

	Objective GCSE F
Integers, powers & roots	Convert between ordinary and standard index form.
	Calculate with standard index form
	Write numbers as products if their prime factors
	Use prime factor form to find the HCF and LCM of a pair of numbers
	Use the laws of indices (numerical and algebraic examples)
Fractions, decimals and percentages	FDP conversions including mixed ordering.
	Apply the four operations with fractions including proper, improper and mixed
	Increase or decrease a quantity by a given percentage (multiplier)
	Calculate percentage change
	Reverse percentages
	Work out compound interest and depreciation
Data	Find the mean, median, mode and range for a set of numbers
	Calculate quartiles and IQR from data in lists
	Calculate averages from a frequency table
	Estimate the mean from a grouped frequency table
	Find the modal group and location of the median from grouped data
Calculations and accuracy	Calculate with negative numbers
	Calculation with decimals using alternative calculations
	Related calculations ($34 \times 56 = 1904$ so what does $19.04 \div 56$ give etc)
	Understand and apply the correct order of operations
	Rounding to a given amount of decimal places and significant figures.
	Estimation
	Find upper and lower bounds
	Use inequality notation to specify error intervals due to rounding
Simplifying and substituting	Laws of indices with algebraic terms
	Expand single brackets including where two are being added or subtracted.
	Factorise into a single bracket including ax^2+bx
	Expand quadratics
	Factorise quadratics of the form $ax^2 + bx + c$ where $a=1$
	Recognise and factorise the difference of two squares
Ratio and proportion	Simplify ratios including writing in the form 1:n
	Recognise ratios as fractions
	Divide a quantity into a ratio given a whole, part or difference.
	Solve non-standard questions when sharing a ratio given whole, part or difference
	Use ratio to compare best buy problems.
	Calculate maximum quantity problems
Pythagoras and Trigonometry	Simplify two pairs of ratio when given a common term
	Apply and use pythagoras including finding heights of shapes
	Use SOHCAHTOA to calculate the missing angles in right angled triangles
	Use SOHCAHTOA to calculate the missing sides in right angled triangles
	Know the exact trig values for sin, cos and tan for (0° , 30° , 45° , 60° and 90°)
ns	Use the exact trig values in SOHCAHTOA calculations
	Recognise the difference between identities, equations and expressions.

Forming and solving equations	Equate coefficients in basic identities
	Solve linear equations with unknowns on both sides
	Solve linear equations with unknowns on both sides including brackets
	Solve linear simultaneous equations
	Factorise and solve quadratics of the form $ax^2 + bx + c = 0$ where $a=1$
	Substitute numbers into more complex formulae including brackets, fractions and square roots
	Rearrange formulae that include brackets, fractions and square roots
	Rearrange formulae where the subject appears twice
Lines, angles and shapes	Apply the properties of angles around a point, on a straight line, in a triangle etc to solve problems
	Recognise and use angles within parallel lines
	Calculate interior and exterior angles in regular polygons
Data	Draw and Interpret pie charts
	Draw and interpret time series graphs
	Draw and interpret scatter graphs including describing correlation and relationship
	Draw lines of best fit to make predictions and to interpolate and extrapolate values
Proportion	Solve problems involving basic direct and inverse proportion
	Solve problems involving direct and inverse proportion algebraically.
	Recognise and interpret graphs that illustrate direct and inverse proportion
Area	Know and use the formula to find the areas of triangles, parallelograms and trapezium.
	Find the area and perimeter of composite shapes
	Identify the parts of a circle
	Calculate the area and circumference of a circle including composite shapes
	Calculate the area of sectors and lengths of arcs
Inequalities	Identify values for an inequality through listing and on a number line
	Solve linear inequalities in one variable
	Represent the solution set on a number line
Sequences, functions and graphs	Recognise and use triangular, square and cube numbers, arithmetic, geometric, fibonacci and quadratic
	Find the nth term of arithmetic sequences
	Complete a table of values and draw graphs of the form $y = mx + c$
	Use linear graphs to find approximate solutions to solve simultaneous equations
	Calculate the gradient of a line
	Use $y = mx + c$ to calculate the gradient and intercepts of a line
	Use $y = mx + c$ to identify parallel lines
	Find the equation of a line through two points or one point with a given gradient
	Sketch the graphs of quadratic, cubic and reciprocal functions
	Identify roots, intercepts and turning points of quadratics graphically
	Identify the roots and intercepts of a quadratic algebraically
Transformations	Identify, describe and construct congruent and similar shapes, on coordinate axes, by considering
	Describe translations as 2D vectors
	Apply addition and subtraction of vectors, multiplication of vectors by a scalar both diagrammatically and algebraically
Volume	know and apply formula to find the volume (and surface area) of cuboids and other right prisms
	Calculate the volume and surface areas of cylinders
	Calculate the volume and surface area of spheres and cones
	Calculate the volume of composite solids

Probability	Work with and use relative frequency including noting that it tends to the theoretical
	Use set notation and venn diagrams to organise data and find appropriate probabilities.
	Use probaility trees to calculate the probability of two successive independent events occuring
	Use probability trees to find probabilities of two successive independent events
Measures	Convert between metric units of area and volume
	Calculate compound measures including speed, distance and time, density, mass and volume.
	Draw and interpret distance time graphs
	Calculate speed from a distance time graph
Constructions and loci	Draw and measure lines and angles
	Draw and recognise the nets of simple solids
	Draw and recognise the plans and elevations of 3D objects
	Use the standard conventions for labelling sides and angles in triangles
	Construct a triangle given SAS or ASA
	Construct a triangle given SSS
	Use basic congruence criteria for triangles
	Recognise similarity in order to deduce the lenghts of missing sides.
	Draw and measure bearings
	Use map scales to find distances
	Construct the perpendicular bisector of a line
	Construct the bisector of an angle
	Construct 30° , 60° and 120° angles
	Use construction to solve loci problems

} rotation, reflection, translation and enlargement (including fractional SF)