### Key Learning in Mathematics – Year 5

#### Number – number and place value
- Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.
- Count forwards and backwards in decimal steps.
- 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 3 decimal places.
- Identify the value of each digit to three decimal places.
- Identify represent and estimate numbers using the number line.
- Find 0.01, 0.1, 1, 10, 100, 100 and other powers of 10 more or less than a given number.
- Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.
- Round decimals with two decimal places to the nearest whole number and to one decimal place.
- Multiply/divide whole numbers and decimals by 10, 100 and 1,000.
- Interpret negative numbers in context, count on and back with positive and negative whole numbers, including through zero.
- Describe and extend number sequences including those with multiplication/division steps and where the step size is a decimal.
- Read Roman numerals to 1,000 (M); recognise years written as such.
- Solve number and practical problems that involve all of the above.

#### Number – addition and subtraction
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Select a mental strategy appropriate for the numbers involved in the calculation.
- Recall and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place).
- Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places).
- Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places.
- Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction).
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve addition and subtraction problems involving missing numbers.

#### Number – multiplication and division
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two 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.
- Recognise and use square (\(2\)) and cube (\(3\)) numbers, and notation.
- Use partitioning to double or halve any number, including decimals to two decimal places.
- Multiply and divide numbers mentally drawing upon known facts.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
- 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.
- 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.
- Use estimation/inverse to check answers to calculations; determine, in the context of a problem, an appropriate degree of accuracy.
- 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.
# Key Learning in Mathematics – Year 5

## Number – fractions, decimals and percentages
- Recognise mixed numbers and improper fractions and convert from one form to the other.
- Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$).
- Count on and back in mixed number steps such as $1\frac{1}{2}$.
- Compare and order fractions whose denominators are all multiples of the same number (including on a number line).
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.
- Add and subtract fractions with denominators that are the same and that are multiples of the same number (using diagrams).
- Write statements $> 1$ as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$).
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
- 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 involving fractions and decimals to three places.
- Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{1}{25}$ and fractions with a denominator of a multiple of 10 or 25.

## Geometry – properties of shapes
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
- Use the properties of rectangles to deduce related facts and find missing lengths and angles.
- Identify 3-D shapes 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 half a turn (total $180^\circ$).
  - other multiples of $90^\circ$.
- Use, read and write standard units of length and mass.
- Estimate (and calculate) volume (e.g., using 1 cm$^3$ blocks to build cuboids (including cubes)) and capacity (e.g. using water).
- Understand the difference between liquid volume and solid volume.
- Continue to order temperatures including those below 0°C.
- Convert between different units of metric measure.
- Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.
- Measure/calculate the perimeter of composite rectilinear shapes.
- Calculate and compare the area of rectangles, use standard units square centimetres (cm$^2$) and square metres (m$^2$) and estimate the area of irregular shapes.
- Continue to read, write and convert time between analogue and digital 12 and 24-hour clocks.
- Solve problems involving converting between units of time.
- Use all four operations to solve problems involving measure using decimal notation, including scaling.

## Geometry – position and direction
- Describe positions on the first quadrant of a coordinate grid.
- Plot specified points and complete shapes.
- 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.

## Measurement
- Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).
- Complete, read and interpret information in tables and timetables.
- Solve comparison, sum and difference problems using information presented in all types of graph including a line graph.
- Calculate and interpret the mode, median and range.

## Statistics
- Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).
- Complete, read and interpret information in tables and timetables.
- Solve comparison, sum and difference problems using information presented in all types of graph including a line graph.
- Calculate and interpret the mode, median and range.

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