Year 8 Autumn Term 1 **Department:** Mathematics **Unit of Work:** Whole number theory

Projection Grades 1-3	Projection Grades 4-6	Projection Grades 7-9
• Use mental calculation strategies to solve number problems including those involving money and measures • Choose the appropriate operation when solving addition and subtraction • Multiply and divide two digit numbers by 2, 3, 4 or 5 as well as 10 with whole number answers and remainders • Use mental recall of addition and subtraction facts to 20 in solving problems involving larger numbers • Solve whole number problems including those involving multiplication or division that may give rise to remainders • Use the knowledge that subtraction is the inverse of addition and understand halving as a way of 'undoing' doubling and vice versa • Use mental recall of addition and subtraction facts to 10.	• Use efficient written methods of addition and subtraction and of short multiplication and division • Multiply a simple decimal by a single digit • Solve problems with or without a calculator • Check the reasonableness of results with reference to the context or size of numbers • Derive associated division facts from known multiplication facts • Add and subtract two digit numbers mentally • Add and subtract three digit numbers using written method • Calculate percentages and find the outcome of a given percentage increase or decrease • Add and subtract fractions by writing them with a common denominator, calculate fractions of quantities (fraction answers), multiply and divide an integer by a fraction • Use a range of mental methods of computation with all operations • Recall multiplication facts up to 10 × 10 and quickly derive corresponding division facts.	• Understand the effects of multiplying and dividing by numbers between 0 and 1 • Add, subtract, multiply and divide fractions • Make and justify estimates and approximations of calculations; estimate calculations by rounding numbers to one significant figure and multiplying and dividing mentally • Use a calculator efficiently and appropriately to perform complex calculations with numbers of any size, knowing not to round during intermediate steps of a calculation • Use place value to make approximations • Recognise negative numbers in contexts such as temperature • Use simple fractions that are several parts of a whole and recognise when two simple fractions are equivalent • Begin to use decimal notation in contexts such as money • Solve problems involving calculating with powers, roots and numbers expressed in standard form, checking for correct order of magnitude and using a calculator as appropriate.

Year 8 Autumn Term 2 **Department:** Mathematics **Unit of Work:** Probability & Geometry

Projection Grades 1-3	Projection Grades 4-6	Projection Grades 7-9
• Understand and use probability • In probability, select methods based on equally likely outcomes and experimental evidence, as appropriate • Understand and use the probability scale from 0 to 1. • Classify 3-D and 2-D shapes in various ways using mathematical properties such as reflective symmetry for 2-D shapes • Begin to recognise nets of familiar 3-D shapes, e.g. cube, cuboid, triangular prism, square-based pyramid • Recognise shapes in different orientations and reflect shapes, presented on a grid, in a vertical or horizontal mirror line • Describe position and movement • Use a wider range of measures including non-standard units and standard metric units of length.	• Find and record all possible mutually exclusive outcomes for single events and two successive events in a systematic way • know that the sum of probabilities of all mutually exclusive outcomes is 1 and use this when solving problems. • Use the properties of 2-D and 3-D shapes • Make 3-D models by linking given faces or edges and draw common 2-D shapes in different orientations on grids • Reflect simple shapes in a mirror line, translate shapes horizontally or vertically and begin to rotate a simple shape or object about its centre or a vertex • Choose and use appropriate units and instruments • Find perimeters of simple shapes and find areas by counting squares • Use a wider range of properties of 2-D and 3-D shapes and identify all the symmetries of 2-D shapes • Use language associated with angle and know and use the angle sum of a triangle and that of angles at a point • Measure and draw angles to the nearest degree, when constructing models and drawing or using shapes • Solve problems involving the conversion of units and make sensible estimates of a range of measures in relation to everyday situations • Understand and use the formula for the area of a rectangle and distinguish area from perimeter.	• Understand relative frequency as an estimate of probability and use this to compare outcomes of an experiment • Know when to add or multiply two probabilities • Use tree diagrams to calculate probabilities of combinations of independent events. • Classify quadrilaterals by their geometric properties • Solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons • Identify alternate and corresponding angles; understand a proof that the sum of the angles of a triangle is 180° and of a quadrilateral is 360° • Enlarge 2-D shapes, given a centre of enlargement and a positive whole number scale factor • Know that translations, rotations and reflections preserve length and angle and map objects onto congruent images • Deduce and use formulae for the area of a triangle and parallelogram. • Know and use the formulae for the circumference and area of a circle • Understand the difference between formulae for perimeter, area and volume in simple contexts by considering dimensions.