

Year 6 – Maths Objectives

- add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)
- calculate and interpret the mean as an average.
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3) and extending to other units, such as mm^3 and km^3 .
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- compare and order fractions, including fractions >1
- describe positions on the full coordinates grid (all four quadrants)
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$).
- draw 2-D shapes using given dimensions and angles
- draw and translate simple shapes on the coordinates plane, and reflect them in the axes
- enumerate all possibilities of combinations of two variables express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- generate and describe linear number sequences
- identify common factors, common multiples and prime numbers
- identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- interpret and construct pie charts and line graphs and use these to solve problems
- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- multiply one digit numbers with up to two decimal places by whole numbers
- multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)
- read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
- recognise that shapes with the same areas can have different perimeters and vice versa
- recognise when it is possible to use the formulae for area and volume of shapes
- recognise, describe and build simple 3-D shapes, including making nets
- round any whole number to a required degree of accuracy
- solve problems involving similar shapes, where the scale factor is known or can be found
- solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate

- solve problems involving the calculations of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison
- solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts
- solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
- solve problems which require answers to be rounded to specified degrees of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- use negative numbers in context, and calculate intervals across zero
- use simple formulae
- use their knowledge of the order of operations to carry out calculations involving the four operations
- use written division methods in cases where the answer has up to two decimal places
- use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places convert between miles and kilometres

Year 5 – Maths Objectives

- add and subtract fractions with the same denominator and multiples of the same number
- add and subtract numbers mentally with increasingly large numbers
- add and subtract whole numbers with more than 4 digits, including using formal written methods (column addition and subtraction)
- calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- compare and order fractions whose denominators are all multiples of the same number
- convert between different units of metric measure (e.g. kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre)
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- 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
- draw given angles, and measure them in degrees (°)
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- estimate volume (e.g. using 1 cm³ blocks to build cubes and cuboids) and capacity (e.g. using water)
- identify 3-D shapes, including cubes and cuboids, from 2-D representations
- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°); other multiples of 90°
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
- read and write decimal numbers as fractions (e.g. 0.71 = $\frac{71}{100}$)
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- read, write, order and compare numbers with up to three decimal places
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$)

- recognise the percent symbol (%) and understand that percent relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred, and as a decimal fraction
- round decimals with two decimal places to the nearest whole number and to one decimal place
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- solve comparison, sum and difference problems using information presented in line graphs
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25
- understand and use equivalences between metric units and common imperial units such as inches, pounds and pints
- use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling
- use the properties of rectangles to deduce related facts and find missing lengths and angles