

## Key Learning Topics Mathematics Years 7-11

Year Group> Year 11					
Grades	1 & 2	3 & 4	5 & 6	7 & 8	
<b>Term 1</b>	Find the volume of Equations Trigonometry & Pythagoras Graphs	prisms Collect like terms & single brackets Draw simple graphs	cones & cylinders Solve simple and double brackets Use the formulas Linear & Quadratic graphs: Use a table	pyramids Solve quadratics & use the formula Real life problems $Y = mx+c$ Cover and plot method	Complete the square Complex 3D problems Solve simultaneous equations
<b>Term 2</b>	First Mock Graphs Proportion	draw linear graphs Read a graph	sketch quadratic and cubic graphs Draw graphs to solve	understand function changes Solve direct & inverse proportion	Find turning points & equations of tangents Solve complex problems
<b>Term 3</b>	Mock 2 Inequalities Vectors	Use $<$ & $>$ List simple inequalities Add and subtract vectors	Solve simple inequalities Understand vector terminology	Draw inequality graphs Describe complex routes	Define regions Prove straight lines
<b>Term 4</b>	Sine and cosine rules Circle theorems Area under a curve Algebraic fractions		Know and apply the sine rule Know the 4 easy rules	Know and apply cosine rule Know all the rules	Find area of triangles Use the rules with trigonometry Pythagoras Find the area under a curve Manipulate algebraic fractions
<b>Term 5</b>	Revision			Multiply and add	
Year 10					
Grades	1 & 2	3 & 4	5 & 6	7 & 8	
<b>Term 1</b>	Calculating with Percentages Measures Number work	Find simple percentages Know units of measure for length, weight, volume	Increase and decrease percentages Speed distance time conversions Order and convert standard form numbers	Compound interest and reverse percentages Find density mass volume, and change units Manipulate standard form & know the rules of indices	Make comparisons Manipulate surds
<b>Term 2</b>	Statistical Measures Properties of polygons Construction and Loci	Find averages and the range Bisect a line and angle	Find averages from a table Know the properties of quadrilaterals Construct loci	Find and use interquartile range Know the properties of polygons Use constructions to solve problems	Compare populations using statistical measures Use the properties of polygons
<b>Term 3</b>	Congruency and Similarity Pythagoras and Trigonometry Perimeter and area	Know angle facts (straight line, triangle, parallel lines) Know the trigonometry rules Name faces edges and vertices. Find simple areas	Know basic proof of congruency (SSS SAS RHS ASA) Apply the trigonometry rules Find the area and perimeter of composite shapes	Obtain simple proofs Know and apply Pythagoras' Theorem and trigonometry to 2D Find the surface area of pyramids and composite solids	Know the link between length area and volume Know and apply Pythagoras' Theorem and trigonometry to 3D
<b>Term 4</b>	Simultaneous equations Circles (area and perimeter) Probability	Solve simultaneous equations graphically Name the parts of a circle Find theoretical probabilities	Solve simultaneous equations Find the area and perimeter of circles Understand the link between theoretical and experimental	Solve simultaneous equations (changing both) Find the area and perimeter of sectors Use Venn diagrams	Derive equations from real life situations and solve Calculate the probability using tree diagrams and know the underlying assumptions
<b>Term 5</b>	Algebra: quadratics and rearranging Properties of polygons Probability	Derive the sum of angles in triangles and polygons Calculate theoretical probabilities	Know the law of indices Calculate volumes of prisms Calculate relative frequency	Expand and factorise quadratics Calculate volumes of spheres, cones and pyramids Use Venn diagrams	Rearrange a formula Calculate exactly with multiple of $\pi$ Use tree diagrams
<b>Term 6</b>	Graphs	Read and draw real life graphs	Solve linear equations graphically	Solve quadratic equations	Formulate quadratic equations and solve
Year 9					
Grades	1 & 2	3 & 4	5 & 6	7 & 8	
<b>Term 1</b>	Number Factors and Multiples Angles Scale diagrams and bearings Basic Algebra	Four rules and rounding to 10 and 100 Identify primes, multiples, factors Draw and measure. Name angles Make scale drawings understand simpl notation, collect like terms	Use inequality symbols Use approximation Prime factor decomposition Calculate angles in parallel lines Interpret maps, including bearings Manipulate single brackets	Understand very large and very small numbers Use prime factor decomposition to find LCM and HCF Know the correct terminology ( alternate and corresponding) Use bearings Simplify and manipulate simple expressions	Manipulate very large and very small numbers Use the product rule for counting
<b>Term 2</b>	Fractions and decimals Coordinates and Linear graphs Rounding Collecting and representing data	Order fractions Plot coordinates in all four quadrants Round to appropriate degree of accuracy Draw and interpret pictograms and bar charts	Apply the four rules to fractions Plot linear graphs Apply and interpret limits Draw and interpret pie charts and time series data	Identify parallel lines Use inequality notation Draw and interpret box plots	Simplify and manipulate expressions Calculate exactly with fractions Identify perpendicular lines Apply and interpret limits of accuracy including upper and lower bounds Draw and interpret histograms
<b>Term 3</b>	Sequences Basic Percentages Perimeter and area Real life graphs	Generate a sequence, know square and cube numbers Convert between fractions decimals and percentages Know notation, calculate area of rectangles and triangles	Find the nth term of linear sequences Calculate with percentages Find area of quadrilaterals and composite shapes Draw real life graphs	Deduce expressions to calculate the nth term of linear sequences Calculate with percentages bigger than 1 Know the area of quadrilaterals Interpret real life graphs	Deduce expressions to calculate the nth term of quadratic sequences Use a multiplier Find the surface area of pyramids and composite shapes Interpret the gradient of a straight-line graph as a rate of change
<b>Term 4</b>	Circumference and area of circles Ratio and proportion Basic Probability	Name lines in circles Simplify ratios Make and use frequency tables to find probability	Know and use $C=\pi d$ and $A=\pi r^2$ Divide in given ratios Calculate theoretical probability	Calculate surface area of spheres, cones and composite solids Understand and use proportion as equality of ratios Construct a sample space and use it	Calculate arc lengths, angles and areas of sectors of circles Relate ratios to fractions and to linear functions Construct a sample space for two events and use it
<b>Term 5</b>	Equations Scatter graphs Standard form Pythagoras' theorem	Substitute into formulae Use and interpret scatter diagrams Know Pythagoras' theorem and use it	Solve linear equations with unknowns on both sides Draw and use a line of best fit Put numbers into and out of standard form Apply Pythagoras' theorem to real life situations	Make predictions manipulate standard form	Interpolate and extrapolate apparent trends whilst knowing the dangers of doing so Calculate and interpret using standard form
<b>Term 6</b>	Transformations Constructions and loci	Describe and make transformations	Include Enlargements with fractional scale factors Construct and interpret plans of 3D shapes	Include Enlargements with negative scale factors Construct perpendicular and angle bisectors	Combine transformations Solve Loci problems using these skills
Year 8					
Grades	1 & 2	3 & 4	5 & 6	7 & 8	
<b>Term 1</b>	Working with numbers Geometry Probability	Multiply and divide directed numbers Find angles in parallel lines Find probabilities of events	Find HCF & LCM Know the geometric properties of quadrilaterals Use a sample space	Identify prime factors Translate a shape Use relative frequency to estimate probability	
<b>Term 2</b>	Percentages Congruent shapes Surface area and volume of prisms	Calculate percentages Understand when shapes are congruent Find the area of 2D shapes. Know metric units	Calculate percentage increases and decreases Know the condition to prove congruent triangle Find the volume of prisms	Calculate percentage change Use congruent triangles to solve problems Find the surface area of prisms	
<b>Term 3</b>	Graphs Number Interpreting data	Draw linear graphs from a table Multiply and divide by powers of 10 (including negative) Interpret different charts used in the media	Draw graphs using $y=mx+c$ and real life graphs Round to significant figures. Standard form with large numbers Draw pie charts relative to data size and scatter graphs	Draw quadratic graphs and solve quadratic equations graphically Multiply numbers in standard form Interpret correlation and use a line of best fit	
<b>Term 4</b>	Algebra Shape and ratio	Collect like terms Use ratio to compare lengths	Expand brackets Use ratio to compare lengths, areas and volumes	Use index notation Map scales and fractional enlargements	
<b>Term 5</b>	Fractions and decimals Proportion Circles	Adding and subtracting To use direct proportion Find the circumference of a circle	Multiply and divide To represent proportion graphically Find the area of a circle	Multiply and divide mentally very large and very small numbers To know and find direct and inverse proportion Apply these skills in real life situations	
<b>Term 6</b>	Equations and formulae	Solve equations with brackets	Solve equations with unknowns on both sides	Solve more complex problems	

	Comparing data	Create a grouped frequency table	Draw frequency diagrams and compare data	Recognise misleading data
<b>Year 7</b>	<b>Grades</b>	1 & 2	3 & 4	5 & 6
<b>Term 1</b>	Using numbers	Order directed numbers	Use and apply < >	To add, subtract and multiply directed numbers
	Sequences	Use function machines to generate inputs and out puts	Describe and generate linear sequences	Identify missing terms, find the nth term
	Problem solving	Know square and triangular numbers	Know and generate Fibonacci and Pascal's triangle	To apply knowledge of sequences in context
	Perimeter, area and volume	Find the area and perimeter of rectangles	Find the area and perimeter of compound shapes	Find the area of triangles, parallelograms and trapeziums
<b>Term 2</b>	Decimal numbers	Order decimals, Multiply them by 10, 100 & 1000	Apply the four rules to decimals	Solve multi-step problems involving decimals
	Working with numbers	Recognise and use square numbers up to 225	Round to 1dp and 1s.f. Use BIDMAS.	Use efficient written methods for long multiplication and division
	Statistics	Find the mode and range of data. Make a tally chart	Find averages. Read and interpret statistical diagrams	Understand continuous data and use grouped frequency
<b>Term 3</b>	Using Algebra	Write simple expressions. Substitute into expressions	Simplify expressions	Use formulae and write formulae in context
	Fractions	Find equivalent fractions and compare them	Add and subtract fractions. Convert between mixed numbers and improper fractions	Add and subtract mixed numbers
	Angles	Measure and draw angles	Calculate angles on a line, round a point & in a triangle	Know the properties of triangles and quadrilaterals
<b>Term 4</b>	Coordinates and graphs	Plot coordinates in all four quadrants	Draw graphs of simple linear equations	Use cover and plot. Draw and use real-life graphs
	Percentages	Know equivalent Fractions, Decimals and Percentages	Find fractions and percentages of amounts with and without a calculator	Calculate the result of a percentage change
	Probability	Know the vocabulary. Know and use a probability scale	Make and use a sample space	Know the difference between theoretical and experimental
<b>Term 5</b>	Symmetry	Recognise and draw lines of and rotational symmetry	Reflect shapes in horizontal and vertical lines. Tessellate shapes	Reflect shapes in y=x and rotate shapes
	Equations	Find unknown numbers	Solve simple equations	Solve complex equations.
	Interpret data	Read and interpret bar charts Carry out a statistical survey	Read and interpret pie charts. Compare data using averages	Carry out a statistical surveyCompare data and write a report
<b>Term 6</b>	3D shapes	Name 3D shapes and draw on isometric paper	Use nets to construct 3D shapes	Establish the rule connecting faces edges and vertices
	Ratio	Use ratios to compare quantities	Simplify ratios	Use and apply ratios and fractions as a proportionality relationship