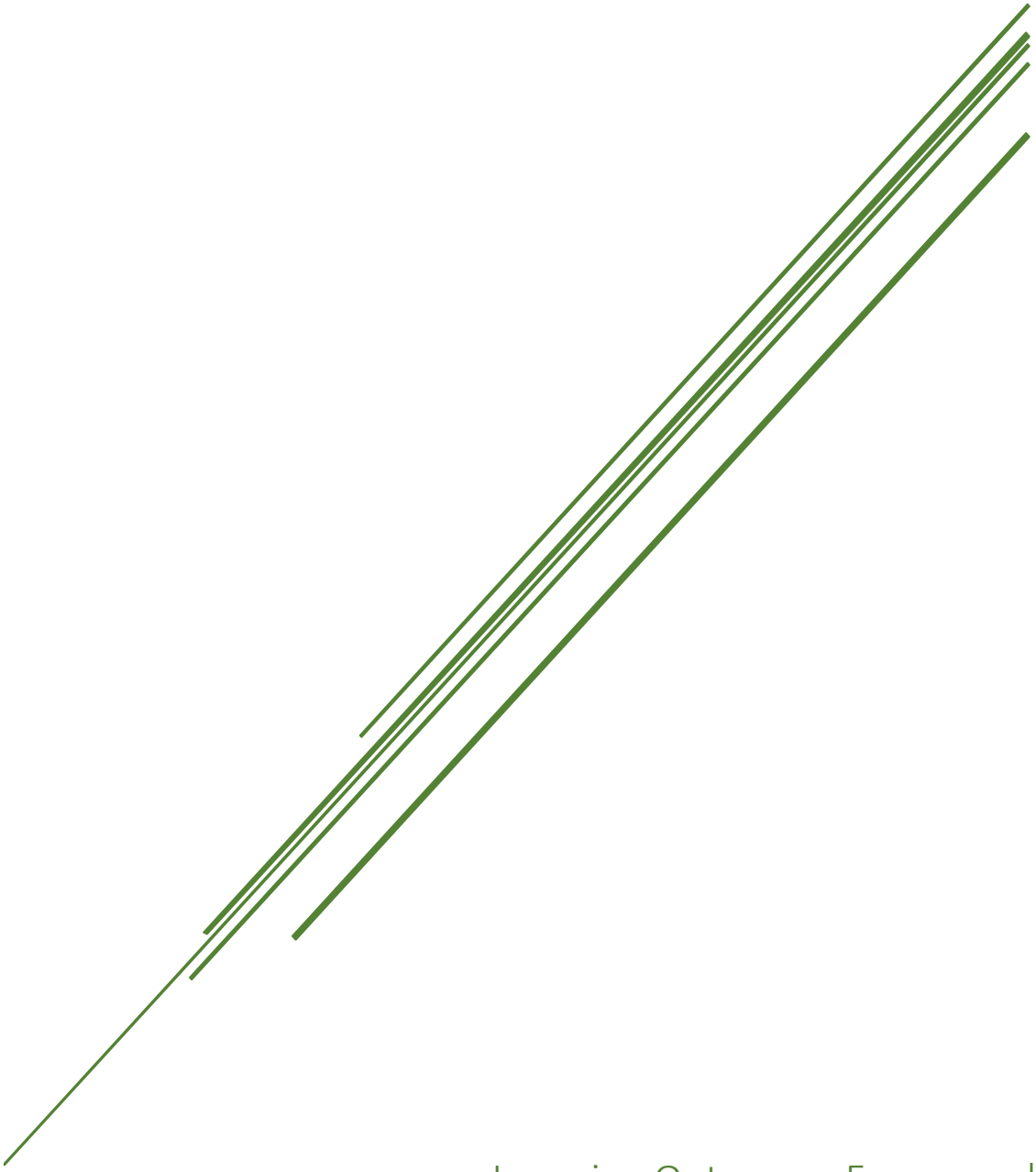
MATHEMATICS SYLLABUS

YEAR 11 Lev 2-3



Learning Outcomes Framework

September 2022

Year 11 Lev 2-3		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		
14	I can identify all the common factors of up to three numbers.	1.2r
15	I can identify the highest common factor (HCF) of up to three numbers.	1.3r
41	I can use assistive technology (E.g. tablets, computers & calculators) and other learning resources to learn about numbers and their properties	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.	1.2/3bd
	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.	1.2/3bc

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		
27	I can use prime factorisation to work out the square root of large numbers and to work out the LCM and HCF.	1.3y/z/aa
28	I can work out problems involving the LCM and HCF	1.3bd
54	Express a quantity as a percentage of another where the percentage ≥ 100% and the percentage error > 0%. E.g. (i) Express 550 m as percentage of 80 m. E.g. (ii) 20 years ago, the price of gold was €9.61 per gram and now it is €56.07 per gram. Calculate the percentage change in the price of gold per gram. E.g. (iii) I thought 70 people would turn up to the concert, but in fact 80 did. What is my percentage error?	2.3ao
56	I can work out reverse percentage calculations.	2.3aq
60	I can work out compound interest, appreciation and depreciation, working step by step.	2.3at
65	I know the difference between selling rate and buying rate in currency exchange rates. I can use buying rate and selling rate to convert currencies.	2.3aw
67	I can work through situations involving personal and household finance (E.g. earnings, simple interest, income tax and VAT)	2.3ay
70	Work through complex situations involving ratios (excluding area and volume). E.g. A mixture of 900 g contains sugar and flour in the ratio 1:2. How much sugar should be added to change the ratio of the mixture to 2:3?	2.3bc
73	I can work through situations that involve direct and inverse proportion.	2.3bg
75	I can apply the four rules on numbers in standard form	2.3bk

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.	2.2/3bq
77	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	2.2/3bs
	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.	2.2/3br

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

12	I can use the four operations on algebraic fractions with numerical denominators.	3.3p
13	I can simplify fractions by taking out the common factor and cancelling. E.g. Simplify: $\frac{4}{2x+4}$	3.3q
15	I can change the subject of the formula that includes squares, cubes, square roots and cube roots and when the subject letter occurs more than once. E.g. Make r the subject of the formula: $V = \frac{4}{3}\pi r^3$; Make g the subject of the formula $T = 2\pi\sqrt{\frac{L}{g}}$	3.3u/v
16	I can write down and solve linear equations involving an unknown and integers or fractions (with numerical denominators) on both sides.	3.3w
21	I can solve algebraically two simultaneous linear equations.	3.3aa
39	I can compare information from two or more straight line graphs concerning real life situations.	4.3q
40	I can solve two simultaneous linear equations graphically.	4.3s
45	I can interpret non-linear graphs arising from real life situations. E.g. The rise of water in a conical flask as it is being filled.	4.3p
48	I can interpret rates of change/the gradient in linear graphs. E.g. In a distance-time graph, the rate of change/gradient represents the speed.	4.3r
49	I can use the rules for multiplying and dividing integer powers (positive, negative and zero indices) E.g. (i) $2a^8 \times 3a^{-5} = 6a^3$ (ii) $6y^5 \div 3y^{-2} = 2y^7$ (iii) $(2c^3)^5 = 32c^{15}$ (iv) $x^0 = 1$ (v) $x^{-2} = \frac{1}{x^2}$	3.3t

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.	3.2/3am
53	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	3.2/3ao
	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.	3.2/3an

Strand 4: Learning Area Outcome: I understand and can use forms of measurement and can make reasonable estimations. Subject Focus: Shape, Space & Measures – Measures			
10	I can use trigonometric ratios in problems involving bearings in 2D.	3	5.3w
21	I can convert larger to smaller standard units of area and volume, and vice versa.	3	5.3ah
34	I can calculate the area of a sector of a circle.	3	5.3aw
35	I can calculate the area of compound shapes that use sectors of circles.	3	5.3ax
36	I can calculate the length of an arc of a circle.	3	5.3av
37	I can derive and use a formula for the volume of a prism and can calculate the surface area of a prism. I can find the volume of simple compound solid shapes involving cubes, cuboids, cylinders and prisms.	3	5.3ba/bb
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.		5.2/3bw
55	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.		5.2/3by
	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.		5.2/3bx

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		
19	I can draw the plan, front elevation and side elevation of a cylinder, cone and triangular prism from a 2D drawing.	6.3bm/bn/bo
29	I can explain the concept of congruency. I can identify congruent shapes. I can prove two triangles are congruent using SSS, SAS, ASA and RHS.	6.3x 6.3y 6.3z

	I can use the fact that two triangles are congruent in order to find the lengths of missing sides and angles.	6.3aa
30	I can explain the concept of similarity. I can identify similar shapes. I can prove two triangles are similar using either one of the following properties: (i) the angles of one are respectively equal to the angles of the other (AAA); (ii) the ratio of the three sides of the first triangle is equal to the ratio of the corresponding sides of the other; (iii) one angle of one triangle is equal to one angle of the other triangle and the sides about these equal angles are in the same ratio. I can use the fact that two triangles are similar in order to find the lengths of missing sides and angles.	6.3ab 6.3ac 6.3ad 6.3ae
31	I can describe what a locus of a point is.	7.3n
32	I can use ruler and compasses only to construct the locus of a point which is: i) at a fixed distance from a given point; ii) equidistant from a straight line; iii) equidistant from two given points; iv) equidistant from two intersecting straight lines.	7.3o 7.3p 7.3q 7.3r
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.	7.2/3u
35	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	7.2/3w
	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.	7.2/3v

Strand 6: Learning Area Outcome: I can describe position and movement of shapes in a plane Subject Focus: Shape, Space & Measures – Transformation Geometry		
8	I can deduce that reflections preserve length and angle.	8.3f
16	I can deduce that translations preserve length and angle.	8.3n
17	I can draw and describe enlargements of a shape using a centre of enlargement with positive scale factors (integral and fractional).	8.3o/p
18	I can deduce that enlargements preserve angle but not length.	8.3q
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.	8.3w

22	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	8.3y
	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.	8.3x

Strand 7: Learning Area Outcome: I can collect, analyse, interpret and communicate statistical information

Subject Focus: Data Handling & Chance – Statistics

14	I can find an estimate of the mean of a set of grouped data from a frequency table.	9.3aa
16	I can find the class interval in which the median of a set of data lies from a grouped frequency table.	9.3af
17	I can identify the modal class from a grouped frequency table.	9.3ag
23	I can use assistive technology (E.g. tablets, computers and calculators) and other learning resources to learn about statistics.	9.2/3an
24	I can work on tasks and activities including worded problems that are related to mathematical content in this strand at this level.	9.2/3ap
	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.	9.2/3ao

Strand 8: Learning Area Outcome: I understand ideas of chance and uncertainty

Subject Focus: Data Handling & Chance – Probability.