**Mathematics Overview Year 4/5**

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| **Ongoing Learning Objectives -** there is no reason why if Y4 children are secure with these objectives they can’t practice the year 5 ones. |
| Year 4* Count in multiples of 6, 7, 9, 25 & 1000;
* Count backwards through zero to include negative numbers;
* Find 1000 more or less than a given number;
* Recall multiplication and division facts for multiplication tables up to 12 x 12
* Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1.
* Count up and down in hundredths.
 | Year 5* 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 numbers through zero;
* Recall multiplication and division facts for multiplication tables up to 12 x 12 (Y4).
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| **Term** | **Weeks** |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **1** | Place Value | MentalCalc. | Calculation | Fractions | Measurement |
| **2** | Place val. | Calculation | Geometry | Props of no. Y5Decs.Y4 | Fractions & Decimals | Perimeter & Area |
| **3** | Place value/ calculation | Geometry | Statistics | Fractions, Decimals & Percentages | *Catch Up!* |

**Do NOT extend the Year 4 children by giving them the Y5 work or objectives. Use support from NCETM to ‘drill down’ into the objectives and give the children lots of opportunities for reasoning and to apply fluency.**

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| **Term** | **Area** | **Learning Objective** |
| **1** | **Place Value** | **Year 4*** Identify, represent and estimate numbers using different representations;
* Find 1000 more or less than a given number;
* Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones);
* Order and compare numbers beyond 1000;
* Round any number to the nearest 10, 100 or 1000.
 | **Year 5*** Read, write order and compare numbers to at least 1,000,000 and determine the value of each digit;
* Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including numbers through zero;
* Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.
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| **Mental Calculation** | **Year 4*** Recall multiplication and division facts for multiplication tables up to 12 x 12
* Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
* Recognise and use factor pairs and commutativity in mental calculations;
 | **Year 5*** Add and subtract numbers mentally with increasingly large numbers;
* Multiply and divide numbers mentally, drawing upon known facts;
* Identify multiples and factors, including finding all factor pairs of a number and common factors of 2 numbers;
* Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
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| **Calculation** | **Year 4*** Estimate and use inverse operations to check the answers to a calculation;
* Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate;
* Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why;
* Multiply two-digit and three-digit numbers by a one-digit number using formal written layout ***when ready***.
 | **Year 5*** Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy;
* Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction);
* 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.
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| **Fractions** | **Year 4*** Find the effect of dividing a one- or two-digit number by 10 and 100 and identifying the value of the digits in the answer as ones, tenths and hundredths;
* Recognise and show, using diagrams, families of common equivalent fractions;
* Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by ten;
* Add and subtract fractions with the same denominator.
 | **Year 5*** 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 them 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.
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| **Measures incl. time**  | **Year 4*** Convert between different units of measurement [e.g: kilometre to metre; hour to minute].
* 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.
* Estimate, compare and calculate different measures, including money in pounds and pence.
 | **Year 5*** Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram 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**];(make sure money is covered)
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| **2** | **Place Value** | **Year 4*** Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones);
* Round any number to the nearest 10, 100 or 1000;
* Round decimals with one decimal place to the nearest whole number.
* Order and compare numbers beyond 1000;
* Compare numbers with the same number of decimal places up to 2-decimal places
 | **Year 5*** 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 number problems and practical problems that involve all of the above ***(autumn & spring term’s place value objectives)***;
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| **Calculation** | **Year 4*** Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate;
* Estimate and use inverse operations to check the answers to a calculation;
* Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why;
* Multiply two-digit and three-digit numbers by a one-digit number using formal written layout;
* Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as when n objects are connected to m objects.
 | **Year 5*** Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction);
* Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why;
* 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;
* Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign;
* Use all four operations to solve problems involving measure [for example, length, mass, volume, money].
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| **Geometry** | **Year 4*** Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes;
* Identify lines of symmetry in 2-D shapes presented in different orientations;
* Complete a simple symmetric figure, with respect to a specific line of symmetry;
* Identify acute and obtuse angles and compare and order angles up to two right angles by size.
 | **Year 5*** 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, 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 one whole turn (total 360°)
* Angles at a point on a straight line and ½ a turn (total 180°)
* Other multiples of 90°;
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| **Properties of number Y5****Decimals Y4** | **Year 4*** Find the effect of dividing a one- or two-digit number by 10 and 100 and identifying the value of the digits in the answer as ones, tenths and hundredths;
 | **Year 5*** 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 numbers and cube numbers, and the notation for squared (²) and cubed (³);
* Solve problems involving multiplication and division, including their knowledge of factors and multiples, squares and cubes.
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| **Fractions and Decimals** | **Year 4*** Recognise and show, using diagrams, families of common equivalent fractions;
* Recognise and write decimal equivalents of any number of tenths or hundredths;
* Recognise and write decimal equivalents to ¼, ½, ¾;
 | **Year 5*** 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.
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| **Perimeter & Area** | **Year 4*** Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres;
* Find the area of rectilinear shapes by counting squares.
 | **Year 5*** 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 (cm²) and square metres (m²) and estimate the area of irregular shapes
* Estimate volume [for example, using 1cm³ blocks to build cuboids (including cubes)] and capacity [for example using water.
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| **3** | **Place value/ Calculation** | **Year 4*** **Place Value** – solve number problems and practical problems that involve all of the above *(term 1 & 2 place value)* and with increasingly large positive numbers;
* Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value;
* Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate;
* Estimate and use inverse operations to check the answers to a calculation;
* Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why;
* Multiply two-digit and three-digit numbers by a one-digit number using formal written layout;
* Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as when n objects are connected to m objects.
 | **Year 5*** Solve number problems and practical problems that involve all of the above ***(autumn & spring term’s place value objectives)***;
* Read Roman numerals to 1000 (M) and recognise years written in Roman numerals;
* Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction);
* Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why;
* 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;
* Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign;
* Use all four operations to solve problems involving measure [for example, length, mass, volume, money].
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| **Geometry** | **Year 4*** Describe positions on a 2-D grid as co-ordinates in the first quadrant;
* Describe movements between positions as translations of a given unit to the left/right and up/down;
* Plot specified points and draw sides to complete a given polygon.
 | **Year 5*** 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** | **Year 4*** Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs;
* Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.
 | **Year 5*** 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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| **Fractions****Decimals & percentages** | **Year 4*** Solve simple measure and money problems involving fractions and decimals to 2 decimal places
* Solve problems involving increasingly harder fractions to calculate quantities and fractions to divide quantities, including non-unit fractions where the answer is a whole number.
* Add and subtract fractions with the same denominator.
 | **Year 5*** 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 ½, ¼, $\frac{1}{5}$, $\frac{2}{5}$ and those fractions with a denominator of a multiple of 10 or 25.
* Solve problems involving numbers up to three decimal places;
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