

# MATHEMATICS SYLLABUS

## Year 11 Track 1

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Year 11 - Track 1: Number and Applications

SMP Interact Mathematics for Malta: Foundation Level

Ch	Mod	Learning Outcome:	Pg	Level	Notes
44	NN40	i. Multiply directed numbers by a negative number.	328		<ul style="list-style-type: none"> <li>To include evaluating expressions with up to three variables.</li> </ul>
	NN40	ii. Divide directed numbers by a negative number.			
	NN40	iii. Work out cases of mixed calculations.			
47	NA41	i. Change percentages to fractions and vice-versa.	351		
	NA41	ii. Find the percentage of a quantity.			
	NA41	iii. Express one quantity as a percentage of another.			
	NA41	iv. Solve problems on everyday use of percentages.			
49	NN42	i. Make efficient use of a calculator relating to basic functions (+, −, ×, ÷, =).	365		
	NN42	ii. Apply basic functions in problem solving.			
	NN42	iii. Present necessary working in orderly form.			
60	NN43	i. Reduce fractions to their lowest terms.	459		<ul style="list-style-type: none"> <li>To include adding and subtracting two mixed numbers.</li> <li>Write fractions in ascending and descending order of size.</li> </ul>
	NN43	ii. Change improper fractions to mixed numbers and vice-versa.			
	NN43	iii. Add and subtract two fractions with different denominators			
	NN43	iv. Multiply one fraction by a whole number.			
	NN43	v. Compare two fractions according to size.			
63	NN44	i. Make efficient use of a calculator relating to change sign, reciprocal and brackets	487		
	NN44	ii. Make efficient use of a calculator to find squares, cubes and square roots.			
65	NN45	i. Multiply two decimal numbers without using a calculator.	504		<ul style="list-style-type: none"> <li>To include applications in conversions, bills and area.</li> </ul>
67	NN46	i. Find a fraction of a quantity.	516		<ul style="list-style-type: none"> <li>Learn to use the fraction key on the calculator.</li> </ul>
	NN46	ii. Divide a fraction by a whole number.			
	NN46	iii. Multiply a fraction by another fraction.			
69	NA47	i. Work out the percentage increase/decrease.	528		<ul style="list-style-type: none"> <li>To include examples on sale, discounts, simple interest, VAT, appreciation, depreciation and other everyday situations.</li> </ul>
	NA47	ii. Solve problems involving percentage increase and decrease.			

Year 11 – Track 1: Algebra

SMP Interact Mathematics for Malta: Foundation Level

Ch	Mod	Learning Outcome:	Pg	Level	Notes
50	AL24	i. Factorise expressions by taking out a single numeric/algebraic common factor.	371		E.g. $2(a+3) \pm (3(a-1))$
	AL24	ii. Multiply a single term over a bracket.			
	AL24	iii. Simplify algebraic expressions by collecting like terms including simple use of brackets.			
58	AL25	i. Recognize geometric and number patterns.	449		<ul style="list-style-type: none"> <li>Opportunity should be given to generate number patterns on a spreadsheet.</li> </ul> E.g. which term contains 100 dots in a geometric pattern?
	AL25	ii. Describe simple patterns by a verbal rule.			
	AL25	iii. Find the next term or pattern in a sequence.			
	AL25	iv. Extend patterns and sequences of numbers to find a term of a sequence.			
	AL25	v. Finding which term fits a given description in a geometric pattern			
61	AL26	i. Use simple formulae by substituting numbers for the unknown including brackets and fractions.	468		
	AL26	ii. Solve problems leading to solution of linear equations in one unknown.			
63	AL27	i. Use a calculator to work out positive integral indices.	490		
66	AL28	i. Solve linear equations in one unknown involving two or more operations	510		<ul style="list-style-type: none"> <li>Include the use of brackets and simple fractions with numerical denominators.</li> </ul>
	AL28	ii. Solve problems leading to solution of linear equations in one unknown.			
70	AL29	i. Draw and use conversion graphs.	536		



Year 11 – Track 1: Shape, Space and Measurement (i)

SMP Interact Mathematics for Malta: Foundation Level

Ch	Mod	Learning Outcome:	Pg	Level	Notes
38	GG27	i. Find unknown angles in general triangles.	268		<ul style="list-style-type: none"> <li>Students should be given the opportunity to use LOGO and Dynamic Geometry Software to investigate the properties of quadrilaterals and regular polygons.</li> <li>Students are expected to use a formula such as <math>(2n - 4)</math> right angles and <math>(n - 2) \times 180^\circ</math> to find the sum of the interior angles of a polygon.</li> </ul>
	GG27	ii. Derive the sum of the angles of a quadrilateral from the angles of a triangle.			
	GG27	iii. Solve problems involving the angles of quadrilateral.			
	GG27	iv. Draw the inscribed regular hexagon in a given circle using ruler and compasses only.			
	GG27	v. Construct regular polygons inside a circle using the angle at the centre subtended by the sides and using a protractor.			
	GG27	vi. Derive the sum of the exterior angles of a polygon.			
	GG27	vii. Derive the sum of the interior angles of a polygon.			
51	GG28	i. Draw simple scale drawings from given data and interpret scale drawings.	378		<ul style="list-style-type: none"> <li>Exclude making a scale drawing using bearings.</li> </ul>
	GG28	ii. Use three-figure bearings to describe the position of one point from another.			
	GG28	iii. Find the distance/bearing of one object from another by reading a scale drawing.			
55	GM29	i. Work out the volume of a cuboid by counting cubes/using formula.	423		
	GM29	ii. Use the formula $V = l \times b \times h$ to find length, breadth or height.			
	GM29	iii. Solve problems involving the volume of a cube or cuboids.			
	GM29	iv. Understand and use units of volume in $\text{cm}^3$ and $\text{m}^3$ and be able to convert units in simple cases.			
	GM29	v. Work out the surface area of a right prism by drawing and measurement.			

Year 11 – Track 1: Shape, Space and Measurement (ii)

SMP Interact Mathematics for Malta: Foundation Level

Ch	Mod	Learning Outcome:	Pg	Level	Notes
56	GM30 GM30 GM30  GM30 GM30 GM30	i. Use the formula Circumference = $\pi d$ ii. Estimate the areas of awkward shapes by counting squares. iii. Use the formula $A = \pi r^2$ for the area of a circle.  iv. Find the area of composite shapes: dividing them into simple shapes including circles. v. Find the length of arc and area of sector as fractions of a circle. vi. Solve problems involving the area and the circumference of a circle.	431		<ul style="list-style-type: none"> <li>Students should be able to demonstrate, by taking circles with different radii, that the area of a circle is approximately equal to 3 times the area of the square drawn with the radius of the circle.</li> <li>For half, quarter and three-quarters of a circle.</li> </ul>
59	GG31 GG31	i. Enlarge a shape given the centre of enlargement and the scale factor. ii. Understand the effects of enlargement.	454		<ul style="list-style-type: none"> <li>Understand and use the effect of enlargement on perimeter for 2D shapes. Exclude the effect on the area of the shape.</li> </ul>
64	GG32 GG32  GG32 GG32  GG32 GG32 GG32	Draw: i. Reflections. ii. Translation.  iii. Rotations. iv. Enlargement.  v. Transform 2D shapes by a combination of transformations. vi. Understand the notion of similarity through enlargement. vii. Understand the notion of congruent shapes.	492		<ul style="list-style-type: none"> <li>Use <math>y = \pm c</math>, <math>x = \pm c</math> as axes.</li> <li>Use right, left, up and down descriptions in the <math>x, y</math> plane.</li> <li>Use angles of rotation in multiples of <math>90^\circ</math>.</li> <li>Use positive integers as scale factors.</li> <li>Recognise that reflections, rotations and translations preserve length and angle, so that any figure is congruent to its image under any of these transformations.</li> </ul>
68	GG33 GG33	Construct triangles, using ruler and compasses only: i. Given the length of the sides, ii. Given the length of one side and two angles, iii. Given two sides and the included angle.	523		<ul style="list-style-type: none"> <li>Exclude the ambiguous case.</li> </ul>

Year 11 – Track 1: Data Handling

SMP Interact Mathematics for Malta: Foundation Level

Ch	Mod	Learning Outcome:	Pg	Level	Notes
52	DH13 DH13	i. Read pie charts. ii. Draw pie charts using angles to create sectors.	387		
57	DH14  DH14  DH14	i. Group data and compile grouped frequency tables  ii. Understand, compute and interpret the mean, mode, median and range of a set of ungrouped data.  iii. Understand, compute and interpret the modal group of a set of grouped data.	439		<ul style="list-style-type: none"> <li>Exclude the use of inequality signs in grouping data.</li> <li>Understanding the difference between discrete and continuous data is not expected.</li> <li>For further exercises on the median and range see Chapter 20 Pg. 131</li> </ul>
36	DH15	i. Compile a possibility space and use it to work the probability of an outcome.	253		