Year 5 Learning Objectives in Mathematics

Autumn Term	Spring Term	Summer Term
Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit		

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Number - Number and Place Value Pupils should be taught to: *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 and backwards with positive and negative whole numbers, including through zero *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. **Number – Addition and Subtraction** *Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) *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	**Measurement** *Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes **Number – 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, including tenths and hundredths *Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number *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 *Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	**Measurement: Converting Units** *Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) *Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints *Solve problems involving converting between units of time *Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. **Measurement: Volume** *Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] **Geometry – Properties of Shape**

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*Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Number – Multiplication and Division

*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
*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 and divide numbers mentally drawing upon known facts
*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
*Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
*Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
*Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

*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 1/2, 1/4, 1/5, 2/5, 4/5 and fractions with a denominator of a multiple of 10 or 25.

Number – Multiplication and Division
*Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

* 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 (°)
* Identify: angles at a point and 1 whole turn (total 360°) angles at a point on a straight line and half a turn (total 180°) other multiples of 90°
* 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.

Geometry: Position and Direction
* 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

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*Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **Measurement** *Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres		*Complete, read and interpret information in tables, including timetables.