

| Proportional Reasoning | | | R e p r e s e n t a t i o n s | | | |
|------------------------|---|--|---|--|--|---|
| Autumn | Ratio and scale 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 Express ratios in the form $1 : n$ H Compare ratios and related fractions Understand π as the ratio | Multiplicative change Solve problems involving direct proportion Explore conversion graphs Convert between currencies Explore direct proportion graphs H Explore relationships between similar shapes Understand scale factors as multiplicative representations Draw and interpret scale diagrams Interpret maps using scale factors and ratios | Multiplying and dividing fractions 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 Multiply and divide improper and mixed fractions H Multiply and divide algebraic fractions H | Working in the Cartesian plane Work with coordinates in all four quadrants Identify and draw lines that are parallel to the axes Recognise and use the line $y = kx$ Recognise and use lines of the form $y = kx$ Link $y = kx$ to direct proportion problems Explore the | Representing data Draw and interpret scatter graphs Understand and describe linear correlation Draw and use line of best fit 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- | Tables & Probability Construct sample spaces for 1 or more events Find probabilities from a sample space Find probabilities from two-way tables Find probabilities from Venn diagrams Use the product rule for finding the total number of possible outcomes H |

H denotes higher strand

Year 8 Overview

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| | <p>between diameter and circumference Understand gradient of a line as a ratio H</p> | | | <p>gradient of the line $y = kx$ 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 $y = mx + c$ Explore non-linear graphs H Find the midpoint of a line segment H</p> | <p>way tables</p> | |
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| | | Algebraic techniques | | Developing Number | | |
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| Spring | <p>Brackets, equations and inequalities</p> <p>Form algebraic expressions</p> <p>Use directed number with algebra</p> <p>Multiply out a single bracket</p> <p>Factorise into a single bracket</p> <p>Expand multiple single brackets and simplify</p> <p>Expand a pair of binomials</p> <p>Solve equations, including with brackets</p> <p>Form and solve equations with brackets</p> <p>Understand and solve simple inequalities</p> <p>Form and solve inequalities</p> <p>Solve equations and inequalities with unknowns on both sides H</p> <p>Form and solve equations and inequalities with unknowns on both sides H</p> <p>Identify and use formulae, expressions, identities and equations</p> | <p style="text-align: center;">Sequences</p> <p>Generate sequences given a rule in words</p> <p>Generate sequences given a simple algebraic rule</p> <p>Generate sequences given a complex algebraic rule</p> <p>Find the rule for the n^{th} term of a linear sequence H</p> | <p style="text-align: center;">Indices</p> <p>Adding and subtracting expressions with indices</p> <p>Simplifying algebraic expressions by multiplying indices</p> <p>Simplifying algebraic expressions by dividing indices</p> <p>Using the addition law for indices</p> <p>Using the addition and subtraction law for indices</p> <p>Exploring powers of powers H</p> | <p>Fractions and percentages</p> <p>Convert fluently between key fractions, decimals and percentages</p> <p style="text-align: center; color: red;">Review</p> <p>Calculate key fractions, decimals and percentages of an amount without a calculator</p> <p style="text-align: center; color: red;">Review</p> <p>Calculate fractions, decimals and percentages of an amount using calculator methods</p> <p style="text-align: center; color: red;">Review</p> <p>Convert between decimals and percentages greater than 100%</p> <p>Percentage decrease with a multiplier</p> <p>Calculate percentage increase and decrease using a multiplier</p> <p>Express one number as a fraction or a percentage of another without a calculator</p> | <p>Standard index form</p> <p>Investigate positive powers of 10</p> <p>Work with numbers greater than 1 in standard form</p> <p>Investigate negative powers of 10</p> <p>Work with numbers between 0 and 1 in standard form</p> <p>Compare and order numbers in standard form</p> <p>Mentally calculate with numbers in standard form</p> <p>Add and subtract numbers in standard form</p> <p>Multiply and divide numbers in standard form</p> <p>Use a calculator to work with numbers in standard form</p> <p>Understand and use negative indices H</p> <p>Understand and use fractional indices H</p> | <p>Number sense</p> <p>Round numbers to powers of 10, and 1 significant figure R</p> <p>Round numbers to a given number of decimal places</p> <p>Estimate the answer to a calculation</p> <p>Understand and use error interval notation H</p> <p>Calculate using the order of operations R</p> <p>Calculate with money</p> <p>Convert metric measures of length</p> <p>Convert metric units of weight and capacity</p> <p>Convert metric units of area H</p> <p>Convert metric units of volume H</p> <p>Solve problems involving time and the calendar</p> |

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Year 8 Overview

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| | | | | <p>Express one number as a fraction or a percentage of another using calculator methods</p> <p>Work with percentage change</p> <p>Choose appropriate methods to solve percentage problems</p> <p>Find the original amount given the percentage less than 100% H</p> <p>Find the original amount given the percentage greater than 100% H</p> <p>Choose appropriate methods to solve complex percentage problems H</p> | | |
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| Developing Geometry | | Reasoning with Data | |
|---------------------|---|--|--|
| Summer | <p>Angles in parallel lines and polygons</p> <p><i>Understand and use basic angles rules and notation</i> R</p> <p><i>Investigate angles between parallel lines and the transversal</i></p> <p><i>Identify and calculate with alternate and corresponding angles</i></p> <p><i>Identify and calculate with co-interior, alternate and corresponding angles</i></p> <p><i>Solve complex problems with parallel line angles</i></p> <p><i>Construct triangles and special quadrilaterals</i> R</p> <p><i>Investigate the properties of special quadrilaterals</i></p> <p><i>Identify and calculate with sides and angles in special quadrilaterals</i></p> <p><i>Understand and use the properties of diagonals of quadrilaterals</i> H</p> <p><i>Understand and use the sum of exterior angles of any polygon</i></p> <p><i>Calculate and use the sum of the interior angles in any polygon</i></p> <p><i>Calculate missing interior angles in regular polygons</i></p> <p><i>Prove simple geometric facts</i> H</p> <p><i>Construct an angle bisector</i> H</p> <p><i>Construct a perpendicular bisector of a line segment</i> H</p> | <p>Area of trapezia and circles</p> <p><i>Calculate the area of triangles, rectangles and parallelograms</i> R</p> <p><i>Calculate the area of a trapezium</i></p> <p><i>Calculate the perimeter and area of compound shapes (1)</i></p> <p><i>Investigate the area of a circle</i></p> <p><i>Calculate the area of a circle and parts of a circle without a calculator</i></p> <p><i>Calculate the area of a circle and parts of a circle with a calculator</i></p> <p><i>Calculate the perimeter and area of compound shapes (2)</i></p> | <p>The data handling cycle</p> <p><i>Find and interpret the range</i></p> <p><i>Compare distributions using charts</i></p> <p><i>Identify misleading graphs</i></p> |
| | <p>Measures of location</p> <p><i>Understand and use the mean, median and mode</i></p> <p><i>Choose the most appropriate average</i></p> <p><i>Find the mean from an ungrouped frequency table</i> H</p> <p><i>Find the mean from an grouped frequency table</i> H</p> <p><i>Identify outliers</i></p> <p><i>Compare distributions using averages and the range</i></p> | <p>Line symmetry and reflection</p> <p><i>Recognise line symmetry</i></p> <p><i>Reflect a shape in a horizontal or vertical line 1 (shapes touching the line)</i></p> <p><i>Reflect a shape in a horizontal or vertical line 2 (shapes not touching the line)</i></p> <p><i>Reflect a shape in a diagonal line 1 (shapes touching the line)</i></p> <p><i>Reflect a shape in a diagonal line 2 (shapes not touching the line)</i></p> | |

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