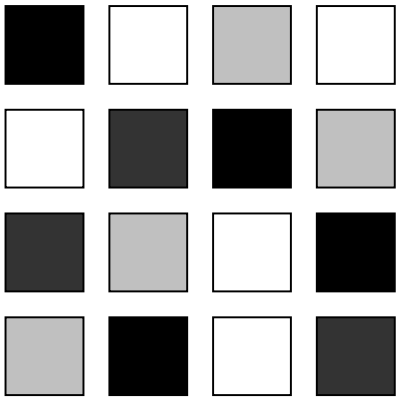

Mathematics Syllabus
Scheme C
June 2009

Curriculum Management and eLearning Department, Directorate for Quality and Standards in Education, Malta

Scheme C

Contents

Form 1 Scheme C

Form I - Scheme C: Number and Applications (i)

Mod	**Learning Outcome:**	Level	SEC	Notes
NA1	i. Understand place value.		Core	• Restrict to numbers up to 1 000 000.
NN1	ii. Read and write whole numbers in figures and words.			
NN1	iii. Order a set of numbers.			
NN1	iv. Multiply and divide whole numbers by 10, 100 or 1000.			
NN1	v. Find a number which lies between two given whole numbers.			
NN1	vi. Learn that kilo stands for 1000.			
NN2	i. Add natural numbers up to 1000.		Core	
NN2	ii. Subtract natural numbers less than 1000.			
NN2	iii. Learn the multiplication facts up to 10×10. Multiply and divide natural numbers by a single-digit number.			
NN3	i. Read decimal numbers to two places from scales and dials.		Core	• The notion of a decimal number is introduced through the pupils' concrete experience with measurement, money and weight. E.g. The length of a pencil can be expressed as 7 centimetres and 4 tenths of a centimetre, i.e. 7.4 cm. • Restrict decimals to two decimal places.
NN3	ii. Understand the place value of decimal numbers.			
NN3	iii. Arrange numbers (including decimals) in ascending and descending order.			
NA3	iv. Read and use scales in practical situations.			
NN3	v. Add and subtract decimal numbers.			
NN4	i. Understand the notion of a fraction.		Core	
NN4	ii. The meaning of half, third, quarter, fifth, tenth.			
NN4	iii. Find a fraction of a quantity.			
NN4	iv. Use equivalent fractions.			E.g. in relation to shaded diagrams.
NN4	v. Use simple percentages.			
NN5	i. Know the meaning of multiples.		Core	
NN5	ii. Understand and use square numbers.			
NN5	iii. Know the meaning of factors.			
NN5	iv. Recognise prime numbers.			
NN5	v. Know the meaning of even and odd.			
NA6	i. Write time using 12-hour and 24-hour clock.		Core	
NA6	ii. Convert 12-hour to 24-hour clock and vice versa.			
NA6	iii. Read and use a calendar.			

Mod	Learning Outcome:	Level	SEC	Notes
NN7	ii. Multiply and divide decimal numbers by a whole number.		Core	• The calculator is to be used not only as a numerical computational tool, but also as a tool that can help students to gain an insight into mathematical concepts. It is very important that students learn to use the calculator appropriately and efficiently while at the same time employing suitable procedures to check the result displayed on their calculator.
NA8	i. Draw simple scale drawings.		Core	
NN9	i. Understand the meaning of positive and negative numbers (directed numbers) and represent these on a number line.		Core	
NN9	ii. Recognise and understand negative numbers through practical examples.			E.g. thermometer.
NN10	i. Round numbers to the nearest 10, 100 or 1000.		Core	
NN10	ii. Carry out rough estimates to check accuracy.			
NN10	iii. Round numbers to the nearest whole number.			
NN11	i. Use the four rules for calculations with positive integers, including the correct order of carrying out operations.		Core	• Use the mnemonic BIDMAS to work out the operations in the correct order:
NN11	ii. Multiply a two-digit number by a one-digit number using the partitioning method.			E.g. $4 \times 28 = 4 \times (20 + 8)$ $= 4 \times 20 + 4 \times 8$ $= 80 + 32$ $= 112$
NN11	iii. Divide by large numbers using factors.			• Avoid numbers which do not divide exactly. E.g. $936 \div 24 = (936 \div 4) \div 6$ $= 234 \div 6$ $= 39$

Form I - Scheme C: Algebra (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
AL1	i.	Plot points in the first quadrant using ordered pairs.		Core	
AL1	ii.	Draw lines and shapes given the co-ordinates of their endpoints/vertices.			
AL2	i.	Construct simple number (function) machines.		Core	• At this stage students are helped to realise that in algebra, letters may be used to represent numbers. Students learn to describe functions, both verbally and symbolically.
AL2	ii.	Describe number machines verbally and symbolically.			
AL2	iii.	Obtain the output using a number machine.			
AL2	iv.	Find the rule for a number machine.			
AL3	i.	Evaluate simple formulae.		Core	
AL3	ii.	Understand and use simple formulae.			
AL3	iii.	Work backwards using number pyramids.			• Include examples involving the four operations. E.g. $\square + 5 = 17$
AL4	i.	Interpret line graphs arising from real life situations.		Core	
AL4	ii.	Draw line graphs from simple relationships.			
AL4	iii.	Interpret conversion graphs.			

Form I - Scheme C: Shape, Space and Measurement (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
GG1	i.	Distinguish between acute, right, obtuse and reflex angle.		Core	• **LOGO** provides an ideal environment for students to experience angle as a measure of turn, in both clockwise and anti-clockwise direction. Besides turtle geometry gives students an opportunity to manipulate angles of different sizes.
GG1	ii.	Understand that a revolution is divided into 360 parts called degrees.			
GG1	iii.	Estimate the size of an angle and use a protractor to measure and draw angles up to 180°.			
GG2	i.	Identify and draw the lines of symmetry of shapes.		Core	
GG2	ii.	Complete a figure to make it symmetrical about a given line.			
GG2	iii.	Identify shapes having rotational symmetry in 2D.			
GG2	iv.	Determine the order of rotational symmetry in 2D.			
GG3	i.	Distinguish between scalene, isosceles and equilateral triangles.		Core	
GG3	ii.	Identify parts of a circle: centre, radius, diameter and circumference.			
GG3	iii.	Identify concentric circles.			
GG3	iv.	Form patterns made up from a number of circles.			
GG3	v.	Construct rectangles/squares using set squares.			
GG3	vi.	Use folding to investigate properties of squares and rectangles.			
GG4	i.	Make cubes and cuboids from their nets.		Core	• Use ruler and set square to draw parallel edges.
GG4	ii.	Identify faces, vertices, edges of simple solids.			
GM5	i.	Measure the length of objects.		Core	
GM5	ii.	Convert units of length to smaller units and vice versa.			
GM5	iii.	Understand the meaning of capacity and solve problems involving capacity.			
GM5	iv.	Use litres and millilitres.			
GM5	v.	Convert units of weight to smaller units and vice versa.			
GM6	i.	Find the perimeter of simple shapes by adding the lengths of the sides.		Core	
GM6	ii.	Find the area of a rectangle by counting squares.			
GM6	iii.	Understand and use units of area: cm^2.			
GM6	iv.	Find the area of a right angled triangle as half the area of a rectangle or square.			
GM6	v.	Find the area of simple composite shapes by counting squares.			
GM6	vi.	Find the volume of a cuboid by counting cubes.			
GM6	vii.	Understand and use units of volume. E.g. cm^3.			
GM6	viii.	Find the volume of compound shapes involving cubes and cuboids by counting cubes.			

Form I - Scheme C: Data Handling (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
DH1	i.	Collect data using observations, surveys and experiments.		Core	Students: • Formulate questions about relevant issues and answer these questions by collecting data and presenting it in meaningful ways. • Use spreadsheets to display and analyse collected data. It is important that students not only learn how to use and interpret statistics but also understand its scope and drawbacks.
DH1	ii.	Compile and interpret frequency tables for ungrouped discrete data.			
DH1	iii.	Draw and interpret bar charts and pictograms.			
DH1	iv.	Carry out simple interpretation of pie charts			• Students are not required to calculate angles and draw pie charts.
DH2	i.	Compute the mean and the mode.		Core	
DH3	i.	Describe events as certain, impossible, likely, unlikely, etc.		Core	• Students use a spreadsheet to simulate randomly occurring events such as the throw of a die and the toss of a coin. • Questions involving playing cards will not be set in the exam.
DH3	ii.	Understand and work out the probability of an event.			
DH3	iii.	Find the probability by experiment.			

Form 2 Scheme C

Mod	Learning Outcome:	Level	SEC	Notes
NN12	i. Round numbers to a given degree of accuracy (nearest unit, nearest 10 … up to nearest 1 000 000).		Core	
NN12	ii. Read decimal numbers on the number line and from scales.			
NA12	iii. Read and use scales in practical situations.			
NN13	i. Add and subtract decimal numbers.		Core	• Multiplication and division by 100 can be seen as repeated multiplication and division by 10. A calculator can be used to help students establish a relationship between multiplying and dividing by 10 and the manner in which the number is changing. • Revise multiplying/dividing by a single digit.
NN13	ii. Round numbers to one decimal place.			
NN13	iii. Multiply decimal numbers by 10, 100 and 1000.			
NN13	iv. Divide decimal numbers by 10, 100 and 1000.			
NN13	v. Work out simple problems on multiplication and division of decimals.			
NN14	i. Represent directed numbers on a number line.		Core	
NN14	ii. Recognise and understand negative numbers through practical examples.			E.g. thermometer etc.
NN14	iii. Add and subtract directed numbers.			
NN14	iv. Use a calculator to subtract a negative number.			• The calculator is to be used not only as a numerical computational tool, but also as a tool that can help students to gain an insight into mathematical concepts. It is very important that students use the calculator appropriately and efficiently while at the same time employing suitable procedures to check the result displayed on their calculator.
NA14	v. Solve problems using directed numbers.			
NN15	i. Write a fraction that is equivalent to another fraction.		Core	• Students should understand that multiplying by a fraction implies finding a fraction of a quantity.
NN15	ii. Reduce a fraction to its simplest form by cancelling common factors.			
NN15	iii. Add and subtract two fractions that have a common denominator.			
NN15	iv. Multiply one fraction by a whole number.			
NA15	v. Change simple percentages to fractions / decimals and vice-versa.			
NA16	i. Convert large units of length/weight to smaller units and vice-versa.		Core	
NN17	i. Recognise and use factors and multiples.		Core	
NN17	ii. Recognise squares and cubes.			
NN17	iii. Write powers of two in index form.			

Form II – Scheme C: Number and Applications (ii)

Mod	Learning Outcome:	Level	SEC	Notes
NN18	i. Use the ratio notation to compare two or more quantities.		Core	
NN18	ii. Write ratios in their simplest form.			
NA18	iii. Solve problems involving direct proportion using ratio and the unitary method.			
NA18	iv. Sharing quantities in a given ratio.		Core	
NA19	i. Change percentages to fractions and vice versa.			• Fractions are restricted to denominators that are factors of 100.
NA19	ii. Express one quantity as a percentage of another.			
NA19	iii. Work out the percentage of a quantity.			
NN20	i. Correct use of brackets to help with multiplication.		Core	
NN20	ii. Tests of divisibility restricted to multiples of 2, 3, 5 and 10.			
NN20	iii. Interpreting the remainder.			

Form II - Scheme C: Algebra (i)

Mod	Learning Outcome:	Level	SEC	Notes
AL5	i. Read and plot co-ordinates using ordered pairs in all four quadrants. ii. Draw lines and shapes given the co-ordinates of their endpoints/vertices.		Core	• Students are given the opportunity to make use of a Computer Algebra Software (CAS) and a spreadsheet to introduce and reinforce related algebraic concepts.
AL6	i. Use letter symbols to represent unknown numbers.		Core	
AL6	ii. Evaluate simple formulae by substituting letters with two positive inputs.			
AL6	iii. Solve simple formulae by working backwards.			
AL7	i. Plot and interpret information presented in a variety of linear and non-linear graphs.		Core	E.g. distance-time graphs; conversion graphs. • Curves are to be excluded.
AL8	i. Solve simple problems involving length and weight.		Core	• Imperial units are to be excluded.
AL9	i. Work out the input/output of a number machine. ii. Forming/solving linear equations involving one operation.		Core	
AL10	i. Recognise geometric and number patterns.		Core	• Students are given the opportunity to use a spreadsheet to generate sequences of numbers that they can describe both verbally and symbolically.
AL10	ii. Describe the rule of a sequence in words.			
AL10	iii. Complete a given sequence.			
AL11	i. Generate and plot ordered pairs that satisfy a simple linear rule.		Core	
AL11	ii. Generate a sequence of ordered pairs and plot them to produce straight-line graphs.			• Restrict to graphs in the first quadrant. • Restrict to equations of the form $y = x + c$ and $y = mx$ where m is always positive but c may be both positive or negative.

Form II - Scheme C: Shape, Space and Measurement (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
GG7	i.	Estimate the size of an angle.		Core	• LOGO provides an ideal environment for students to experience angles as a measure of turn, in both a clockwise and an anti-clockwise direction. Furthermore, turtle geometry gives students an opportunity to manipulate angles of different sizes. • Dynamic Geometry Software can help students discover the properties of vertically opposite angles, angles at a point and angles on a straight line.
GG7	ii.	Use a protractor to measure and draw angles up to 180°.			
GG7	iii.	Distinguish between acute, right, obtuse and reflex angle.			
GG7	iv.	Understand that a revolution is divided into 360 parts called degrees.			
GG7	v.	Solve problems involving angles at a point and angles on a straight line.			
GG7	vi.	Find unknown angles in triangles.			
GG7	vii.	Express the eight main compass directions as three figure bearings.			
GG8	i.	Draw simple scale drawings from given data and interpret scale drawings.		Core	• By drawing simple shapes such as squares, rectangles and triangles using simple LOGO commands such as FD, BK, RT, LT and REPEAT, students will have the opportunity to reflect upon the properties of these shapes.
GG8	ii.	Construct triangles given the length of the sides using ruler and compasses only.			
GG8	iii.	Construct a triangle given the length of one side and two angles, two sides and the included angle.			
GG8	iv.	Use ruler and compasses only to draw angles of 60° and 90°.			
GG8	v.	Construct squares and rectangles using ruler and compasses only.			
GG9	i.	Distinguish between scalene, isosceles and equilateral triangles.		Core	
GG9	ii.	Classify quadrilaterals using their geometric properties.			
GG9	iii.	Identify tessellating shapes.			
GG9	iv.	Cover a given area with tessellating shapes.			
GM10	i.	Find the perimeter of simple shapes by adding side length.		Core	
GM10	ii.	Understand and use units of area: cm^2 and m^2.			
GM10	iii.	Use the formula to find the area of a rectangle.			
GM10	iv.	Find the area of simple shapes made up of rectangles.			
GM10	v.	Find the volume of cubes and cuboids by counting cubes/using formula.			
GM10	vi.	Find the volume of compound shapes involving cubes and cuboids.			
GM10	vii.	Understand and use units of volume: cm^3 and m^3.			
GG11	i.	Identify and draw the lines of symmetry of shapes.		Core	• Recognise that reflection, rotations and translations preserve length and angle so that any figure is **congruent** to its image under any of these transformations.
GG11	ii.	Identify shapes having rotational symmetry in 2D.			
GG11	iii.	Determine the order of rotational symmetry in 2D.			
GG12	i.	Describe and draw Reflections and Rotations.		Core	• Using angles of rotation at the centre of a circle.
GG12	ii.	Translation using right, left, up and down descriptions.			
GG13	i.	Use squared paper to draw nets of solid shapes.		Core	
GG13	ii.	Use isometric paper to draw solids.			
GG13	iii.	Learn the meaning of edges, sides, vertices and dimensions of a shape.			

Form II - Scheme C: Data Handling (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
DH4	i.	Draw and interpret bar charts, pie charts and pictograms.		Core	Students: • Formulate questions about relevant issues and answer these questions by collecting data and presenting it in meaningful ways. • Use spreadsheets to display and analyse the collected data. • Learn not only how to compute statistics but also understand their scope and drawbacks.
DH4	ii.	Understand, compute and interpret the mean, mode, median and range of a set of ungrouped data.			
DH4	iii.	Compile and interpret frequency tables for ungrouped data.			
DH5	i.	Design and use a questionnaire to collect data.		Core	
DH6	i.	Understand and work out the probability of an event.		Core	
DH6	ii.	Work out the probability by experiment.			
DH6	iii.	Work out the probability from a frequency table.			

Form 3 Scheme C

Mod	**Learning Outcome:**	Level	SEC	Notes
NA21	i. Use units of length/weight/time and capacity		Core	
NA21	ii. Solve simple problems involving length, weight and capacity.			• Include converting one metric unit to another.
NA21	iii. Understand and use timetables.			
NA21	iv. Determine time intervals in hours and minutes.			
NA21	v. Understand the notion of speed.			
NA21	vi. Express speed in km/h.			• Through direct proportion.
NA21	vii. Work out the distance/time given the speed and time/distance.			• Through direct proportion.
NN22	i. Write ratios in their simplest form.		Core	
NA22	ii. Share quantities in a given ratio.			
NN23	a. Add negative numbers.		Core	
NN23	b. Subtract negative numbers.			
NA23	c. Apply notions of directed number to practical situations.			
NA24	i. Find the percentage of a quantity.		Core	
NA24	ii. Work out the percentage increase/decrease.			
NA24	iii. Solve problems involving percentage increase/decrease.			
NN25	i. The correct use of operations and the use of brackets.		Core	• Students should explore the correct use of brackets in working out operations such as $4\times3 + 4\times5$ to facilitate work.
NN25	ii. Expanding brackets.			
NN26	i. Simplify fractions.		Core	• One denominator being a multiple of the other.
NN26	ii. Use equivalent fractions.			
NN26	iii. Add and subtract two fractions with same and different denominators			
NN27	i. Arrange numbers (including decimals and fractions) in ascending and descending order.			• Students should be aware of non terminating decimals.
NN27	iii. Multiply and divide decimal numbers by an integer.			
NN28	i. Choose reasonable approximations.		Core	
NN28	ii. Round decimals to up to three decimal places.			
NN28	iii. Carry out rough estimates to check accuracy.			
NN29	i. Use the four rules for calculations with numbers.		Core	• Paper and pencil methods for multiplication and division by a one- digit number.
NN29	ii. Problems involving the four rules for calculations with numbers.			• Multiplication by a two-digit number using the partitioning method. • Division by large numbers using factors and repeated subtraction. • The calculator is to be used for harder examples.
NA30	i. Money problems on hourly rates including overtime, bank statements, holiday brochures.		Core	

Form III - Scheme C: Algebra (i)

Mod	Learning Outcome:	Level	SEC	Notes
AL12	i. Use letter symbols to represent unknown numbers.		Core	
AL12	ii. Evaluate simple formulae with three positive inputs.			
AL13	i. Solve linear equations in one unknown involving two operations.		Core	
AL14	i. Construct simple number (function) machines.		Core	
	ii. Obtain the input/output using a number machine.			
	iii. Recognise and generate geometric and number patterns.			• Students should be given opportunities to use a spreadsheet to generate sequences of numbers that they can describe verbally.
AL15	i. Read and plot co-ordinates using ordered pairs in all four quadrants.		Core	
	ii. Generate and plot coordinate pairs that satisfy a simple linear rule.			• To include equations of the form $y = mx + c$
AL15	iii. Understand that the equation of a straight line describes the relationship between x- and y-coordinates.			
AL16	i. Simplify algebraic expressions by collecting like terms.		Core	
AL16	ii. Multiply a bracket by a single term.			
AL16	iii. Factorise fully expressions containing a numerical common factor.			
AL17	i. Draw and interpret linear and non-linear graphs arising from real-life situations.		Core	E.g. distance-time graphs; conversion graphs; currency etc. • Exclude the interpretation of the gradient.

Form III - Scheme C: Shape, Space and Measurement (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
GG14	i.	Sort out shapes into 2D and 3D shapes		Core	
GG14	ii.	Use isometric paper to draw solid shapes.			
GG14	iii.	Discover the meaning of parallel lines and parallelogram.			
GG14	iv.	Learn the meaning of prism and recognise the net of a particular prism.			
GG15	i.	Understand that a ratio of 1: *n* for enlargement is called scale factor of *n* (where *n* is an integer).		Core	• Recognise that enlargements preserve angle and not length.
GG15	ii.	Learn the meaning of "similar" for flat and solid shapes.			• Other examples need to be considered.
GG16	i.	Understand that a revolution is divided into 360 parts called degrees.		Core	• LOGO provides an ideal environment for students to experience angle as a measure of turn, in both clockwise and anti-clockwise direction. Besides turtle geometry gives students an opportunity to manipulate angles of different sizes. • Dynamic Geometry Software can help students discover the properties of vertically opposite angles, angles at a point and angles on a straight line. • By drawing simple shapes such as squares, rectangles and triangles using simple LOGO commands such as FD, BK, RT, LT and REPEAT, students reflect upon the properties of these shapes.
GG16	ii.	Solve problems involving angles at a point and angles on a straight line.			
GG16	iii.	Understand the angle sum property of a triangle.			
GG16	iv.	Solve problems involving the angles of a triangle and quadrilateral.			
GG16	v.	Discover the angle properties of a parallelogram.			
GG16	vi.	Recognise polygons and learn their names according to the number of sides.(3, 4, 5, 6 and 8 sides).			
GG16	vii.	Recognise regular polygons.			
GG16	viii.	Draw regular polygons inside a circle, given the radius, by finding angles at the centre for 3, 4, 5, 6 and 8 sided polygons.			
GG17	ii.	Draw simple scale drawings from given data and interpret scale drawings.		Core	
GG17	iii.	Use ruler and compasses only to draw the perpendicular bisector of a line segment.			
GG17	iv.	Use ruler and compasses only to draw the bisector of an angle.			
GG17	v.	Use ruler and compasses to draw angles of 30° and 45°.			
GM18	i.	Find the area of a rectangle and of a right angled triangle as half the area of a rectangle or square.		Core	
GM18	ii.	Discover and learn that the area of a triangle can be found by using the formula: half the base times the height.			
GM18	iii.	Find the volume of compound shapes involving cube, cuboid and prism.			
	iv.	Investigate the relationship between the diameter and circumference of a circle.			

Form III - Scheme C: Shape, Space and Measurement (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
		Draw:		Core	
GG19	i.	Reflect an object in a vertical or horizontal mirror line.			• Use also the *x* and *y* axis as mirror lines.
GG19	ii.	Rotate an object in the *x*, *y* plane.			• Use angles of rotation in multiples of 90°.
GG19	iii.	Translate an object using right, left, up and down descriptions in the *x*, *y* plane.			
GG19	iv.	Enlarge an object using positive integer as scale factor.			• Include also finding the scale factor.

Form III - Scheme C: Data Handling (i)

Mod	Learning Outcome:	Level	Sec	Notes
DH7	i. Draw and interpret bar charts and pie charts for ungrouped discrete data.		Core	• Use a spreadsheet to construct bar graphs and pie charts.
DH8	i. Understand, compute and interpret the mode, median, mean and range of a set of ungrouped data.		Core	• Use a spreadsheet to compute the mean and range. Students are given opportunities: • to formulate questions about relevant issues and answer these questions by collecting data and presenting it in meaningful ways. • to use spreadsheets to display and analyse the collected data. • to compute statistics and understand its scope and drawbacks. • to learn to group data in a meaningful way.
DH8	ii. Draw and interpret bar charts for grouped data.			
DH8	iii. Compile and interpret frequency tables for grouped discrete data.			
DH8	iv. Draw a bar chart with equal intervals from a frequency table.			
DH9	i. Find the probability by experiment.		Core	
DH9	ii. Understand and work out the probability of an event.			
DH9	iii. Compile and use a possibility space.			
DH9	iv. Work out the probability from a frequency table.			

Form 4 Scheme C

Form IV - Scheme C: Number and Applications (i)

Mod	Learning Outcome:	Level	SEC	Notes
NN31	i. Know what each digit represents in a given number.		Core	• Students are expected to work out, without using pencil and paper or a calculator, simple computations, and to solve simple problems.
NN31	ii. Write in a given order a set of numbers.			E.g. smallest first , increasing order of size, etc.
NN31	iii. Round numbers to a given degree of accuracy.			E.g. nearest unit, nearest 10 up to nearest 1 000 000.
NN31	iv. Round numbers correct to one significant figure.			
NN31	v. Multiply and divide numbers by numbers ending with zeros.			
NN31	vi. Carry out rough estimates to check accuracy.			E.g. 732 × 28
NN31	vii. Convert large metric units to smaller metric units and vice versa.			• To include units of length, capacity (***ℓ***, ***mℓ***, cm^3) and weight and simple problems connected with these.
NN31	viii. Work out problems using metric units.			
NN32	i. Read decimal numbers to two decimal places from scales.		Core	
NN32	ii. Arrange numbers in ascending and descending order of size.			• To include decimal numbers.
NN32	iii. Use the notion of limits in simple cases.			• For example fitting in an envelope or inserting a number in a given range.
NA33	i. Estimate height by comparing against a known length.		Core	
NA33	ii. Read and use scales in practical situations.			
NN34	i. Round numbers and quantities to the nearest unit.		Core	
NN34	ii. Round to one and more than one decimal place.			
NN34	iii. Multiply and divide by powers of ten.			• To include decimal numbers.

Mod	**Learning Outcome:**	Level	SEC	Notes
NN35	i. Recognise multiples, factors and prime numbers.		Core	
NN35	ii. Identify a common factor and a common multiple of two numbers.			
NN35	iii. Find perfect squares and perfect square roots without using calculators.			
NN35	iv. Find perfect cubes without using a calculator.			
NN35	v. Use factors to multiply and divide by 4 and 5 mentally.			
NA36	i. Apply notions of directed number to practical situations.		Core	
NN36	ii. Compare the magnitude of two or more integers.			
NN36	iii. Add negative numbers.			• To include evaluating simple expressions of addition, subtraction and multiplication by substituting one variable by a directed number.
NN36	iv. Subtract negative numbers.			
NN36	v. Multiply directed numbers by a positive number.			
NA37	i. Change percentages to fractions / decimals and vice-versa.		Core	
NA37	ii. Work out the percentage of a quantity.			
NN38	i. Round numbers, including decimals, to one significant figure.		Core	
NN38	ii. Multiply decimal numbers.			
NN38	iii. Carry out rough estimates to check accuracy.			E.g. $\frac{21.82 \times 3.921}{3.72}$
NN38	iv. Round numbers, including decimals, to one and more than one decimal place.			
NA39	i. Work with quantities in a given proportion.		Core	E.g Use recipes and make comparisons by using unit costs.
NN39	ii. Use the ratio notation to compare two or more quantities.			
NA39	iii. Solve problems involving direct proportion using ratio and the unitary method.			
NA39	iv. Mix quantities in a given ratio.			
NN39	v. Write ratios in their simplest form.			
NA39	vi. Share quantities in a given ratio.			

Form IV – Scheme (C): Algebra (i)

Mod		Learning Outcome:	Level	SEC	Notes
AL18	i.	Use simple formulae by substituting numbers for the unknown.		Core	E.g. Function machines.
AL19	i.	Simplify algebraic expressions by collecting like terms.		Core	
AL19	ii.	Form expressions and formulae.			
AL20	i.	Generate and plot coordinate pairs that satisfy a simple linear rule/equation.		Core	
AL20	ii.	Draw straight-line graphs from linear equations.			
AL20	iii.	Use straight-line graphs to find the value of one coordinate given the other.			
AL21	i.	Solve linear equations in one unknown involving two or more operations.		Core	• Solve equations by the balancing method.
AL21	ii.	Construct and solve simple linear equations.			• Exclude equations involving brackets and fractions
AL21	iii.	Form and solve equations in one unknown to solve problems.			
AL22	i.	Evaluate simple expressions and formulae by substituting numbers for the unknown.			
AL22	ii.	Construct and use simple formulae/linear equations.			E.g. Function machines- arrow diagram.
AL22	iii.	Evaluate simple formulae with two or more positive inputs.			• Students should be given opportunities to use a spreadsheet and/or a CAS to explore algebraic relationships.
AL23	i.	Use conversion graphs.		Core	• Students are not required to draw conversion graphs.

Mod		Learning Outcome:	Level	SEC	Notes
GM20	i.	Use metric units of length, mass and capacity.		Core	• To include 1$m\ell$ = 1cm^3 and 1litre = 1000 $m\ell$ = 1000 cm^3
GG21	i.	Identify and draw shapes having reflection symmetry.		Core	
GG21	ii.	Understand the symmetrical properties of a regular polygon.			
GG21	iii.	Determine the order of rotational symmetry.			• Limited to shapes in 2D only.
GG21	iv.	Identify shapes having rotational symmetry.			
GG22	i.	Solve problems involving angles at a point, angles on a straight line and vertically opposite angles.		Core	
GG22	ii.	Identify parallel lines in geometric figures.			
GG22	iii.	Solve problems involving parallel lines.			• To include alternate and corresponding angles.
GG22	iv.	Give reasons for deducing true statements from geometric diagrams.			• Only an outline notion is required with one step statements. Proofs of geometric statements from geometric diagrams will not be required.
GG23	i.	Draw different views of a given solid.		Core	• To draw the plan, front and side view of a solid on squared paper.
GG23	ii.	Identify a prism and draw its uniform cross section.			
GG23	iii.	Identify and construct the net of a cuboid, triangular prism and square based right pyramid.			
GM24	i.	Know and understand the meaning of terms related to the circle: centre, radius, diameter and circumference.		Core	
GM24	ii.	Understand the notion of π.			• Discover through practical activity that as ratio of circumference to diameter π is approximately equal to 3.
GM24	iii.	Work out the circumference of a circle using π as a multiplier.			• Learn to use the π key on the calculator.
GM25	i.	Derive and use the formula for the area of a parallelogram.		Core	• Use squared paper to demonstrate that the area of a parallelogram is equal to that of a rectangle on an equal base and having the same perpendicular height. • Identify the perpendicular height with respect to a given side.
GM26	i.	Derive the formula ½ × base × perpendicular height for the area of a triangle.		Core	
GM26	ii.	Use the formula for the area of a triangle in composite shapes.			

Form IV – Scheme C: Data Handling (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
DH10	i.	Interpret information tables.		Core	
DH10	ii.	Read line graphs and bar charts.			
DH10	iii.	Construct ungrouped frequency tables.			
DH10	iv.	Understand, compute and interpret the mean, mode and range of a set of data.			• Understanding the difference between discrete and continuous data is not expected.
DH11	i.	Group data and compile grouped frequency tables.		Core	Students should be given opportunities • To formulate questions about relevant issues and answer these questions by collecting data and presenting it in meaningful ways. • To use spreadsheets to display and analyse the collected data. • It is important that pupils not only learn how to compute statistics but understand their scope and drawbacks. • Learn to group data in a meaningful way.
DH11	ii.	Draw bar charts for grouped data.			
DH11	iii.	Collect, classify and tabulate statistical data.		Core	
DH12	i.	Find the probability by experiment.		Core	
DH12	ii.	Understand and work out the probability of an event.			

Form 5 Scheme C

Form V - Scheme C: Number and Applications (i)

Mod	Learning Outcome:	Level	SEC	Notes
NN40	i. Multiply directed numbers by a negative number.		Core	
NN40	ii. Divide directed numbers by a negative number.			
NN40	iii. Work out cases of mixed calculations.			• To include evaluating expressions with up to three variables.
NA41	i. Change percentages to fractions and vice-versa.		Core	
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.			
NN42	i. Make efficient use of a calculator relating to basic functions (+, −, ×, ÷, =).		Core	
NN42	ii. Apply basic functions in problem solving.			
NN42	iii. Present necessary working in orderly form.			
NN43	i. Reduce fractions to their lowest terms.		Core	
NN43	ii. Change improper fractions to mixed numbers and vice-versa.			
NN43	iii. Add and subtract two fractions with different denominators			• To include adding and subtracting two mixed numbers.
NN43	iv. Multiply one fraction by a whole number.			
NN43	v. Compare two fractions according to size.			• Write fractions in ascending and descending order of size.
NN44	i. Make efficient use of a calculator relating to change sign, reciprocal and brackets		Core	
NN44	ii. Make efficient use of a calculator to find squares, cubes and square roots.			
NN45	i. Multiply two decimal numbers without using a calculator.		Core	• To include applications in conversions, bills and area.
NN46	i. Find a fraction of a quantity.		Core	
NN46	ii. Divide a fraction by a whole number.			
NN46	iii. Multiply a fraction by another fraction.			• Learn to use the fraction key on the calculator.
NA47	i. Work out the percentage increase/decrease.		Core	• To include examples on sale, discounts, simple interest, VAT, appreciation, depreciation and other everyday situations.
NA47	ii. Solve problems involving percentage increase and decrease.			

Form V – Scheme (C): Algebra

Mod		**Learning Outcome:**	Level	SEC	Notes
AL24	i.	Factorise expressions by taking out a single numeric/algebraic common factor.		Core	
AL24	ii.	Multiply a single term over a bracket.			
AL24	iii.	Simplify algebraic expressions by collecting like terms including simple use of brackets.			E.g. $2(a+3) \pm (3(a-1)$
AL25	i.	Recognize geometric and number patterns.		Core	• Opportunity should be given to generate number patterns on a spreadsheet.
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			E.g. which term contains 100 dots in a geometric pattern**?**
AL26	i.	Use simple formulae by substituting numbers for the unknown including brackets and fractions.		Core	
AL26	ii.	Solve problems leading to solution of linear equations in one unknown.			
AL27	i.	Use a calculator to work out positive integral indices.		Core	
AL28	i.	Solve linear equations in one unknown involving two or more operations		Core	• Include the use of brackets and simple fractions with numerical denominators.
AL28	ii.	Solve problems leading to solution of linear equations in one unknown.			
AL29	i.	Draw and use conversion graphs.		Core	

Mod	Learning Outcome:	Level	SEC	Notes
GG27	i. Find unknown angles in general triangles.		Core	
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.			• Students should be given the opportunity to use LOGO and Dynamic Geometry Software to investigate the properties of quadrilaterals and regular polygons.
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.			• Students are expected to use a formula such as $(2n - 4)$ right angles and $(n - 2) \times 180^o$ to find the sum of the interior angles of a polygon.
GG27	vii. Derive the sum of the interior angles of a polygon.			
GG28	i. Draw simple scale drawings from given data and interpret scale drawings.		Core	
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.			• Exclude making a scale drawing using bearings.
GM29	i. Work out the volume of a cuboid by counting cubes/using formula.		Core	
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 cm^3 and 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.			

Form V – Scheme C: Shape, Space and Measurement (ii)

Mod	Learning Outcome:	Level	SEC	Notes
GM30	i. Use the formula Circumference = πd		Core	
GM30	ii. Estimate the areas of awkward shapes by counting squares.			
GM30	iii. Use the formula $A = \pi r^2$ for the area of a circle.			• 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.
GM30	iv. Find the area of composite shapes: dividing them into simple shapes including circles.			
GM30	v. Find the length of arc and area of sector as fractions of a circle.			• For half, quarter and three-quarters of a circle.
GM30	vi. Solve problems involving the area and the circumference of a circle.			
GG31	i. Enlarge a shape given the centre of enlargement and the scale factor.		Core	
GG31	ii. Understand the effects of enlargement.			• Understand and use the effect of enlargement on perimeter for 2D shapes. Exclude the effect on the area of the shape.
	Draw:		Core	
GG32	i. Reflections.			• Use $y = \pm c$, $x = \pm c$ as axes.
GG32	ii. Translation.			• Use right, left, up and down descriptions in the x, y plane.
GG32	iii. Rotations.			• Use angles of rotation in multiples of 90º.
GG32	iv. Enlargement.			• Use positive integers as scale factors.
GG32	v. Transform 2D shapes by a combination of transformations.			
GG32	vi. Understand the notion of similarity through enlargement.			
GG32	vii. Understand the notion of congruent shapes.			• Recognise that reflections, rotations and translations preserve length and angle, so that any figure is congruent to its image under any of these transformations.
GG33	Construct triangles, using ruler and compasses only:		Core	
GG33	i. Given the length of the sides,			
	ii. Given the length of one side and two angles,			• Exclude the ambiguous case.
	iii. Given two sides and the included angle.			

Form V – Scheme C: Data Handling (i)

Mod		**Learning Outcome:**	Level	SEC	Notes
DH13	i.	Read pie charts.		Core	
DH13	ii.	Draw pie charts using angles to create sectors.			
DH14	i.	Group data and compile grouped frequency tables		Core	• Exclude the use of inequality signs in grouping data. • Understanding the difference between discrete and continuous data is not expected.
DH14	ii.	Understand, compute and interpret the mean, mode, median and range of a set of ungrouped data.			
DH14	iii.	Understand, compute and interpret the modal group of a set of grouped data.			
DH15	iii.	Compile a possibility space and use it to work the probability of an outcome.		Core	