IGCSE Mathematics
Core

Topic	Syllabus Details Pupils should be able to:-
Syllabus Sections **NUMBER** **1.** **Number** **2.** **3, 5, 7,8.**	Use natural numbers, integers, prime numbers, common factors and common multiples, rational and irrational numbers, real numbers Continue a given number sequence, recognise patterns, generalise to simple algebraic statements including expressions for the nth term. **squares, square roots cubes and cube roots** Order numbers – demonstrate familiarity with <,> etc. Estimate numbers to both decimal places and significant figures **Directed numbers, ordering, the four rules. Use in practical situations such as temp change and water levels**
9. **Limits of accuracy**	Give appropriate upper and lower bounds for data given to a specified accuracy
10. **Ratio,** **Proportion,** **Rate**	Demonstrate an understanding of ratio, direct and inverse proportion and common measures of rate. Divide a quantity in a given ratio; use scales in practical situations. Calculate average speed.
11. **Percentages and fractions**	Calculate a given percentage of a quantity; express one quantity as a percentage of another; Calculate percentage increase or decrease including % profit and loss Simple and compound interest Use language and notation of simple vulgar and decimal fractions. Recognise equivalence and convert between Order a list of numbers Four rules including BODMAS
13, 14.	**Measures and Time**
ALGEBRA **17.** **Graphs in practical situations**	Use cartesian coordinates in two dimensions Construct, interpret and use, graphs in practical situations including travel graphs and conversion graphs.
Syllabus Sections **20** **Algebraic representation and formula** **21.** **Algebraic Manipulation**	Use letters to express generalised numbers and express basic arithmetic processes algebraically, substute numbers for words and letters in formulae; Transform formulae Construct simple expressions and set up simple equations Use brackets and extract common factors

24. **Solutions of equations and inequalities**	Solve simple linear equations in one unknown solve simultaneous linear equations in two unknowns
18. **Graphs of functions**	Construct tables of values for functions of the form $ax+b$, $\pm x^2+ax+b$ $\frac{a}{x}$ $(x\neq 0)$ $a,b\in Z$ draw and interpret such graphs; find the gradient of a straight line graph; solve linear and quadratic equations approximately by graphical methods
23. **Indices**	Use and interpret positive, zero and negative indices
SHAPE AND SPACE **30. Locus** **27,**	Use the following loci and the method of intersecting loci for sets of points in two dimensions: A given distance from a given point, given distance from a straight line, equidistant from two given points, equidistant from two given intersecting straight lines **Geometrical constructions – measure lines and angles; construct a triangle given three sides using ruler and compass only. Construct other simple shapes from given data using geometry set. Construct line and angle bisectors. Read and make scale drawings.**

26. Geometric terms and relationships	Use and interpret the terms: point, line, parallel, bearing, right angle, acute, obtuse and reflex angles, perpendicular, similarity, congruence. Use and interpret vocabulary of triangles, quadrilaterals, circles, polygons and simple solid figures including nets
29. Angle properties	Calculate unknown angles using the following geometrical properties : Angles at a point, angles formed within parallel lines angle properties of :- triangles and quadrilaterals, regular polygons, angle in a semi circle, angle between tangent and radius of a circle

Syllabus Sections **32. Trigonometry**	Interpret and use three-figure bearings measured clockwise from the north (0-360°) apply Pythagoras' theorem and the sine, cosine, and tangent ratios for acute angles to the calculation of a side or of an angle of a right angled triangle (angles to 1 decimal place)
31. Measuration	Carry out calculations involving the perimeter and area of a rectangle and triangle, the circumference of a circle and area of a circle, the area of a parallelogram and a trapezium, the volume of a cuboid, prism and cylinder and the surface area of a cuboid and a cylinder
Syllabus Sections **35.** **Vectors (2-D)**	Describe a translation by using a vector represented by $\begin{pmatrix} \\ \end{pmatrix}$, $\overrightarrow{AB}$ a Add vectors and multiply by scalars.
28. Symmetry	Recognise rotational and line symmetry (including order of rotational symmetry) in two dimensions and properties of triangles, quadrilaterals and circles directly related to their symmetries
37. **Transformations**	Reflect simple plane figures in horizontal or vertical lines Rotate simple plane figures about the origin, vertices or mid points of edges of the figures, through multiples of 90° Construct given translations and enlargements of simple plane figures Recognise and describe reflections, rotations, translations and enlargements
33. Statistics	Collect, classify and tabulate statistical data; Read. Interpret and draw simple inferences from tables and statistical diagrams Construct and use bar charts, pie charts, pictograms, simple frequency distributions and histograms with equal intervals Scatter diagrams, describe correlation and draw a line of best fit by hand. Calculate the mean, median and mode for individual and discrete data and distinguish between the purposes for which they are used
34. Probability	Calculate the probability of a single event as either a fraction or a decimal (not a ratio). Calculate the probability of an event not occurring Relative frequency