Number	Understand and use place value for decimals, measures and integers of any size
	Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥
	Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property
	Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
	Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
	Recognise and use relationships between operations including inverse operations
	Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
	Interpret and compare numbers in standard form A x 10n 1≤A<10, where n is a positive or negative integer or zero
	Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 2 7 or 0.375 and 8 3)
	Define percentage as ‘number of parts per hundred’, interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%
	Interpret fractions and percentages as operators
	Use standard units of mass, length, time, money and other measures, including with decimal quantities
	Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]
	Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notat+bion a<x>=b
	Use a calculator and other technologies to calculate results accurately and then interpret them appropriately
	Appreciate the infinite nature of the sets of integers, real and rational numbers

Algebra	Use and interpret algebraic notation, including: ab in place of a × b; 3y in place of y + y + y and 3 × y; a2 in place of a × a, a3 in place of a × a × a; a2 b in place of a × a × b; b a in place of a ÷ b; coefficients written as fractions rather than as decimals; brackets
	Substitute numerical values into formulae and expressions, including scientific formulae
	Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
	Simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms; multiplying a single term over a bracket; taking out common factors; expanding products of two or more binomials
	Understand and use standard mathematical formulae; rearrange formulae to change the subject
	Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs
	Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
	Work with coordinates in all four quadrants
	Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the Cartesian plane
	Interpret mathematical relationships both algebraically and graphically
	Reduce a given linear equation in two variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically
	Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations
	Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs
	Generate terms of a sequence from either a term-to-term or a position-to-term rule
	Recognise arithmetic sequences and find the nth term
	Recognise geometric sequences and appreciate other sequences that arise

Ratio, proportion and rates of change	Change freely between related standard units [for example time, length, area, volume/capacity, mass]
	Use scale factors, scale diagrams and maps
	Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1
	Use ratio notation, including reduction to simplest form
	Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio
	Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction
	Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions
	Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
	Solve problems involving direct and inverse proportion, including graphical and algebraic representations
	Use compound units such as speed, unit pricing and density to solve problems.

Geometry and measure	Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
	Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes
	Draw and measure line segments and angles in geometric figures, including interpreting scale drawings
	Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line
	Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric
	Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles
	Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies
	Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures
	Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids
	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
	Understand and use the relationship between parallel lines and alternate and corresponding angles
	Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
	Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs
	Use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles
	Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D
	Interpret mathematical relationships both algebraically and geometrically

Probability	Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale
	Understand that the probabilities of all possible outcomes sum to 1
	Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
	Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.

Statistics	Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
	Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
	Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.