

KS3 Topic List

Number

Topic
Place value
Order positive, negative, decimals, fractions and percentages
Compare numbers using the symbols =, ≠, <, >, ≤ and ≥
Round numbers to the nearest whole number
Round numbers to a given number of decimal places
Round numbers to a given number of significant figures
Use approximation to estimate answers
Know and recognise prime numbers, multiples, factors, square numbers, cube numbers, powers, roots and reciprocals
Highest Common Factor and Lowest Common Multiple
Prime factorisation
Four operations for integers
Four operations for decimals
Four operations for fractions
Order of operations
Inverse operations
Use a calculator efficiently
Convert fractions, decimals and percentages
Express one quantity relative to the other for percentages and fractions
Standard form



Algebra

Topic
Understand and use the vocabulary of expressions, equations, formulae, terms, factors, inequalities and identities
Substitution
Simplify and collect like terms
Expand single brackets
Expand double brackets
Factorise linear expressions
Factorise quadratic expressions
Understand and use mathematical formulae
Rearrange formulae to change the subject
Solve linear equations
Write expressions and equations to solve a problem
Generate sequences from linear and quadratic sequences
Find the term-to-term rule
Find the n^{th} term of a sequence
Recognise geometric sequences
Coordinates in all four quadrants
Recognise, sketch and produce linear and quadratic graphs
Interpret simple linear and quadratic relationships
Use $y = mx + c$
Use linear and quadratic graphs to estimate the values of x and y
Find approximate solutions for real-life problems from a variety of graphs



Ratio, Proportion and Rates of Change

Topic
In a given quantity divided into two parts find a fraction of a quantity using a part:whole ratio
Divide a quantity into two parts using part:part ratio
Divide a quantity into two parts using part:whole ratio
Express the division of a quantity into two parts as a ratio
Change freely between related standard units for time, length, area, volume/capacity and mass
Change freely between related standard units for speed and unit pricing
Change freely between related standard units for acceleration and density
Solve problems involving compound units for unit pricing, speed and density
Use scale factors in scale diagrams, maps and enlargement
Use and understand ratio notation to simplify a ratio
Use and understand ratio notation as a fraction
Solve problems involving percentage increase
Solve problems involving percentage decrease
Solve problems involving percentage change
Solve problems involving finding the original value
Solve problems involving simple interest
Solve problems involving direct proportion algebraically and graphically
Solve problems involving inverse proportion algebraically and graphically



Geometry and Measures

Topic
Calculate the perimeter of 2D shapes including squares, rectangles, triangles, parallelograms and trapezia
Calculate the area of 2D shapes including squares, rectangles, triangles, parallelograms and trapezia
Calculate the perimeter of composite shapes
Calculate the area of composite shapes
Calculate the volume of prisms
Calculate the area of a circle
Calculate the circumference of a circle
Calculate the volume of a cylinder
Solve right-angled triangle problems using Pythagoras' theorem
Solve right-angled triangle problems using trigonometric ratios
Draw, measure and interpret geometric line segments
Draw, measure and interpret geometric angles
Draw, measure and interpret scale drawings
Construct a perpendicular bisector of a line segment
Construct a perpendicular to a given line from/at a given point
Construct an angle bisector
Solve loci problems
Describe, sketch and draw using conventional terms and notation such as points, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric
Use appropriate language to describe and illustrate triangles, quadrilaterals, circles and other plane figures



Describe and use the properties of faces, surfaces, edges and vertices to solve 3D problems
Recall and apply the properties of angles at a point
Recall and apply the properties of angles at a point on a straight line
Recall and apply the properties of vertically opposite angles
Recall and apply the properties of quadrilaterals
Understand and use the relationship between parallel lines and alternate and corresponding angles.
Derive and use the sum of angles in a triangle
Derive and use the sum of angles in a triangle and use this to deduce the angle sum in any polygon
Derive properties of regular polygons
Obtain simple geometric proofs
Derive results about angles and sides using triangle congruence
Derive results about angles and sides using similarity
Use the standard conventions for labelling the sides and angles of triangle ABC
Identify, describe and construct congruent shapes using translations
Identify, describe and construct congruent shapes using rotations
Identify, describe and construct congruent shapes using reflections
Identify, describe and construct congruent shapes using enlargement
Identify, describe and construct congruent shapes with and without coordinate grids
Interpret mathematical relationships both algebraically and geometrically



Probability

Topic
Know and understand the probability scale
Use appropriate language for probability
Record, describe and analyse frequency
List outcomes
Enumerate sets and unions/intersections of sets through the use of diagrams
Enumerate sets and unions/intersections of sets through the use of tables
Enumerate sets and unions/intersections of sets through the use of grids
Enumerate sets and unions/intersections of sets through the use of Venn diagrams
Generate simple theoretical sample spaces
Generate simple theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes
Use sample spaces to calculate theoretical probabilities



Statistics

Topic
Discrete, grouped and continuous data
Mean
Median
Mode
Range
Construct and interpret frequency tables
Construct and interpret bar charts
Construct and interpret pictograms
Construct and interpret pie charts
Construct and interpret vertical line charts for ungrouped data
Construct and interpret vertical line charts for grouped data
Construct and interpret scatter graphs
Correlations

