

Year 8 Learning map



Autumn	Proportional Reasoning			Representations		
	Ratio and scale	Multiplicative change	Multiplying and dividing fractions	Working in the Cartesian plane	Collecting and representing data	Tables
Spring	Algebraic techniques			Developing number		
	Brackets equations and inequalities	Sequences	Indices	Fractions and percentages	Standard index form	Number sense
Summer	Developing Geometry			Reasoning with data		
	Angles in parallel lines and polygons	Area of trapezia and circles	Line symmetry and reflection	The data handling cycle	Measures of location	

*Bold are the prerequisite skills previously covered within curriculum

Year 8 Autumn Learning map

Proportional Reasoning



Ratio and Scale	Multiplicative Change	Multiplying and Dividing Fractions
<ul style="list-style-type: none"> Understand the meaning and representation of ratio understand and use ratio notation Solve problems involving ratios of the form 1:n (or N:1) Solve proportional problems involving the ratio M:N divide a value into a given ratio Express ratios in their simplest integer form Compare ratios and related fractions Understand π as the ratio between diameter and circumference 	<ul style="list-style-type: none"> Solve problems involving direct proportion Explore conversion graphs Convert between currencies Explore the relationship between similar shapes Understand scale factors as multiplicative representations Draw and interpret scale diagrams Interpret maps using scale factors and ratios 	<ul style="list-style-type: none"> Represent multiplication of fractions Multiply a fraction by an integer Find the product of a pair of unit fractions Find the product of a pair of any fractions Divide an integer by a fraction Divide a fraction by a unit fraction Understand and use the reciprocal Divide any pair of fractions
<ul style="list-style-type: none"> Express ratios in the form 1:n Understand gradient of a line as ratio 	<ul style="list-style-type: none"> Explore direct proportion graphs 	<ul style="list-style-type: none"> Multiply and divide improper and mixed fractions Multiply and divide algebraic fractions

Year 8 Autumn Learning map

Representations



Working in the Cartesian Plane	Representing Data	Tables and Probability
<ul style="list-style-type: none"> • Work with coordinates in all four quadrants • Identify and draw lines that are parallel to the axes • recognise and use the line $y=x$ • Recognise and use lines in the form $y=kx$ • Link $y=kx$ to direct proportion problems • Recognise and use lines of the form $y=x+a$ • Explore graphs with negative gradient ($y=-kx$, $y=a-x$, $x+y=a$) • Link graphs to linear sequences • Plot graphs of the form $y-mx+c$ 	<ul style="list-style-type: none"> • Draw and interpret scatter graphs • Understand and describe linear correlation • Draw and use line of best fit (1) & (2) • Identify non-linear relationships • Identify different types of data • Read and interpret ungrouped frequency tables • Read and interpret grouped frequency tables • Represent grouped discrete data • Represent continuous data grouped into equal classes • Represent data in two-way tables 	<ul style="list-style-type: none"> • Construct sample space for 1 or more events • Find probabilities from a sample space • Find probabilities from two-way tables • Find probabilities from Venn diagrams
<ul style="list-style-type: none"> • Explore the gradient of the line $y=kx$ • Explore non-linear graphs • Find the midpoint of a line segment 		<ul style="list-style-type: none"> • Use the product rule for finding the total number of possible outcomes

Year 8 Spring Learning map

Algebraic Techniques



Brackets, Equations and Inequalities	Sequences	Indices
<ul style="list-style-type: none"> Form algebraic expressions Use directed number with algebra Multiply out a single bracket Factorise into a single bracket Expand multiple single brackets and simplify Solve equations, including with brackets forma and solve equations with brackets Understand and solve simple inequalities Form and solve inequalities Identify and use formulae, expressions, identities and equations 	<ul style="list-style-type: none"> Generate sequences given a rule in words Generate sequences given a simple algebraic rule Generate sequences given a complex algebraic rule 	<ul style="list-style-type: none"> Adding and subtracting expressions with indices Simplifying algebraic expressions by multiplying indices Simplifying algebraic expressions by dividing indices Using the addition law for indices Using the addition and subtraction law for indices
<ul style="list-style-type: none"> Expand a pair of binomials Solve equations and inequalities with unknowns on both sides Form and solve equations and inequalities with unknowns on both sides 	<ul style="list-style-type: none"> Find the rule for the nth term of a linear sequence 	<ul style="list-style-type: none"> Exploring powers of powers

Year 8 Spring Learning map

Developing Number



Fractions and Percentages	Standard Index Form	Number Sense
<ul style="list-style-type: none"> • Convert fluently between key fractions, decimals and percentages • Calculate key fractions, decimals and percentages of an amount with and without a calculator • Convert between decimals and percentages greater than 100% • Percentage decrease with a multiplier • Calculate percentage increase and decrease using a multiplier • Express one number as a fraction or a percentage of another with and without a calculator • Work with percentage change • Choose appropriate methods to solve percentage problems 	<ul style="list-style-type: none"> • Investigate positive powers of 10 • Work with numbers greater than 1 in standard form • Investigate negative powers of 10 • Work with numbers between 0 and 1 in standard form • Compare and order numbers in standard form • Mentally calculate with numbers in standard form • Add and subtract numbers in standard form • multiply and divide numbers in standard form • Use a calculator to work with numbers in standard form 	<ul style="list-style-type: none"> • Round numbers to powers of 10, and 1 significant figure • Round numbers to a given number of decimal places • Estimate the answer to a calculation • Calculate using the order of operations • Calculate with money • Convert metric measures of length • Convert metric units of weight and capacity • Solve problems involving time and the calendar
<ul style="list-style-type: none"> • Find the original amount given the percentage less than and greater than 100% • Choose appropriate methods to solve complex percentage problems 	<ul style="list-style-type: none"> • Understand and use negative indices • Understand and use fractional indices 	<ul style="list-style-type: none"> • Understand and use error interval notation • Convert metric units of area and volume

Year 8 Summer Learning map

Developing Geometry



Angles in Parallel Lines and Polygons	Area of Trapezia and Circles	Line of Symmetry and Reflection
<ul style="list-style-type: none"> • Understand and use basic angles rules and notation • Investigate angles between parallel lines and the transversal • Identify and calculate with alternate, corresponding, co-interior, alternate and corresponding angles • Solve complex problems with parallel line angles • Constructions triangles and special quadrilaterals • Investigate the properties of special quadrilaterals • Identify and calculate with sides and angles in special quadrilaterals • Understand and use the sum of exterior angles of any polygon • Calculate and use the sum of the interior angles in any polygon • Calculate missing interior angles in regular polygons 	<ul style="list-style-type: none"> • Calculate the area of triangles, rectangles and parallelograms • Calculate the area of a trapezium • Calculate the perimeter and area of compound shapes (1) • Investigate the area of a circle • Calculate the area of a circle and parts of a circle with and without a calculator • Calculate the perimeter and area of compound shapes (2) 	<ul style="list-style-type: none"> • Recognise line symmetry • Reflect a shape in a horizontal or vertical line (shapes touching and not touching the line) • Reflect a shape in a diagonal line (shapes touching and not touching the line)
<ul style="list-style-type: none"> • Understand and use the properties of diagonals of quadrilaterals • Prove simple geometric facts • Construct an angle bisector and a perpendicular bisector of a line segment 		

Year 8 Summer Learning map

Reasoning with Data



The Data Handling Cycle		Measures of Location	
<ul style="list-style-type: none"> • Set up a statistical enquiry • Design and criticise questionnaires • Draw and interpret pictograms, bar charts and vertical line charts • Draw and interpret multiple bar charts • Draw and interpret pie charts • Draw and interpret line graphs • Choose the most appropriate diagram for given set of data • Represent and interpret grouped quantitative data • Find and interpret the range • Compare distributions using charts • Identify misleading graphs 		<ul style="list-style-type: none"> • Understand and use the mean, median and mode • Choose the most appropriate average • Identify outliers • Compare distributions using averages and the range 	
		<ul style="list-style-type: none"> • Find the mean from an ungrouped frequency table • Find the mean from a grouped frequency table 	