

# National Curriculum 2014 – Mathematics Overview

## Year 5

### Number and Place Value

- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- interpret negative numbers in context, count forwards/backwards with positive and negative whole numbers, incl. through 0
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals

### Addition and Subtraction

- +/-whole numbers with more than 4 digits, including using formal written methods (columnar +/-)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve +/- multi-step problems in contexts, deciding which operations and methods to use and why

### Multiplication and Division

- identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by U/TU using a formal written method, including long x for TU numbers
- multiply and divide numbers mentally, drawing upon known facts
- $\div$  up to ThHTU by U using formal method of short  $\div$  and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
- recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ )
- solve problems involving  $x/\div$ , including using their knowledge of factors and multiples, squares and cubes
- solve problems involving  $+/-/x/\div$  and a combination of these, including

understanding the meaning of the = sign

- solve problems involving  $\times/\div$ , including scaling by simple fractions and problems involving simple rates

### **Fractions** (including decimals and percentages)

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, incl. tenths/hundredths
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements  $>1$  as a mixed number [for example,  $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ ]
- add and subtract fractions with the same denominator and denominators that are multiples of the same number
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- read and write decimal numbers as fractions [for example,  $0.71 = \frac{71}{100}$ ]
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- round decimals with two decimal places to the nearest whole number and to one decimal place
- read, write, order and compare numbers with up to three decimal places
- solve problems involving number up to three decimal places
- recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- solve problems which require knowing percentage and decimal equivalents of  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{2}{5}$  and those fractions with a denominator of a multiple of 10 or 25

### **Measurement**

- convert between different units of metric measure (e.g. km/m; cm/m; cm/mm; g/kg; l/ml)
- understand/use approximate equiv. between metric units & common imperial units such as inches/pounds/pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres ( $\text{cm}^2$ ) and square metres ( $\text{m}^2$ ) and estimate the area of irregular shapes
- estimate volume [e.g. using  $1\text{ cm}^3$  blocks to build cuboids (incl. cubes)] and capacity [e.g. using water]
- solve problems involving converting between units of time
- use all four operations to solve problems involving measure [e.g. length, mass,

volume, money] using decimal notation, including scaling.

## **Geometry**

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees ( $^{\circ}$ )
- identify:
  - angles at a point and one whole turn (total  $360^{\circ}$ )
  - angles at a point on a straight line and  $\frac{1}{2}$  a turn (total  $180^{\circ}$ )
  - other multiples of  $90^{\circ}$
- use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles
- 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.

## **Statistics**

- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables