitre.

T1 T2 T3 T4

#### Connect volume and capacity and their units of measurement

select the appropriate unit to measure volume and capacity		MR		
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Connect decimal representations to the metric system				
• recognise the equivalence of whole-number and decimal representations of measurements of capacities, e.g. 375 mL is the same as 0.375 L				
• interpret decimal notation for volumes and capacities, e.g. 8.7 L is the same as 8 litres and 700 millilitres				
• record volume and capacity using decimal notation to three decimal places, e.g. 1.275 L				
Convert between common metric units of capacity				
• convert between millilitres and litres	MR			

## Mass 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- selects and uses the appropriate unit and device to measure the masses of objects, and converts between units of mass - MA3-12MG

### Vocabulary

mass, gross mass, net mass, measure, device, scales, tonne, kilogram, gram.

T1 T2 T3 T4

### Choose appropriate units of measurement for mass

- |  |  |  |  |  |
|--|--|--|--|--|
| • recognise the need for a formal unit larger than the kilogram  |  |  |  |  |
| • use the tonne to record large masses, e.g. sand, soil, vehicles  |  |  |  |  |
| • record masses using the abbreviation for tonnes (t)  |  |  |  |  |
| • select and use the appropriate unit and device to measure mass, e.g. electronic scales, kitchen scales |  |  |  |  |

## Mass 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- selects and uses the appropriate unit and device to measure the masses of objects, and converts between units of mass - MA3-12MG

### Vocabulary

mass, gross mass, net mass, measure, device, scales, tonne, kilogram, gram.

T1 T2 T3 T4

### Connect decimal representations to the metric system

- |   |  |  |  |  |
|---|--|--|--|--|
| • recognise the equivalence of whole-number and decimal representations of measurements of mass, e.g. 3 kg 250 g is the same as 3.25 kg |  |  |  |  |
| • interpret decimal notation for masses, e.g. 2.08 kg is the same as 2 kilograms and 80 grams   |  |  |  |  |
| • measure mass using scales and record using decimal notation of up to three decimal places, e.g. 0.875 kg                              |  |  |  |  |

### Convert between common metric units of mass

- |   |    |    |  |  |
|---|----|----|--|--|
| • convert between kilograms and grams and between kilograms and tonnes  | MR | MR |  |  |
| • solve problems involving different units of mass, e.g. find the total mass of three items weighing 50 g, 750 g and 2.5 kg | MR | MR |  |  |

## Time 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- uses 24-hour time and am and pm notation in real-life situations, and constructs timelines - MA3-13MG

### Vocabulary

12-hour time, 24-hour time, time zone, daylight saving, local time, hour, minute, second, am (notation), pm (notation), scale, timetable, timeline.

T1 T2 T3 T4

### Compare 12- and 24-hour time systems and convert between them

- |  |  |    |  |  |
|--|--|----|--|--|
| • tell the time accurately using 24-hour time, e.g. '2330 is the same as 11:30 pm' |  | MR |  |  |
| • convert between 24-hour time and time given using am or pm notation              |  | MR |  |  |

### Determine and compare the duration of events

- |   |  |  |    |  |
|---|--|--|----|--|
| • select an appropriate unit to measure a particular period of time         |  |  | MR |  |
| • use a stopwatch to measure and compare the duration of events             |  |  |    |  |
| • order a series of events according to the time taken to complete each one |  |  | MR |  |

• use start and finish times to calculate the elapsed time of events, e.g. the time taken to travel from home to school				
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## Three-Dimensional Space 1

<b>Outcomes</b>
<ul style="list-style-type: none"> <li>describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM</li> <li>gives a valid reason for supporting one possible solution over another - MA3-3WM</li> <li>identifies three-dimensional objects, including prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views - MA3-14MG</li> </ul>

<b>Vocabulary</b>
object, shape, three-dimensional object (3D object), prism, cube, pyramid, base, uniform cross-section, face, edge, vertex (vertices), apex, top view, front view, side view, depth, net.

	T1	T2	T3	T4
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### Compare, describe and name prisms and pyramids

• identify and determine the number of pairs of parallel faces of three-dimensional objects, e.g. 'A rectangular prism has three pairs of parallel faces'				
• identify the 'base' of prisms and pyramids				
• name prisms and pyramids according to the shape of their base, e.g. rectangular prism, square pyramid				
• identify, describe and compare the properties of prisms and pyramids, including: <ul style="list-style-type: none"> <li>number of faces</li> <li>shape of faces</li> <li>number and type of identical faces</li> <li>number of vertices</li> <li>number of edges</li> </ul>				
• use the term 'apex' to describe the highest point above the base of a pyramid or cone				

### Connect three-dimensional objects with their nets and other two-dimensional representations

• examine a diagram to determine whether it is or is not the net of a closed three-dimensional object				
• visualise and sketch nets for given three-dimensional objects				
• visualise and name prisms and pyramids, given diagrams of their nets				

## Three-Dimensional Space 2

<b>Outcomes</b>
<ul style="list-style-type: none"> <li>describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM</li> <li>identifies three-dimensional objects, including prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views - MA3-14MG</li> </ul>

<b>Vocabulary</b>
object, shape, three-dimensional object (3D object), prism, cube, pyramid, base, uniform cross-section, face, edge, vertex (vertices), apex, top view, front view, side view, depth, net.

	T1	T2	T3	T4
--	----	----	----	----

### Construct simple prisms and pyramids

• create prisms and pyramids using a variety of materials, e.g. plasticine, paper or cardboard nets, connecting cubes				
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## Two-Dimensional Space 1

<b>Outcomes</b>
<ul style="list-style-type: none"> <li>describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM</li> <li>selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM</li> <li>gives a valid reason for supporting one possible solution over another - MA3-3WM</li> <li>manipulates, classifies and draws two-dimensional shapes, including equilateral, isosceles and scalene triangles, and describes their properties - MA3-15MG</li> </ul>

<b>Vocabulary</b>
shape, two-dimensional shape (2D shape), triangle, equilateral triangle, isosceles triangle, scalene triangle, right-angled triangle, quadrilateral, parallelogram, rectangle, rhombus, square, trapezium, kite, pentagon, hexagon, octagon, regular shape, irregular shape, features, properties, side, parallel, pair of parallel sides, opposite, length, vertex (vertices), angle, right angle, line (axis) of symmetry, rotational symmetry, order of rotational symmetry, translate, reflect, rotate, enlarge, centre, radius, diameter, circumference, sector, semicircle, quadrant, diagonal, circle, centre, radius, diameter, circumference, sector, semicircle, quadrant, diagonal, clockwise, anti-clockwise.



	T1	T2	T3	T4
<b>Classify two-dimensional shapes and describe their features</b>				
• manipulate, identify and name right-angled, equilateral, isosceles and scalene triangles	Yellow			
• compare and describe features of the sides of equilateral, isosceles and scalene triangles	Yellow			
• explore by measurement side and angle properties of equilateral, isosceles and scalene triangles	Yellow			
• explore by measurement angle properties of squares, rectangles, parallelograms and rhombuses	Yellow			
• select and classify a two-dimensional shape from a description of its features		Green		
• identify and draw regular and irregular two-dimensional shapes from descriptions of their side and angle properties		Green		
<b>Describe translations, reflections and rotations of two-dimensional shapes</b>				
• use the terms 'translate', 'reflect' and 'rotate' to describe the movement of two-dimensional shapes				MR
• describe the effect when a two-dimensional shape is translated, reflected or rotated, e.g. when a vertical arrow is rotated 90°, the resulting arrow is horizontal				MR

## Two-Dimensional Space 2

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations - MA3-2WM
- manipulates, classifies and draws two-dimensional shapes, including equilateral, isosceles and scalene triangles, and describes their properties - MA3-15MG

### Vocabulary

shape, two-dimensional shape (2D shape), triangle, equilateral triangle, isosceles triangle, scalene triangle, right-angled triangle, quadrilateral, parallelogram, rectangle, rhombus, square, trapezium, kite, pentagon, hexagon, octagon, regular shape, irregular shape, features, properties, side, parallel, pair of parallel sides, opposite, length, vertex (vertices), angle, right angle, line (axis) of symmetry, rotational symmetry, order of rotational symmetry, translate, reflect, rotate, enlarge, centre, radius, diameter, circumference, sector, semicircle, quadrant, diagonal, circle, centre, radius, diameter, circumference, sector, semicircle, quadrant, diagonal, clockwise, anti-clockwise.

	T1	T2	T3	T4
<b>Identify and name parts of circles</b>				
• create a circle by finding points that are all the same distance from a fixed point (the centre)			Cyan	
• identify and name parts of a circle, including the centre, radius, diameter, circumference, sector, semicircle and quadrant			Cyan	

## Angles 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- measures and constructs angles, and applies angle relationships to find unknown angles - MA3-16MG

### Vocabulary

angle, arm, vertex, protractor, degree, angles on a straight line, angle of revolution, angles at a point, vertically opposite angles, right angle, straight angle.

	T1	T2	T3	T4
<b>Estimate, measure and compare angles using degrees</b>				
• identify the arms and vertex of an angle where both arms are invisible, such as for rotations and rebounds	Yellow	Green		
• recognise the need for a formal unit for the measurement of angles	Yellow	Green		
• record angle measurements using the symbol for degrees (°)	Yellow	Green		
• measure angles of up to 360° using a protractor	Yellow	Green		
<b>Construct angles using a protractor</b>				
• construct angles of up to 360° using a protractor			Cyan	Red
• identify that a right angle is 90°, a straight angle is 180° and an angle of revolution is 360°			Cyan	Red
• identify and describe angle size in degrees for each of the classifications acute, obtuse and reflex			Cyan	Red
• compare the sizes of two or more angles in degrees, e.g. compare angles in different two-dimensional shapes			Cyan	Red
• estimate angles in degrees and check by measuring			Cyan	Red

## Position

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- locates and describes position on maps using a grid-reference system - MA3-17MG

### Vocabulary

- position, location, map, plan, street directory, route, grid, grid reference, legend, key, scale, directions, compass, north, east, south, west, north-east, south-east, south-west, north-west.

T1 T2 T3 T4

#### Use a grid-reference system to describe locations

find locations on maps, including maps with legends, given their grid references			MR	
describe particular locations on grid-referenced maps, including maps with a legend, e.g. 'The post office is at E4'			MR	

#### Describe routes using landmarks and directional language

find a location on a map that is in a given direction from a town or landmark, e.g. locate a town that is north-east of Broken Hill			MR	
describe the direction of one location relative to another, e.g. 'Darwin is north-west of Sydney'			MR	
follow a sequence of two or more directions, including compass directions, to find and identify a particular location on a map				
use a given map to plan and show a route from one location to another, e.g. draw a possible route to the local park or use an Aboriginal land map to plan a route				
describe a route taken on a map using landmarks and directional language, including compass directions, e.g. 'Start at the post office, go west to the supermarket and then go south-west to the park'				

## Data 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- gives a valid reason for supporting one possible solution over another - MA3-3WM
- uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, line graphs and two-way tables - MA3-18SP

### Vocabulary

data, survey, category, display, tabulate, table, column graph, vertical columns, horizontal bars, equal spacing, title, scale, vertical axis, horizontal axis, axes, line graph, dot plots, spreadsheet, collect, category, two-way table, side-by-side column graph, misleading, bias.

T1 T2 T3 T4

#### Pose questions and collect categorical or numerical data by observation or survey

pose and refine questions to construct a survey to obtain categorical and numerical data about a matter of interest				
collect categorical and numerical data through observation or by conducting surveys, e.g. observe the number of a particular type of insect in one square metre of the playground over time				

#### Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies

tabulate collected data, including numerical data, with and without the use of digital technologies such as spreadsheets				
construct column and line graphs of numerical data using a scale of many-to-one correspondence, with and without the use of digital technologies				
construct dot plots for numerical data, e.g. the number of siblings of each student in the class				
consider the data type to determine and draw the most appropriate display(s), such as column graphs, dot plots and line graphs				

#### Describe and interpret different data sets in context

interpret line graphs using the scales on the axes				
describe and interpret data presented in tables, dot plots, column graphs and line graphs, e.g. 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm'				

## Chance 1

### Outcomes

- describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions - MA3-1WM
- conducts chance experiments and assigns probabilities as values between 0 and 1 to describe their outcomes - MA3-19SP

### Vocabulary

chance, event, likelihood, certain, possible, likely, unlikely, impossible, experiment, outcome, probability, equally likely, expected outcomes, random, fair, trials, expected probability, observed probability, frequency, expected frequency, observed frequency.

	T1	T2	T3	T4
<b>List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions</b>				
<ul style="list-style-type: none"> <li>use the term 'probability' to describe the numerical value that represents the likelihood of an outcome of a chance experiment</li> </ul>				
<ul style="list-style-type: none"> <li>recognise that outcomes are described as 'equally likely' when any one outcome has the same chance of occurring as any other outcome</li> </ul>				
<ul style="list-style-type: none"> <li>list all outcomes in chance experiments where each outcome is equally likely to occur</li> </ul>				
<ul style="list-style-type: none"> <li>represent probabilities of outcomes of chance experiments using fractions, e.g. for one throw of a standard six-sided die or for one spin of an eight-sector spinner</li> </ul>				
<b>Recognise that probabilities range from 0 to 1</b>				
<ul style="list-style-type: none"> <li>establish that the sum of the probabilities of the outcomes of any chance experiment is equal to 1</li> </ul>				
<ul style="list-style-type: none"> <li>order commonly used chance words on an interval from zero ('impossible') to one ('certain'), e.g. 'equally likely' would be placed at <math>\frac{1}{2}</math> (or 0.5)</li> </ul>				