**Key Learning in Mathematics – Year 5**

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| **Number – number and place value** | **Number – addition and subtraction** | **Number – multiplication and division** |
| * 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, 1000,10 000 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 1000
* 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 1000 (M); recognise years written as such
* Solve number and practical problems that involve all of the above
 | * *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*
 | * *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
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| **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 (°)
* Identify:

- angles at a point and one whole turn (total 360°)- angles at a point on a straight line and half a turn (total 180°)- other multiples of 90° |
| **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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and fractions with a denominator of a multiple of 10 or 25
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| **Measurement** |
| * *Use, read and write standard units of length and mass*
* Estimate *(and calculate)* volume ((e.g., using 1 cm3 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 rectangle, use standard units square centimetres (cm2) and square metres (m2) 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
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| **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
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| **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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