**Numeracy Objectives – 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
* interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
* read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
* 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.
 | * solve addition and subtraction **multi-step** problems in contexts, deciding which operations and methods to use and why (including decimals)
* Complements of decimals to one whole
* use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
* (brackets?)
* add and subtract whole numbers with more than 4 digits, (and decimals with up to 3 dp) including using formal written methods (columnar addition and subtraction)
* **add and subtract numbers mentally with increasingly large numbers**
 | * solve problems involving multiplication and division including using their knowledge of factors and multiples, squares **and cubes**
* 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**.
* **establish whether a number up to 100 is prime and recall prime numbers up to 19**
* 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**
* recognise and use square numbers **and cube numbers**, and the **notation for** squared (2) and **cubed (3)**
* multiply numbers **up to 4 digits** by a one- or two-digit number using a formal written method, (including grid) 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
* Express remainders in different ways e.g. 98÷4= 98/4=24r2=24½=24.5~25
* Use mental arithmetic strategies when appropriate, e.g. partitioning, chunking and jottings
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
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| **Number – fractions** | * **Geometry – properties of shapes**
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| * 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,  +  =  = 1]
* read and write decimal numbers as fractions [for example, 0.71 = ]
* recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
* 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 plus FDP equivalence.
* identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
* read, write, order and compare numbers with up to three decimal places
* round decimals with two decimal places to the nearest whole number and to one decimal place
* compare and order fractions whose denominators are all multiples of the same number
* add and subtract fractions with the same denominator and denominators that are multiples of the same number
* multiply and divide whole numbers and decimals numbers by 10 and 100, giving answers up to two decimal places
* multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
* solve problems involving number up to three decimal places
* Find fractions and percentages of amounts
* solve problems which require knowing percentage and decimal equivs. of , , ¾ , , 3/5,  and those fractions with a denominator of a multiple of 10 or 25.
 | * identify 3-D shapes, including cubes and other cuboids, from 2-D representations
* distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
* know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
* draw given angles, and measure them in degrees (o)
* identify:
* angles at a point and one whole turn – prev Y4 - (total 360o)
* angles at a point on a straight line and  a turn (total 180o)
* other multiples of 90o
* use the properties of rectangles to deduce related facts and find missing lengths and angles
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| **Geometry – position and direction** | **Measurement** |
| * 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, 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.
 | * use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
* 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
* measure and calculate the perimeter of composite rectilinear shapes including using the relations of perimeter to find unknown lengths in centimetres and metres
* calculate and compare the area of rectangles (including squares) including using the relations of area to find unknown lengths,, and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
* calculate the area from scale drawings using given measurements
* estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water
* read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
* solve problems involving converting between units of time
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| * **Statistics**
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| * complete, read and interpret information in tables, including timetables.
* solve comparison, sum and difference problems using information presented in a line graph
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| * **Ratio and proportion**
 | * **Algebra**
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| * Solve simple problems involving similar shapes where the scale factor is known or can be found.
* Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. e.g. In a class there are 30 children. For every 3 boys there are 2 girls. How many boys in the class? Problems e.g. altering a recipe from 2 – 6 people e.g. 1 egg, 3 spoons of flour – 3 eggs, 9 spoons of flour.
* solve problems involving the calculation of percentages 10% 25% 50% 75% 40% etc
 | * Extended balance and missing number puzzles
* Counting and describing non-linear sequences eg square and triangular numbers...Fibonacci
* Line graphs in 4 quadrants, including finding co-ordinates of a line given the 'rule', position to term
* Problem solving with line graphs and sequences
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