



MATHEMATICS

Year 7 Track 3



MATHEMATICS DEPARTMENT
Learning Outcomes
Framework SEPT 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

Whole Numbers, Decimal Numbers & Fraction Numbers – The Four Operations

1	🗣️ I can read and write whole numbers to one billion in figures and words.
3	I can recognise the place value of any digit in a whole number up to one billion.
4	I can compare and order whole numbers up to one billion and include symbols such as $<$, $>$ or $=$.
12	I can identify common multiples of two numbers.
13	I can identify the least common multiple (LCM) of two numbers.
14	I can identify all factors of any two-digit number. E.g. factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.
16	🔴 I can work out the square of a number and recall the first ten square numbers.
18	🔴 I can work out the cube of a number and recall the first five cube numbers.
20	🔴 I can define what a prime number is and can identify prime numbers up to hundred.
21	I can use decimal notation for tenths, hundredths and thousandths and know what each digit represents.
22	From a two-digit number I can count forward and backwards in steps of 0.1, 0.2, 0.25 and 0.5.
33	I can describe percentage as the number of parts in every hundred. Hence, I can represent 1% as hundredth.
34	I can associate 25% with one quarter, 50% with one half and 75% with three quarters.
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.
Assistive technology, mathematical resources and activities.	
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

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 assistive technology to add and subtract numbers that involve four or more digits.
7	● I can work through situations involving addition and subtraction with four or more digit numbers.
18	I recognise unit fractions and use them to find fractions of shapes, numbers and quantities. I can interpret the relationship between division and fractions. E.g. $\frac{2}{3}$ means $2 \div 3$ and vice versa.
22	● I can find remainders after division and express the remainder as a fraction and as a decimal rounded, up to two decimal places.
23	I can work through situations involving, addition, subtraction, multiplication and/or division of integers. I can also give a rough estimate of the answer of such situations and I can check the reasonableness of the answer.
24	I can round any whole number to the nearest ten, hundred, thousand & ten thousand.
31	● I can use column addition or subtraction methods using decimal numbers up to three decimal places.
36	I can use written methods for multiplication and division of numbers by up to 2-digit numbers. (Division by decimals restricted to division by single digit decimal numbers). E.g. 125×9 $256 \div 8$ 54×36 $391 \div 23$ 175×1.4 18.6×2.7 $2.4 \div 0.6$
38	I can add and subtract directed numbers.
39	I can use the BIDMAS rule with positive numbers.

40	I can round any decimal number up to two decimal places.
42	I can find fractions of a number without using assistive technology.
45	I can change an improper fraction into a mixed number and vice versa. I can change fractions into decimals and vice versa.
46	 I can read and interpret scales involving decimals up to 2 d.p.
47	I can find equivalent fractions of a given fraction.
48	I can add and subtract two fractions with different denominators using equivalent fractions.
49	I can multiply two fractions. (excluding mixed numbers)
50	I can work through situations involving the addition and subtraction of fractions.
Percentages	
51	I can convert percentages to fractions (limited to fractions with denominators that are factors of 100) and vice versa. E.g. 60% = $\frac{3}{5}$
52	I can convert percentages to decimals that are less than 1 and up to 2 d.p. and vice versa. E.g. 34% = 0.34
53	 I can find percentages of quantities.
Money & Consumer Mathematics	
67	I can work through simple situations involving personal and household finance (e.g. pocket money invested in a bank account, 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. Addition and subtraction of directed numbers can also be included, e.g. the difference between temperatures.
Ratio & Proportion	
73	I can work through simple situations that involve direct proportion using the unitary method (including price, distance, time 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	<p>I can write a sequence given the first term and the rule.</p> <p>I can recognise and extend pictorial patterns and number sequences.</p> <p>I can tabulate the terms corresponding to the first few stages of a pictorial pattern and determine the terms in the next stages.</p>
6	<p> I can use algebraic notation to represent two or more unknown values in expressions involving +, −, x, and ÷.</p>
7	<p>I can derive a formula from a situation involving two or more unknown values with positive inputs.</p>
8	<p>I can simplify linear algebraic expressions by collecting like terms.</p>
9	<p>I can simplify algebraic expressions by multiplying linear positive terms, e.g. $4 \times 5b$; $2a \times 3b$ and can multiply a single positive term over a bracket, e.g. $3(x + 4)$</p>
14	<p>I can evaluate linear expressions by substituting positive integers.</p>
16	<p> I can write down and solve an equation using balancing scales and the balancing method involving unknown and whole numbers with unknown on one side only.</p>
17	<p>I can use and solve simple linear equations involving brackets.</p> <p>E.g. Solve for x: $2(x + 1) = 8$</p>
27	<p> I can plot points and read coordinates from a grid in all four quadrants.</p>
28	<p> I can write the coordinates of a set of points for equations of the form $y = mx$, $y = c$ and $x = c$ that lie in the first quadrant where m and c are positive.</p>
30	<p>I can plot the graph of a linear function from a set of values in the first quadrant.</p>
37	<p>I can use straight line graphs to find the value of one coordinate given the other.</p>
46	<p>I can work out the input/output of number (function) machines involving up to two operations and can find the rule for a number machine involving up to two operations given a set of input and output values.</p>

Assistive technology, mathematical resources and activities.

52	<p>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.</p>
53	<p>I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.</p>

Strand 4

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

Subject Focus: Shape, Space & Measures – Measures

Angles

5  I can estimate, measure and draw angles up to and including 360° with a protractor

6 I can identify and distinguish between right, acute, obtuse and reflex angles.

Length, Area, Volume, Mass & Capacity

16 I 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.

27 I can derive and use formulae to find the area of a square, and a rectangle.

28 I can derive and use the formula to find the area of a triangle.

29 I can calculate the area of compound shapes that include squares, rectangles and triangles.

33 I can use formulae to calculate the volume of cubes and cuboids, including compound shapes made up of cubes and cuboids.

Time

43  I can read and write vocabulary related to time.

45 I can convert and use larger to smaller standard units of time (days, hours, minutes and seconds) and vice versa.
E.g. 2.5 hours = 150 minutes.

49 I can read and use the 12-hour and the 24-hour digital and analogue clock.
I can convert between the 12-hour and 24-hour clock times.

50  I can read and use a calendar, a timetable and a time-line.

52 I can determine time intervals in days, hours and minutes.

53 I can interpret time zones

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.
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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	
Lines & Line Segments	
2	I can recognise and draw examples of parallel lines and transversals.
3	I can recognise vertically opposite angles, alternate angles, corresponding angles and interior angles within sets of parallel lines and transversals.
Angles	
4	I can work out the size of missing angles in situations involving vertically opposite angles, alternate angles, corresponding angles and interior angles within sets of parallel lines and transversals.
Triangles	
8	 I can prove that the angle sum of a triangle is 180° .
9	 I can use the properties of triangles (equilateral, isosceles, scalene and right-angled triangles) in order to solve problems involving missing angles.
Quadrilaterals	
12	  I can classify quadrilaterals (square, rectangle, rhombus, parallelogram, trapezium and kite) according to the length of their sides and the size of their angles.
13	 I can prove that the sum of the angles of a quadrilateral is 360° . I can also work out the size of missing angles in quadrilaterals.
3D Shapes	
21	 I can identify nets that are possible or not possible for a cube and a cuboid.
Constructions	
25	I can construct triangles given the length of one side and two angles; the length of two sides and the included angle using ruler and protractor. I can construct triangles given three sides using ruler and compasses only.

Coordinate Geometry	
27	I can use positive and negative coordinates to plot points and draw shapes.
28	I can find the coordinates of a missing vertex of a shape.
33	I can use simple LOGO commands such as PU, PD, FD, BK, RT and LT.
Assistive technology, mathematical resources and activities.	
34	I can use assistive technology (e.g. tablets, computers, dynamic computer software and LOGO) and other resources (e.g. 2D and 3D plastic shapes) appropriate to this level to learn about properties of shapes.
35	I can work on tasks, investigations and activities including worded problems that are related to mathematical content in this strand at this level.

Strand 6	
Learning Area Outcome: I can describe position and movement of shapes in a plane.	
Subject Focus: Shape, Space & Measures – Transformation Geometry	
Reflections	
5	I can identify and draw lines of symmetry in 2D shapes and pictures: E.g. flags and dominoes.
6	I can classify quadrilaterals (square, rectangle, parallelogram, trapezium, rhombus and kite) using reflective symmetry.
Assistive technology, mathematical resources and activities.	
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 or ungrouped discrete data.
5	   I can construct a bar chart using grouped or ungrouped discrete data from a frequency table.
6	I can interpret data from frequency tables and bar charts.

13	I can construct and interpret a Carroll diagram.
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	
1	 I can mention events that are certain to happen, and others that will not.
2	 I can describe events as certain, very likely, likely, evens, unlikely, very unlikely or impossible.
3	 I can estimate a probability by experiment.
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 = $\frac{5}{6}$.
5	I can distinguish between experimental and theoretical probability.
6	I can deduce that the probability of a certain event is 1 and the probability of an impossible event is 0.
7	I can mark the probability on a probability scale.
8	I can identify the set of all possible outcomes of a single event.
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.