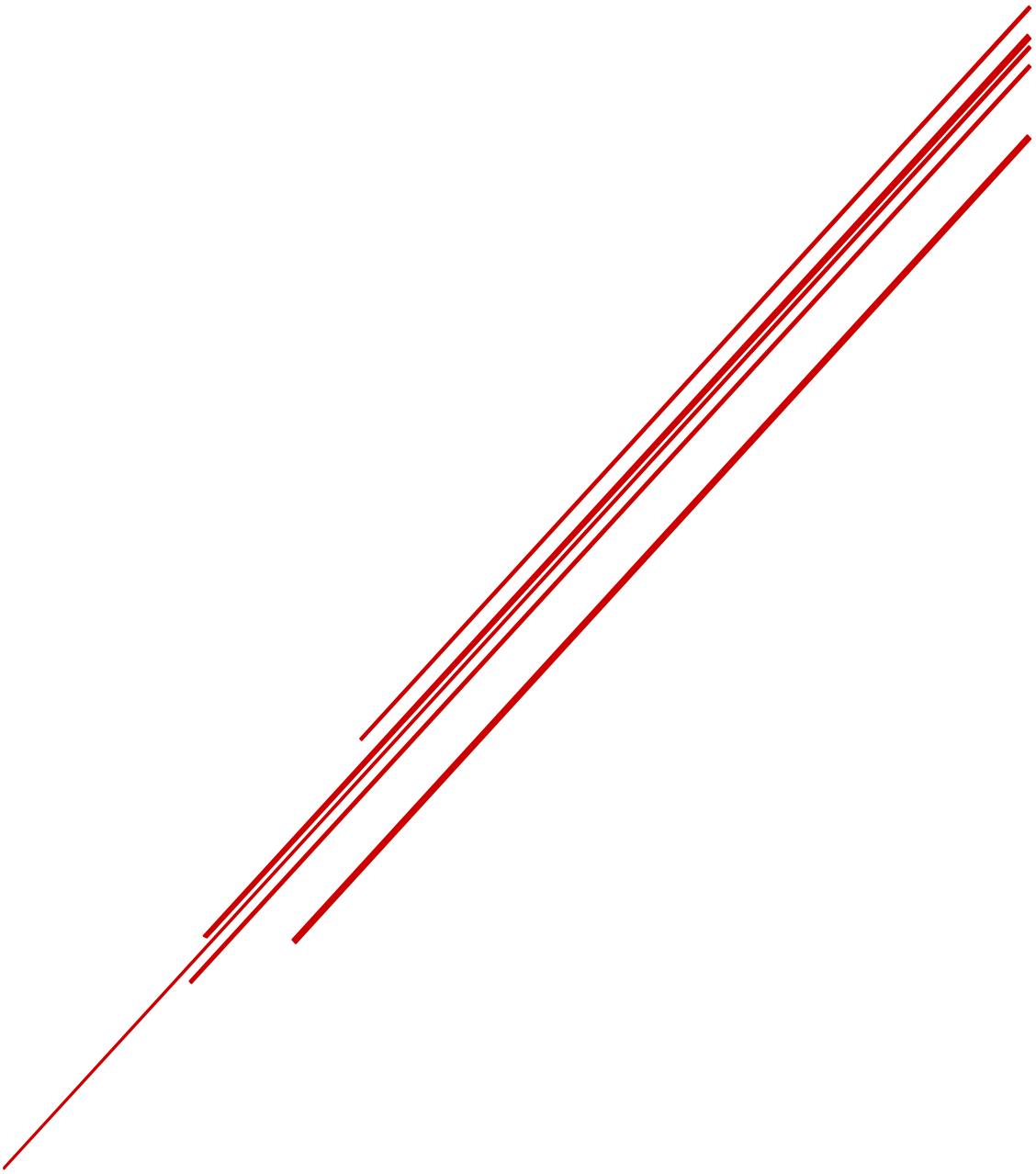
MATHEMATICS SYLLABUS

YEAR 10 Lev 1-2



Learning Outcomes Framework

September 2022

Year 10 Lev 1-2		Ref to SEC
Strand 1: Learning Area Outcome: I understand the structure of the number system and the relationship between numbers. Subject Focus: Number – The number system		
11	I can write multiples of numbers using power notation. E.g. $2 \times 2 \times 2 = 23$ $3 \times 3 \times 5 \times 5 \times 5 = 32 \times 53$	1.2n
12	I can identify common multiples of up to three numbers.	1.2o
13	I can identify the least common multiple of up to three numbers.	1.2p
17	I can deduce that squares and square roots are inverses of each other.	1.2t
18	I can work out the cube of a number and recall the first five cube numbers.	1.1v
19	I can deduce that cubes and cube roots are inverses of each other.	1.2v
27	I can recognise that particular fractions have specific recurring decimal patterns. E.g. $\frac{1}{3} = 0.333 \ldots = 0.\dot{3}$	1.2af
35	I can recognise the relationship between fractions, decimals and percentages.	1.1/2as/at
37	I can state one fraction lying between two given fractions.	1.2au
41	I can use assistive technology (E.g. tablets, computers & calculators) and other learning resources to learn about numbers and their properties	1.1/2bb
42	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	1.1/2bd
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	1.1/2bc

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		
26	I can work out mentally the square root of squares up to 100 without a calculator and use a calculator for other values.	2.1q
27	I can express any integer as a product of prime factors.	1.2w
39	I can use the BIDMAS rule with positive numbers.	2.2ac
40	I can round any decimal number up to three decimal places.	2.2bo
45	I can change fractions into decimals and vice versa.	1.1as
46	I can read and interpret scales involving decimals.	2.2ag

48	I can add and subtract two fractions with different denominators using equivalent fractions.	2.2ah/ai
49	I can multiply and divide two fractions (Excluding mixed numbers).	2.2aj/ak
50	I can work through situations involving the addition and subtraction of fractions.	2.2al
51	I can convert percentages (<100%) to fractions and vice versa.	2.2an
52	I can convert percentages(<100%) to decimals and vice versa.	2.2an
54	I can express a quantity as a percentage of a larger quantity.	2.2ao
55	I can find percentage increase and percentage decrease (<100%). I can work through simple situations involving percentage increase and decrease, (E.g. cost and selling price; discounts; profit and loss).	2.2ap
58	I can work out the simple interest using the simple interest formula.	2.2as
65	I can use published exchange rates to convert from one currency to another.	2.2aw
67	I can work through simple situations involving directed numbers (addition and subtraction only), personal and household finance. (*E.g.* the difference between temperatures, pocket money accrued, finding out how much it will cost to prepare a meal, calculating which item is the best buy when items come in various sizes.)	2.2ay
68	I can write ratios in their simplest form. (Including decimals) E.g. 2.5:4.5 = 5:9	2.2az
69	Divide a quantity in a given ratio.	2.2bb
71	I can draw and interpret scale drawings (excluding area), involving 2D plans. I can use map ratios.	2.2bd/be
72	I can use simple proportion (using ratio notation) to solve simple problems. E.g. *What is the value of* □ *in 1:3 =* □*:6?*	2.2bf
73	I can work through simple situations that involve direct proportion using the unitary method (including price, distance, time and, mass).	2.1bg
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.	2.1/2bq
77	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	2.1/2bs
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	2.1/2br

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

6	I can use algebraic notation to represent two or more unknown values in expressions.	3.2h
8	I can simplify linear algebraic expressions by collecting like terms. E.g. $3a - 2b - 5a + 4b$	3.2i

9	I can simplify algebraic expressions by multiplying positive linear terms. E.g. i) $4 \times 5b$ ii) $2a \times 3b$ iii) $x \times (3x)$ I can multiply a single term over a bracket E.g. i) $2(a + 3)$ ii) $3(x + 4) + 2(x + 1)$	3.2j/k
14	I can evaluate linear expressions by substituting positive numbers.	3.2g
16	I can solve linear equations involving unknown on one side.	3.2x
17	I can use and solve simple linear equations involving brackets. E.g. Solve for x: $4(x - 1) = 6$	3.2y
18	I can work through situations leading to the solution of linear equations in one unknown. E.g. mystery numbers, geometric shapes, etc.	3.2z
28	I can write and plot the coordinates of a set of points for equations of the form: $y = \pm mx + c$ in the first quadrant.	4.2c
29	I can construct tables of values for linear functions using positive values of *x*.	4.2d
30	I can plot the graph of a linear function from a table of values in the first quadrant.	4.2f
31	I can explain what the gradient of a line represents.	4.2h
32	I know that parallel lines have equal gradients.	4.2i
33	I can explain what the *y*-intercept represents.	4.2j
34	I can indicate that for the equation $y = mx + c$ the value of m determines the gradient of the graph and the value of c, determines the *y*-intercept.	4.2k
36	I can verify whether a line passes through a point.	4.2n
37	I can use straight line graphs to find the value of one coordinate given the other.	4.2o
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 and graphs.	3.1/2am
53	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	3.1/2ao
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	3.1/2an

Strand 4: Learning Area Outcome: I understand and can use forms of measurement and can make reasonable estimations. Subject Focus: Shape, Space & Measures – Measures		
28	I can derive and use formulae to find the area of a parallelogram and trapezium.	5.2ak

29	I can calculate the area of compound shapes that include right angled triangles, parallelograms and trapezia.	5.2am
30	I can define the notion of π as a ratio of circumference to diameter.	5.2an
31	I can use formulae to find the circumference and area of a circle.	5.2ao/ap
32	I can define the surface area of a solid shape as the total amount of surface of the shape.	5.2aq
33	I can calculate the surface area of cubes and cuboids.	5.2ar
54	I can use assistive technology (E.g. tablets, computers and calculators) and other resources (E.g. 2D and 3D plastic shapes, measuring instruments) appropriate to this level to learn about measures.	5.1/2bw
55	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	5.1/2by
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	5.1/2bx

Strand 5: Learning 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 geometric statements.

Subject focus**:** Shape Space and Measures – Euclidean Geometry

1	I can distinguish between a line and a line segment.	6.2a
2	I can recognise and draw examples of parallel lines and transversals	6.1c/6.2e/f/g
3	I can recognise vertically opposite angles and alternate angles within sets of parallel lines and transversals.	6.2h/i
4	I can work out the size of missing angles in situations involving vertically opposite angles and alternate angles within sets of parallel lines and transversals.	6.2l/m
8	I can use the fact that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices.	6.1u/6.2w
19	I can draw the plan, front elevation and side elevation of a cube and cuboid.	6.2bm/bn/bo
24	I can construct 60° and 90° angles using a straight edge & compasses only.	7.2b/c
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.	7.2h/i/j
26	I can construct regular hexagons using ruler and compasses only.	7.2m
34	I can use assistive technology (E.g. tablets and computers, including dynamic geometry software packages and LOGO) and other resources (E.g. 2D and 3D plastic shapes) appropriate to this level to learn about properties of shapes.	7.1/2u
35	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	7.1/2w
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	7.1/2v

Strand 6: Learning Area Outcome: I can describe position and movement of shapes in a plane. Subject Focus**:** Shape, Space & Measures – Transformation Geometry		
14	I can draw and describe rotations of a simple shape about a vertex or about the origin using angles of 90°and 180°.	8.2k/l
16	I can draw and describe translations using a column translation vector.	8.2m/n
19	I can create tessellating shapes and draw a tessellation.	8.2t/u
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.	8.1/2w
22	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	8.1/2y
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	8.1/2x

Strand 7: Learning Area Outcome: I can collect, analyse, interpret and communicate statistical information. Subject Focus**:** Data Handling & Chance – Statistics		
9	I can interpret pie charts.	9.2o
10	I can construct pie charts.	9.2p
23	I can use assistive technology (E.g. tablets, computers and calculators) and other learning resources to learn about statistics.	9.1/2an
24	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	9.1/2ap
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	9.1/2ap

Strand 8: Learning Area Outcome: I understand ideas of chance and uncertainty. Subject Focus: Data Handling & Chance – Probability		
2	I can describe events as certain, very likely, likely, evens, unlikely, very unlikely or impossible.	10.1/b
3	I can estimate a probability by experiment.	10.2c
4	I can work out the probability of an event. E.g. the probability of getting 4 when throwing a die.	10.2d
5	I can distinguish between experimental and theoretical probability.	10.2e
6	I can deduce that the probability of a certain event is 1 and the probability of an impossible event is 0.	10.2f
7	I can mark the probability on a probability scale.	10.2g

9	I can deduce that the probability of mutually exclusive outcomes add up to 1.	10.2j
14	I can use assistive technology (E.g. tablets, computers and calculators) and other learning resources to learn about probability.	10.1/2q
15	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	10.1/2s
	I can use appropriate mathematical processes to work on tasks and/or activities that are related to mathematical content at this level and which involve one or more modes of assessment such as solving, investigating, modelling, maths trails, and research projects.	10.1/2r