Year 9

Mathematics Curriculum Overview

Autumn 1

Topic	Big Questions
Straight Line Graphs	How do we distinguish between lines parallel to the axes, y=x and y=-x? How do we use a table of values to form a straight-line graph? What do we understand about y = mx + c? How do we write an equation in the form y=mx+c and find the equation of a graph? What is meant by 'interpret gradient and intercepts of real-life graphs'? How do we model real-life graphs involving inverse proportion? What can we find if we explore perpendicular lines?
Forming and Solving Equations	How do we solve one and two-step equations and inequalities (including brackets)? How do we solve inequalities with negative numbers? How do we solve equation and inequalities with unknowns on both sides? What facts do we know that will help us to form an equation and inequality? How do we substitute into formulae and equations? How do we rearrange formulae? How do we arrange more complex formulae?
Testing Conjectures	How can we use our knowledge of factors, multiples and primes to answer problems? How can we use our understanding of number properties and algebra to prove the truth of a statement?

	How can we use our skills to begin to construct more formal proofs? How can we establish if a conjecture has a couter-example or not? How do we expand a pair of binomials (or even three binomials)?

Autumn 2

Topic	Big Questions
Three Dimensional shapes	What are the names of 2-D and 3-D shapes and how do we recognise a prism? How do we sketch, recognise and draw accurate nets of cuboids and other 3-D shapes? What do we understand about plans and elevations? How do we find the area of various 2-D shapes? How do we calculate the surface area of cubes and cuboids? How do we calculate the surface area of triangular prisms? How do we calculate the surface area of a cylinder? How do we calculate the volume of cubes and cuboids? How do we calculate the volume of prisms and cylinders? What can we discover if we explore volumes of cone, pyramids and spheres?
Constructions and Congruency	What do we recall about drawing and measuring angles? What do we recall about constructing and interpreting scale drawings? How do we find the locus of distance from a point or from a straight line/shape? How do we construct perpendicular lines?

	How do we find the locus of points equidistant from two points or locus of distance from two lines? How do we construct an angle bisector? What do we recall about constructing triangles from given information? What do we understand about identifying congruent figures and triangle?

Spring 1

Topic	Big Questions
Numbers	What is the difference between integers, real and rational numbers? What do we understand about how we use surds? What methods need to be applied when working with directed numbers, integers and decimals? What do we recall about HCF and LCM? What do we recall about adding and subtracting fractions? What do we recall about multiplying and dividing fractions? What do we recall about numbers in standard form?
Percentages with and without a Calculator	What do we recall about the equivalence of fractions, decimals and percentages? What do we recall about percentage increase and decrease? How do we express a change as a percentage? How do we solve reverse percentage problems? How do we recognise and solve percentage problems? How do we solve problems with repeated percentage change?

Maths and Money	How do we solve problems with bills and bank statements? How do we calculate simple and compound interest? How do we solve problems with VAT, wages and taxes? How do we solve problems with exchange rates? How do we solve unit pricing problems?

Spring 2

Topic	Big Questions
Deduction	What are the rules of angles in parallel lines and how do we use them in chains of reasoning? How do we solve angle problems with algebra? How do we approach conjectures with angles and shape?
Rotation & translation	How do we compare and contrast rotational symmetry with line symmetry? How do we rotate a shape about a point? How do we translate points and shapes by a given vector? How do we compare rotation and reflection of shapes? How can we find the result of a series of transformations?
Pythagoras' Theorem	What do we recall about squares and square roots? How do we identify elements of a right-angled triangle? How do we calculate the hypotenuse of a right-angled triangle? How do we calculate missing sides in right-angled triangles? How do we use Pythagoras' theorem on coordinate axes? How do we use Pythagoras' theorem in 3D shapes?

Summer 1

Topic	Big Questions
Enlargement and Similarity	What do we understand about 'enlargement' and 'similarity'? How do we enlarge a shape by a positive scale factor? How do we enlarge a shape by a negative scale factor? How do we work out missing sides and angles in a pair of given similar shapes? How can we solve problems with similar triangles? What can we discover if we explore ratios in right-angled triangles?
Solving Ratio and Proportion Problems	How do we solve problems with direct proportion (inc conversion graphs)? How do we solve problems with indirect proportion? How do we represent graphs of inverse relationships? How do we approach best buy problems? How do we solve problems involving ratio and algebra?

Summer 2

Topic	Big Questions
Rates	How do we solve speed, distance and time problems with and without a calculator? How do we use distance time graphs? How do we solve problems with density, mass and volume? How do we solve flow problems and their graphs? How do we use rates of change and their units?

Probability	How do we calculate the probability of a single event? What is relative frequency and how do we use it? What are independent events? How do we use tree diagrams to solve without replacement problems? How do we use diagrams to work out probabilities?
Algebraic Representations	How do we draw and interpret quadratic graphs? How do we interpret graphs, including reciprocal? What can we discover if we investigate graphs of simultaneous equations? How do we represent inequalities?