

## Stage 5 Key Learning Objectives

- Identify multiples and factors
- Write decimal numbers as fractions
- Understand that percent relates to number of parts per hundred and write percentages as a fraction with denominator 100 and as a decimal
- Draw given angles and measure them in degrees
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles
- Round decimals with two decimal places to the nearest whole number and to one decimal place
- Calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes
- Convert between different units of metric measurement (for example km and metre, metre and cm, cm and mm, grams and kg, litres and ml)
- Count forwards and backwards with positive and negative whole numbers, including through zero
- Multiply number with up to four digits by a one or two-digit number using a formal written method, including long multiplication for two-digit numbers
- Add and subtract whole numbers with more than 4 digits, including using formal written methods (column addition and subtraction)
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- Add and subtract fractions with the same denominator and denominators that are multiples of the same number

## Stage 6 Key Learning Objectives

- Solve problems involving the calculation of percentages (for example, of measures, such as 15% of 360ml) and use percentages for comparison
- Multiply and divide numbers by 10,100 and 1000 giving answers up to 3 decimal places
- Find unknown angles in any triangles, quadrilaterals and regular polygons
- Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles
- Describe positions on the full coordinate grid (all four quadrants)
- Use simple formulae
- Generate and describe linear sequences
- Calculate estimate and compare volumes of cubes and cuboids using standard units
- Calculate and interpret the mean as an average
- Solve problems involving the relative size of two quantities where missing values can be found using integer multiplication and division facts
- Multiply simple pairs of proper fractions
- Add and subtract fractions with different denominators and mixed numbers
- Divide numbers up to 4 digits using the formal written method of short division
- Divide numbers up to 4 digits by a two-digit number using the formal written method of long division
- Using common factors to simplify fractions; use common multiples to express fractions in the same denomination

## Stage 7 Key Learning Objectives

- Substitute numbers into formulae
- Solve linear equations with one unknown algebraically
- Check calculations using approximation and estimation, including answers obtained using technology
- Understand and use lines parallel to the axes and  $y = x$  and  $y = -x$
- Apply the four operations including formal written methods to integers, decimals and fractions (proper and improper) and mixed fractions
- Use conventional terms and notations for points, lines, vertices, edges, planes and parallel lines
- Calculate surface area of cuboids
- Express one quantity as a percentage of another, express one quantity as a fraction of another, where the fraction is less than one or greater than one
- Simplify and manipulate algebraic expressions by collecting like terms and multiplying a single term over a bracket
- Use positive integer powers and associated real roots

## Stage 8 Key Learning Objectives

- Express a multiplicative relationship between two quantities as a ratio or a fraction
- Solve linear equations with the unknown on both sides of the equation
- calculate perimeters of 2d shapes including circles
- calculate areas of circles
- construct theoretical possibility spaces for single experiments with equally likely outcomes and use these to calculate theoretical probabilities
- generate terms from a sequence from a position to term rule
- deduce expressions to calculate the  $n$ th term of linear sequences
- solve problems involving percentage change
- interpret graphs of linear functions
- plot graphs of equations that correspond to straight-line graphs in the coordinate plane
- work interchangeably with terminating decimals and their corresponding fractions such as 3.5 and  $\frac{7}{2}$  or 0.375 and  $\frac{3}{8}$
- rearrange formulae to change the subject
- interpret standard form  $A \times 10^n$  where  $n$  is an integer
- simplify and manipulate algebraic expressions by taking out common factors and powers using the laws of indices
- apply the four operations to integers decimals and simple fractions, proper and improper fractions, mixed numbers, negative and positive values.