



# MATHEMATICS

Year 8 Track 1





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MATHEMATICS DEPARTMENT  
LEARNING OUTCOMES FRAMEWORK  
SEPTEMBER 2022

## Strand 1

**Learning Area Outcome:** I understand the structure of the number system and the relationship between numbers.

**Subject Focus: Number** – The number system




1	 I can read and write whole numbers to 10 000 in figures and words.
3	I can recognise the place value of any digit in a whole number up to 10 000.
10	I can recall the first 10 multiples of the numbers 2 to 10.
14	I can identify <b>all</b> factors of numbers up to 50. E.g. factors of 24 are 1,2,3,4,6,8,12,24.
16	 I can work out the square of a number and recall the first ten square numbers
21	I can use decimal notation for tenths, hundredths and thousandths and know what each digit represents.
22	From a one-digit number I can count forward and backwards in steps of 0.1, 0.2, 0.25 & 0.5.
31	I can compare and order simple fractions, mixed numbers and decimals and position them on a number-line.
35	I can recognise the relationship between fractions (limited to fractions with denominators that are factors of 100), decimals and percentages.
38	I can recognize, represent, understand and use directed numbers in real life situations such as temperature, floor levels and debt. I can represent directed numbers on a number line.
<b>Assistive technology, mathematical resources and activities.</b>	
41	I can use assistive technology (e.g. tablets, computers & calculators) and other learning resources (e.g. Cuisenaire rods, Unifix cubes, base 10 blocks) to learn about numbers and their properties.
42	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

## Strand 2

**Strand 2. Learning Area Outcome:** I can calculate using mental methods, pencil and paper methods, and, assistive technology methods. I can check calculations by rounding numbers and making rough approximations. I can calculate to the most appropriate level of accuracy. I can also check the reasonableness of answers.

**Subject focus: Number** – Numerical calculations

### Whole Numbers, Decimal Numbers & Fraction Numbers - The Four Operations

6	 I can use column addition and subtraction with up to four-digit numbers.
7	 I can work through situations involving addition and subtraction of up to four digit numbers.
17	I can multiply by multiples of 10, 100, 1000. E.g. $32 \times 20$
39	I can use the BIDMAS rule with positive numbers.
42	I can find fractions of a number without using assistive technology where the number is a multiple of the denominator e.g. find $\frac{3}{5}$ of 65.
44	I can reduce a fraction in its simplest form
45	I can change fractions into decimals and vice versa. (Restricted to fractions with denominators that are factors of 100)
46	 I can read and interpret scales involving decimals up to 1 d.p.
47	I can find equivalent fractions of a given fraction.


### Percentages

51	I can convert percentages to fractions (limited to fractions with denominators that are factors of 100) and vice versa. E.g. $60\% = \frac{3}{5}$
53	I can find percentages of quantities.

## Money & Consumer Mathematics

- 67 I can work through simple situations involving personal and household finance (e.g. finding out how much it will cost to prepare a meal, calculating which item is the best buy when items come in various sizes e.g. oil in one litre bottles vs oil in two litre bottles.)

## Ratio & Proportion

- 68  I can write ratios in their simplest form. (using whole numbers only)
- 73 I can work through simple situations that involve direct proportion using the unitary method (including price and mass).


## Assistive technology, mathematical resources and activities.


- 76 I can use assistive technology (e.g. tablets, computers and calculators) and other resources (e.g. Cuisenaire rods, Unifix cubes, base 10 blocks) appropriate to this level to calculate and to learn about numerical calculations.
- 77 I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

## Strand 3

**Learning Area Outcome:** I can recognise and describe patterns and relationships in various mathematical ways and can use algebraic manipulations.

**Subject Focus:** Algebra – Fundamentals of Algebra

- 1 I can write a sequence given the first term and the rule.  
I can recognise and extend pictorial patterns and number sequences.
- 6  I can use algebraic notation to represent up to three unknown values in expressions involving +, -, x, and ÷.
- 14 I can evaluate linear expressions with at most three unknowns by substituting positive numbers.

16	I can recognise the use of an empty box symbol to stand in for an unknown number and can find the unknown number. E.g. $\square + 6 = 8$
27	 I can plot points and read coordinates from a grid in all four quadrants.
46	I can work out the output/input of number (function) machines involving up to two operations
<b>Assistive technology, mathematical resources and activities.</b>	
52	I can use assistive technology (e.g. tablets, computers and calculators) and other resources (e.g. algebra blocks) appropriate to this level to learn about the fundamentals of algebra.
53	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.



## Strand 4

**Learning Area Outcome:** I understand and can use forms of measurement and can make reasonable estimations.

**Subject Focus:** Shape, Space & Measures – Measures

### Length, Area, Volume, Mass & Capacity

16	I can define the volume of a solid shape as the measure of the amount of space that it occupies.
21	I can convert larger to smaller standard metric units of mass (kg, g), length (km, m, cm, mm) and capacity (l, ml), and vice versa.
28	I can work out the area of a right-angled triangle by considering it as half a rectangle.
29	I can calculate the area of compound shapes that include right angled-triangles, given the length of all sides or counting squares on a grid.
33	I can use formulae to calculate the volume of cubes and cuboids.


Time	
43	 I can read and write vocabulary related to time.
49	I can read and use the 12-hour analogue and digital clock at 5 minute intervals.
50	 I can read and use a time-table.
Assistive technology, mathematical resources and activities.	
54	I can use assistive technology (e.g. tablets, computers and calculators) and other resources (e.g. plastic money, cardboard clocks, 2D and 3D plastic shapes, measuring instruments) appropriate to this level to learn about measures.
55	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

## Strand 5





**Learning Area Outcome:** I can recognise and describe the properties of shapes. I can use these properties to construct shapes using appropriate mathematical instruments and to prove given geometric statements.

**Subject Focus:** Shape, Space & Measures – Euclidean Geometry



### Triangles

9	 I can use the properties of triangles (equilateral, isosceles, scalene and right-angled triangles) in order to solve problems involving missing angles.
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### Quadrilaterals

12	  I can classify quadrilaterals (square, rectangle, parallelogram, and trapezium) according to the length of their sides and the size of their angles.
13	 I can deduce that the sum of the angles of a quadrilateral is $360^\circ$ . I can also work out the size of missing angles in quadrilaterals.
14	 I can use the properties of quadrilaterals (square, rectangle, parallelogram, and trapezium) in order to solve problems involving missing angles.

## Polygons

15	  I can sort, name and classify regular and irregular polygons (pentagon, hexagon, heptagon, octagon, nonagon and decagon) using properties such as the number of sides.
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## 3D Shapes

18	 I can recognize and name the simple 3D shapes: cube, cuboid, cylinder and cone.
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## Circles

22	I can identify the centre, radius, diameter and circumference of a circle.
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## Coordinate Geometry

27	I can use positive and negative coordinates to plot points and draw shapes.
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## Assistive technology, mathematical resources and activities.

34	I can use assistive technology (e.g. tablets, computers, and other resources (e.g. 2D and 3D plastic shapes) appropriate to this level to learn about properties of shapes.
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35	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.
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## Strand 6


**Learning Area Outcome:** I can describe position and movement of shapes in a plane.  
**Subject Focus:** Shape, Space & Measures – Transformation Geometry

## Rotations

12	I can identify the order of rotational symmetry of a regular polygon.
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13	I can state the order of rotational symmetry of 2D shapes.
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## Translations

16	 I can draw and describe translations using right, left, up and down.
<b>Assistive technology, mathematical resources and activities.</b>	
21	I can use assistive technology (e.g. tablets and computers) and other resources (e.g. 2D and 3D plastic shapes) appropriate to this level to learn about transformation geometry.
22	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

## Strand 7

**Learning Area Outcome:** I can collect, analyse, interpret and communicate statistical information

**Subject Focus:** Data Handling & Chance – Statistics

3	 I can construct a frequency table with grouped data.
5	 I can construct a bar chart using grouped data from a frequency table.
6	I can extract and interpret data from frequency tables and bar charts.
9	I can interpret simple pie charts e.g. “Which is the most or least favorite?”
14	I can find the mean of a set of ungrouped data.
15	I can differentiate between the mean, median, mode and range of a set of ungrouped data.
16	I can find the median of a set of ungrouped data.
17	I can find the mode of a set of ungrouped data.
18	I can find the range of a set of ungrouped data.



**Assistive technology, mathematical resources and activities.**

23	I can use assistive technology (e.g. tablets, computers and calculators) and other learning resources to learn about statistics.
24	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

**Strand 8**

**Learning Area Outcome:** I understand ideas of chance and uncertainty

**Subject Focus:** Data Handling & Chance – Probability

4	I can work out the probability of an event. e.g. the probability of getting 4 when throwing a die = $\frac{1}{6}$ ; the probability of not getting 4 when throwing a die = $\frac{5}{6}$ .
6	I can deduce that the probability of a certain event is 1 and the probability of an impossible event is 0.

**Assistive technology, mathematical resources and activities.**

14	I can use assistive technology (e.g. tablets, computers, and calculators) and other learning resources to learn about probability.
15	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.