

Higher Number Objectives by Topic

Topic	Objectives
Symbols and Inequalities	Recognising and using Symbols
	Using inequalities to describe the solution to problems
Integers	Addition and subtraction of integers
	Multiplication and division of numbers with more than two digits
Systematic Listings	Systematic Listings
Roots, Powers and Index Laws	Square numbers and positive and negative square roots
	Estimating the square root
	Cube numbers and cube roots
	Calculating with fractional powers
	Calculating with negative powers
Negative Numbers	Addition and subtraction of negative numbers
	Multiplication and division of negative numbers
Order of Operations	Order of operations
Rounding and Estimation	Rounding off to a given number of decimal places
	Rounding off to a given number of significant figures
	Rounding and estimation
Factors, Multiples and Primes	Common multiples and least common multiple
	Common factors and highest common factor
	Prime factor decomposition
	LCM and HCF from the Product of Prime Factors
Ordering	Ordering negative numbers and decimals
	Ordering fractions and decimals
Decimals	Addition and subtraction of decimals
	Multiplication and division of decimals
Fractions	Addition and subtraction of fractions
	Calculating a fraction of a quantity
	Mixed numbers and improper fractions
	Multiplication and division of fractions
	Multiplication and division of mixed numbers and improper fractions
	Addition and subtraction of mixed numbers and improper fractions
	Fractions and ratio
Standard Index Form	Converting numbers to standard index form
	Converting numbers from standard index form
	Multiplication and division using standard index form
	Addition and subtraction using standard index form
Surds and π	Simplifying surds
	Rationalising surds
	Calculations and solutions involving π
Bounds	Recognise and use upper and lower bounds
Decimals and Fractions	Converting from fractions to decimals
	Converting from terminating decimals to fractions
	Converting from fractions to recurring decimals without using a calculator
	Converting from recurring decimals to fractions

Units and Compound Measures	Converting between different metric units of length
	Converting between different metric units of weight
	Converting between different metric units of capacity
	Convert between metric and imperial units
	Problems involving density
	Problems involving speed

Higher Algebra Objectives by Topic

Topic	Objectives
Introduction to Algebra	Using algebraic notation
	Recognising the vocabulary used in algebra
	Using function machines to find inverse functions
Expanding Brackets	Use the index laws for multiplication and division of integer powers
	Expanding brackets and simplifying expressions
	Expanding brackets involving indices
	Expanding two brackets and simplifying
Factorising	Factorising simple expressions
	Factorising expressions into two brackets
	Simplify algebraic fractions by factorising
Solving Linear Equations	Solving simple linear equations
	Solving linear equations with unknowns on both sides
	Solving simultaneous linear equations
Manipulating Equations and Substitution	Changing the subject of a formula
	Substituting into simple expressions
	Substituting into more complicated expressions
Solving Quadratic Equations	Solve quadratic equations by factorising
	Solve quadratic equations by completing the square
	Solve quadratic equations by using the quadratic formula
	Solving simultaneous equations involving quadratics
Interpreting Time-Series Graphs	Interpreting distance-time graphs
	Interpreting velocity-time graphs
Inequalities	Representing a simple inequality on a number line
	Inequalities represented on a number line and by set notation
	Solving simple inequalities
	Describing regions that satisfy an inequality involving two variables
	Solving quadratic inequalities
Trial and Improvement	Using trial and improvement to find approximate solutions to equations
Sequences	Identifying the type of sequence
	Generate sequences using position to term rules
	Finding the n th term of an arithmetic sequence
	Finding the n th term of a more complicated sequence
Linear Graphs	Constructing straight line graphs from linear equations
	Plotting straight line graphs using the gradient-intercept method
	Finding the y -intercept and gradient of a line given in the form $px+qy=r$
	Recognising if lines are perpendicular or parallel from their gradients
Proofs	Use algebra to construct simple proofs

Quadratic and Other Non-Linear Graphs	Construct a quadratic graph from an equation
	Using a quadratic graph to find the solution to a quadratic equation
	Finding the points of intersection of linear and quadratic graphs
	To be able to recognise the basic shape of a non-linear graph from its equation.
	To recognise graphs of trigonometric functions and the equation of a circle
	Equations of circles and tangents
Transforming Graphs	Transform graphs by $f(x) \rightarrow f(x) \pm a$
	Transform graphs by $f(x) \rightarrow f(x \pm a)$
	Transform graphs by $f(x) \rightarrow af(x)$ and $f(ax)$

Higher Ratio, Proportion and Rates of Change

Topic	Objectives
Fractions	Express one quantity as a fraction of another
Percentages	Calculating a percentage of a quantity
	Expressing one quantity as a percentage of another
	Increasing and decreasing an amount by a given percentage
	Percentage profit and loss
	Percentages in real life
	Compound interest
	Overall percentage change
Reverse percentages	
Ratio and Proportion	Simplifying ratios
	Dividing quantities into a given ratio
	Finding the best value using proportion
	Direct proportion
	Inverse proportion
Maps and Scale	Maps and scale drawing
	Bearings
Metric and imperial units	Converting between different metric units of length
	Converting between different metric units of weight
	Converting between different metric units of capacity
	Convert between metric and imperial units
	Converting between compound units
Proportional Graphs	Matching a graph to its proportional relationship

Higher Statistics and Probability Objectives by Topic

Topic	Objectives
Collecting Data	Designing questionnaires and surveys
Sampling	Different sampling techniques
	Stratified sampling
Two Way Tables	Design two way tables for grouped and ungrouped data
	Interpret two way tables for grouped and ungrouped data
Charts and Diagrams	Construct and interpret pie charts
	Construct and interpret frequency polygons

Grouped Data	Calculate an approximation for the mean of a set of grouped data
	Calculate the median of a frequency distribution
Histograms	Construct histograms with equal class intervals
	Interpret histograms with equal class intervals
	Construct histograms with unequal class intervals
	Interpret histograms with unequal class intervals
Stem and Leaf Diagrams	Construct stem and leaf diagrams
	Interpret stem and leaf diagrams to find the median and range
Box Plots and Quartiles	Identify and calculate the upper and lower quartiles for a set of data
	Construct and interpret box plots
Cumulative Frequency Diagrams	Construct cumulative frequency diagrams
	Interpret cumulative frequency diagrams
Probability	Representing the results of experiments
	For mutually exclusive events $P(A \text{ or } B) = P(A) + P(B)$
	For independent events $P(A \text{ and } B) = P(A) \times P(B)$
	Venn diagrams
	Understand and calculate conditional probabilities
Understand the term relative frequency	

Higher Shape Objectives by Topic

Topic	Objectives
Angle Properties and Polygons	Angles at a point and on a straight line
	Alternate and corresponding angles
	Interior and vertically opposite angles
	Interior and exterior angles in a polygon
	Interior and exterior angles of regular polygons
	Identify a quadrilateral from its properties
Circle Theorems	Circle theorems - The angle at the centre is twice the angle at the circumference
	Circle theorems - Angles in the same segment are equal
	Circle theorems - The angle in a semicircle is 90 degrees
	Circle theorems - Opposite angles in a cyclic quadrilateral add up to 180 degrees
	Circle theorems - Alternate segment theorem
	Circle Theorems - Tangent and Chord Theorems
Transformations	Reflections
	Rotational symmetry
	Enlargement by an integer scale factor
	Enlargement by a fractional scale factor
	Enlargement by a negative scale factor
	Translations using vectors
Congruence and Similarity	To use the conditions for congruent triangles
	Understand the rules for area and volume in similar shapes

Pythagoras' Theorem	Use Pythagoras' theorem to find the length of the longest side of a right angled triangle
	Use Pythagoras' theorem to find the length of one of the shorter sides
	Use Pythagoras' theorem to check if a triangle has a right angle
	Use Pythagoras' theorem in three dimensional shapes
Maps and Scale	Maps and scale drawings
	Bearings
Trigonometry	Identifying which of the trigonometric ratios to use
	The exact values of $\sin\theta$, $\cos\theta$ and $\tan\theta$
	Calculating the length of a side using trigonometry
	Finding the size of a missing angle using trigonometry
	Trigonometry in real life situations
	Using trigonometry in three dimensions
	Identifying and solving problems involving the sine rule
	Identifying and solving problems involving the cosine rule
Using the sine rule to find the area of a triangle	
Which method to use when calculating with triangles	
Constructions and Loci	Construct triangles using a compass
	Construct a perpendicular bisector
	Construct an angle bisector
	Construct the perpendicular from a point to a line
	Construct an angle of 60 degrees
	Construct loci
Perimeter and Area	Calculate the area of triangle and parallelograms
	Calculations involving compound shapes including circles
Circles	Calculations involving the circumference of a circle
	Calculations involving the area of a circle
	Recognising and calculating the arc length of a circle
	Recognising and calculating the sector area of a circle
Vectors	Multiply a vector by a scalar
	Adding and subtracting vectors
	Use vectors to solve problems in geometry
Surface Area and Volume	Calculations involving cuboids
	Calculations involving prisms
	Calculations involving cylinders
	Calculations involving pyramids
	Calculations involving cones
	Calculations involving spheres
	Calculations involving composite shapes
Metric and Imperial Units	Converting between different metric units of length
	Converting between different metric units of weight
	Converting between different metric units of capacity
	Convert between metric and imperial units
3-Dimensional Shapes	Properties of 3-dimensional shapes
	Nets of 3-dimensional shapes
	Plans and elevations