

# Maths Year 8



		<b>Emerging</b> – a student whose understanding of the Y8 Maths skills is still emerging will be able to:	<b>Developing</b> – a student who is developing their Y8 Maths skills will be able to	<b>Secure</b> – a student who is secure in the skills in the Y8 Maths curriculum will be able to:	<b>Mastered</b> – a student who has mastered the skills in the Y8 Maths curriculum will be able to:
<b>Number</b>	<b>Directed Number</b>	Understand directed number in context and order directed numbers Perform calculations that cross zero	Perform all four operations with directed numbers	Calculate the range of a set of temperatures Apply understanding of adding directed numbers to simplifying basic algebraic expressions	Apply understanding of adding directed numbers to simplifying more complex algebraic expressions
	<b>Multiplying &amp; Dividing Fractions</b>	Be able to multiply and divide any fractions including improper fractions and mixed numbers	Multiply and divide improper and mixed fractions with larger numbers Solve problems involving fractions including area problems	Multiply and divide algebraic fractions Solve algebraic problems involving fractions	Simplify algebraic fractions with multiple terms on the numerator and denominator
	<b>Indices</b>	Understand and use the addition and subtraction laws of indices	Add, subtract, multiply and divide expressions with indices	Simplify algebraic expressions by multiplying and dividing indices	Understand and use the addition and subtraction laws of indices including algebraic terms with coefficients
	<b>Fractions &amp; Percentages</b>	Convert between key fractions, decimals, and percentages Calculate fractions, decimals, and percentages of amounts with or without a calculator	Calculate fractions, decimals, and percentages over 100% of an amount Calculate percentage increase and decrease using a multiplier	Find an original amount given a percentage less than 100% Choose appropriate methods to solve percentage problems Work with percentage change	Choose appropriate methods to solve complex percentage problems
	<b>Standard Index Form</b>	Work with numbers greater than 1 in standard form Compare and order numbers in standard form Use a calculator to work with numbers in standard form	Write numbers between 0 and 1 in standard form Convert small and large numbers between ordinary and standard form	Add, subtract, multiply and divide numbers in standard form Understand and use negative and fractional indices	Use multiple index rules involving negative indices Solve problems with both negative and fractional indices

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Algebra	<b>Working in the Cartesian Plane</b>	Identify and draw lines that are parallel to the axes Draw and recognise the line $y = x$ and $y = -x$ Link graphs to sequences Use a table of values to plot graphs in the form $y = mx + c$	Solve problems with shapes on a plane Recognise and use lines in the form $y = kx$ and $y = x + a$	Find the gradient of lines in the form $y = kx$ including negative and fractional gradients Begin to recognise families of graphs in form $y = kx + a$	Draw lines with negative and fractional gradients Plot graphs without a table of values Identify and differentiate non-linear graphs
	<b>Brackets, Equations &amp; Inequalities</b>	Form algebraic expressions from words Expand and factorise a single bracket Form and solve simple equations and inequalities Represent inequalities on a number line	Expand and simplify multiple single brackets Form and solve equations with brackets Understand and solve inequalities involving brackets	Form and solve inequalities Solve equations that require expanding and simplifying multiple brackets Form and solve algebraic equations involving angles	Solve equations and inequalities with unknowns on both sides
	<b>Sequences</b>	Generate sequences given a simple rule algebraically and in words	Find the rule for the $n$ th term of a linear sequence	Find the rule for the $n$ th term of a descending linear sequence	Generate a sequence given a complex algebraic rule
Geometry and Measure	<b>Angles in Parallel Lines &amp; Polygons</b>	Use angle notation correctly Identify the different types of angles on parallel lines Recognise, draw, and measure different types of angles Recognise different types of triangle and quadrilateral and to find missing angles	Construct a triangle, given 3 sides, using a ruler and compass Construct quadrilaterals using numerous vertices	Use the properties of triangles and quadrilaterals to find missing sides and angles including those in parallel lines Find and use the sum of exterior and interior angles of a polygon	Solve complex problems with a combination of parallel angle rules and straight-line rules Use algebraic terms when calculating the sum of interior angles
	<b>Line Symmetry</b>	Recognise line symmetry and rotational symmetry Reflect shapes in horizontal and vertical lines	Reflect shapes in horizontal, vertical, and diagonal lines Identify multiple lines of symmetry in regular shapes	Reflect shapes in named lines ( $y = x$ , $y = -x$ , $y = 2$ , $x = -3$ , etc)	
	<b>Area of Trapezia &amp; Circles</b>	Calculate the area of triangles and quadrilaterals	Calculate the area of compound shapes Calculate the circumference and area of a circle with and without a calculator	Involve unit conversion on side measurements Calculate the area of a trapezium, including compound shapes	Calculate the area of parts of a circle and complex compound shapes

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<b>Ratio, Proportion and Rates of Change</b>	<b>Ratio &amp; Scale</b>	Use ratio to compare different amounts Express ratios in their simplest form Understand the difference between ratio and proportion and use both to express relationships between quantities Represent ratios and divide into a given ratio	Solve problems involving converting units Simplify a 3-part ratio	Compare using ratio Make links between ratio and proportion Form ratios from worded problems	Convert real life examples into a ratio into its simplest form Solve problems involving converting units and algebraic expressions Compare one ratio to another where one variable is the same across both
	<b>Multiplicative Change</b>	Understand direct proportion and solve direct proportion problems Exchange between currencies and compare deals Use and create conversion graphs, including currency Understand the relationship between similar shapes	Understand the difference between direct proportion and inverse proportion Draw and interpret scale diagrams Interpret maps using scale factors and ratios	Solve problems with more than one currency exchange calculation Understand the relationship between similar shapes with a fractional scale factor	Explore scale factor relationship between length, area and volumes
<b>Statistics and Probability</b>	<b>Representing Data</b>	Draw and interpret scatter graphs, including using lines of best fit Understand and describe linear correlation Identify different types of data Read and interpret ungrouped frequency tables Represent grouped discrete and continuous data in tables Represent data in two-way tables	Recognise strong and weak correlations Describe the limitations of some data types Read and interpret grouped frequency tables Find the mean from ungrouped frequency tables Interpret two-way tables	Describe the relationship between non-linear variables and relate to real life examples Estimate the mean from grouped frequency tables	
	<b>Tables &amp; Probability</b>	Construct sample space diagrams and use to find probabilities	Construct two-way tables Draw and interpret Venn diagrams and use to find probabilities	Draw and interpret three-part Venn diagrams and use to find probabilities	Use the product rule for finding the total number of possible outcomes

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		Find probabilities from two-way tables			
	<b>Data Handling</b>	Collect and organise data Know the different types of data Represent data using pictograms and bar charts Draw and interpret line graphs	Compare discrete data using mode, median, mean and range Draw a frequency polygon Represent data using pie charts	Represent data using dual and composite bar charts	Use graphs and diagrams to compare grouped data Understand the advantages and disadvantages of different types of data representation and be able to choose the most appropriate diagram for a given set of data
	<b>Measures of Location</b>	Understand and use the mean, median and mode	Calculate the median and mode from a table Compare distributions using averages and the range	Solve problems and compare data using averages Understand which measures are affected by outliers	Understand the limitations of calculating the mean from a grouped frequency table