**Maths Skills Progression**

**Skills taught from EYFS - Y6 using White Rose Maths**

# Place Value

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| **Reception** | * Saying number words in sequence * Recognition of cardinal number | | | | |
|  | | **Counting** | **Represent** | **Use PV and Compare** | **Problems & Rounding** |
| **Year One** | | * Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. * Count numbers to 100 in numerals; count in multiples of twos, fives and tens. | * Identify and represent numbers using objects and pictorial representations. * Read and write numbers to 100 in numerals. * Read and write numbers from 1-20 in numerals and words. | * Given a number, identify one more and one less. |  |
| **Year Two** | * Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or   backward | | Read and write numbers to at least 100 in numerals and in words.  Identify, represent and estimate numbers using different representations, including the number line. | * Recognise the place value of each digit in a two-digit (tens, ones). * Compare and order numbers from 0 up to 100. * Use <, > and = signs. | * Use place value and number facts to solve problems. |
| **Year Three** | * Count from 0 in multiples of 4, 8, 50 and 100. * Find 10 or 100 more or less than a given number | | Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words. | * Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). * Compare and order numbers up to 1000. | * Solve number problems and practical problems involving these ideas. |
| **Year Four** | * Count backwards through * zero to include negative numbers * count in multiples of 6, 7, 9, 25 and 1000. | | * Identify, represent and estimate numbers using different representations. * 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. | * Find 1000 more or less than a given number. * Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, ones). * Order and compare numbers beyond 1000. | * Round any number to the nearest 10, 100 or 1000. * Solve number and practical problems that involve all of the above and with increasingly large numbers. |
| **Year Five** |  | | * Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. * Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. | * Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. | * Interpret negative numbers in context. * 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. |
| **Year Six** |  | | * Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. | * Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. | * Round any whole number to a required degree of accuracy. |

**Addition & Subtraction**

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| **Reception** | * Sorts into groups. * Finds one more and one less within 5. * Combines two groups (up to 10) to find the whole. * Finds number bonds to 10 using objects or diagrams. * Add by counting on. * Take away by counting back. * Finds number bonds to 5. | | | |
|  | **Recall, Represent, Use** | **Calculations** |  | **Solve Problems** |
| **Year One** | * Read, write and interpret mathematical statements involving addition, subtraction and equals signs. * Represent and use number bonds and related subtraction facts within 20. | * Add and subtract 1-digit and 2-digit numbers to 20, including zero. | Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems. | |
| **Year Two** | * Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. * Show that addition of two numbers in any order * (commutative) and subtraction of one number from another cannot. * Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | * Add and subtract numbers using concrete objects, pictorial representations and mentally, including:   + A 2-digit number and ones. * A 2-digit number and tens.   + 2-digit numbers. * Adding three 1-digit numbers. | * Solve problems with addition and subtraction: * Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. * Applying their increasing knowledge of mental and written methods. | |
| **Year Three** | * Estimate the answer to a calculation and use inverse operations to check answers. | * Add and subtract numbers mentally, including: * 3-digit number and ones. * 3-digit number and tens. * 3-digit number and hundreds * Add and subtract numbers with up to 3-digits, using formal written methods of columnar addition and subtraction. | * Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction. | |
| **Year Four** | * Estimate and use inverse operations to check 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. | |
| **Year Five** | * 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. * Add and subtract numbers mentally with increasingly large numbers. | * Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. * Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. | |
| **Year Six** |  | * Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations. | * Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. | |

**Multiplication and Division**

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| **EYFS** | * Finds doubles. * Halves and shares. * Identifies odds and evens. * Solve problems including doubling and halving. | | | | | |
|  |  | **Recall, Represent, Use** | **Calculations** |  | **Solve Problems** | **Combined Operations** |
| **Year One** |  |  |  | * Solve one step problems involving multiplication and division using objects, pictures and arrays, with support from the teacher. | |  |
| **Year Two** | * Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. * Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. | | * Calculate mathematical statements for multiplication and division within the x tables and write them using the correct signs. | * Solve problems involving multiplication and division using objects, arrays, repeated addition, mental methods, facts. | |  |
| **Year Three** | * Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. | | * Write and calculate mathematical statements for multiplication and division using the x tables that they know, including for 2-digit numbers x 1-digit numbers, using mental and progressing to formal written methods. | * Solve problems including missing number problems involving multiplication and division, integer scaling and correspondence problems. | |  |
| **Year Four** | * 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 by 0 and 1, dividing by 1, multiplying together three numbers. * Recognise and use factor pairs and commutativity in mental calculations. | | * Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout. | * Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit by 1digit, integer scaling problems and harder correspondence problems. | |  |

**Fractions**

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| **Reception** | N/A | |  |  | |  |  |  |
|  | **Recognise and Write** | |  | **Compare** |  | **Calculations** |  | **Solve Problems** |
| **Year One** | * Recognise, find and name a half as pone of two equal parts of an object, shape or quantity. * Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. | |  |  |  |  |  |  |
| **Year Two** | * Recognise, find, name and write fractions 1/3 , ¼ , 2/4 , and ¾ of a length, shape, set of objects or quantity. | | * Recognise the equivalence of 2/4 and ½. | | * Write simple fractions. | |  |  |
| **Year Three** | * Count up and down in tenths. * Recognise that tenths arise from dividing an objects into 10 equal parts and in dividing 1-digit numbers or quantities by 10. * Recognise, find and write fractions of a discrete set of objects: unit and non-unit fractions with small denominators. * Recognise and use fractions as numbers: unit and nonunit fractions with small denominators. | | * Recognise and show, using diagrams, equivalent fractions with small denominators. * Compare and order unit fractions and fractions with the same denominators. | | * Add and subtract fractions with the same denominator within one whole. | | * Solve problems that involve all of the above. | |
| **Year Four** | * Count up and down in hundredths. * Recognise that hundredths arise when dividing an object by one hundred and dividing by ten. | | * Recognise and show, using diagrams, families of common equivalent fractions. | | * Add and subtract fractions with the same denominator. | | * 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. | |
| **Year Five** | * 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. | | * 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 proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. | |  |  |
| **Year Six** |  |  | * Use common factors to simplify fractions. * Use common multiples to express * fractions in the same denomination. * Compare and order fractions, including >1. | | * Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. * Multiply simple pairs of proper fractions, writing the answer in its simplest form. * Divide proper fractions by whole numbers. | |  |  |
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**Decimals, Percentages and Algebra:**

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| **Reception** | N/A | |  | |  | |  |
|  | **Calculations & Problems (Decimals)** |  | **Fractions, Decimals and Percentages** |  | **Ratio and Proportion** |  | **Algebra** |
| **Year One** |  |  |  |  |  |  |  |
| **Year Two** |  |  |  |  |  |  |  |
| **Year Three** |  |  |  |  |  |  |  |
| **Year Four** | * Find the effect of dividing a 1 or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. | * Solve simple measure and money problems involving fractions and decimals to two decimal places. | |  |  |  |  |
| **Year Five** | * 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 whole’. * Write percentages as a fraction with a denominator of 100 and as a decimal. * Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. | |  |  |  |  |
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| **Year Six** | * Multiply and divide numbers by 10, 100 and 100 giving answers up to three decimal places. * Multiply 1-digit numbers with up to two decimal places by whole numbers. * Use written division methods in cases where the answers have up to two decimal places. * Solve problems which require answers to be rounded to specific degrees of accuracy. | * Associate a fraction with division and calculate decimal fraction equivalents. * Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. | | * Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. Solve problems involving the calculation of percentages and * the use of percentages for comparison. * Solve problems involving similar shapes where the scale factor is known or can be found. * Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. | | * Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. * Find pairs of numbers that satisfy an equation with two unknowns. * Enumerate possibilities of combinations of two variables. | |

**Note – algebraic thinking is seen in the ‘missing number’ objectives from Y1 upwards.**

# Measurement

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| **Reception** | * Order important times in their day. * Use positional language to describe when events happen. * Use vocab such as yesterday, today, tomorrow to describe relative events. * Measure time e.g. using timers, number of sleeps to an event. * Measure length, height, distance | | | | | |
|  |  | **Using Measures** | **Money** |  | **Time** | **Perimeter, Area, Volume** |
| **Year One** | * Compare, describe and solve practical problems for lengths and heights, mass/weight, capacity and volume, time. * Measure and begin to record length, height, mass/weight, capacity and volume and time. | | * Recognise and know the value of different denominations of coins and notes. | * Sequence events in chronological order using language. * Recognise and use language relating to dates, days, weeks, months, years. * Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. | |  |
| **Year**  **Two** | Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, capacity to the nearest appropriate unit using rules, scales, thermometers and measuring vessels.  Compare and order lengths, mass, volume/capacity and record the results using <, > and =. | | * Recognise and use symbols for pounds and pence combine amounts to make a particular value. * Find different combinations of coins that equal the same amounts of money. * Solve simple problems in a practical content involving addition and subtraction of money of the same unit, including giving change. | Compare and sequence intervals of time.  Tell and write the time to five minutes, quarter past/to and draw the hands on a clock face to show these times.  Know the number of minutes in an hour and the number of hours in a day. | |  |
| **Year Three** | * Measure, compare, add and subtract lengths, mass, volume/capacity. | | * Add and subtract amounts of money to give change, using both £ and p in practical contexts. | * Tell and write the time from an analogue clock, including Roman numerals and 24 hr clocks. * Estimate and read time with increasing accuracy to the nearest minute. * Record and compare time in terms of seconds, minutes, hours and use vocab relating to these. * Know the number of seconds in a minute and the number of days in each year and leap year. * Compare durations of events. | | * Measure the perimeter of simple 2D shapes. |

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| **Year Four** | * Convert between different units of measure. * Estimate, compare and calculate different measures. | * Estimate, compare and calculate different measures, including money in pounds and pence. | * Read, write and convert time between analogue and digital 12 and 24 hr clocks. * Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days. | * Measure and calculate the perimeter of rectilinear figure in cm and m. * Find the area of rectilinear shapes by counting squares. |
| **Year Five** | * Convert between different units of metric measure. * Understand and use approximate equivalences between metric and common imperial units. * Use all four operations to solve problems involving measure using decimal notation, including scaling. | * Use all four operations to solve problems involving measure. | * Solve problems involving calculations converting between units of time. | * Measure and calculate the perimeter of composite rectilinear shapes in cm and m. * Calculate and compare the area of rectangles and including using standard units, square cm, square m, and estimate the area of irregular shapes. * Estimate volume and capacity. |
| **Year Six** | * Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. * Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to three decimal places. * Convert between miles and km. |  | * Use, read, write and convert between standard units, converting measurements of time from a smaller unit of   measure to a larger unit and vice versa. | * Recognise that shapes with the same areas can have different perimeters and vice versa. * Recognise when it is possible to use formulae for area of parallelograms and triangles. * Calculate, estimate and compare volume of cubes, cuboids, using standard units including cubic m, cubic cm and extending to other units. |

# Geometry

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| **Reception** | * Here and begin to use positional language to describe how items are positions in relation to other items. * Represent real places they have visited with drawings, maps, models. * Explore similarities and differences between 3D shapes. * Sort shapes according to what they notice. * Construct their own 3D shapes in different ways. * See 2D shapes on the flat surface of 3D shapes. * Name some common shapes. * Compare 2D shapes, saying what is the same, what is different. * Explore how shapes can be combined to make patterns or new shapes. | | | | | |
|  |  | **2D shapes** | **3D shapes** | **Angles and Lines** | **Position and Direction** | |
| **Year One** | * Recognise and name common 2D shapes. | | * Recognise and name common 3D shapes. |  | * Describe position, direction and movement including whole, half, quarter and three-quarter turns. | |
| **Year**  **Two** | * Identify and describe the properties of 2D shapes, including number of sides and symmetry in a vertical line. Identify 2D shapes on the surface of 3D shapes. * Compare and sort common 2D shapes and everyday objects. | | * Recognise and name common 3D shapes. * Compare and sort common 3D shapes and everyday objects. |  | * Order and arrange combinations of mathematical objects in patterns and sequences. * Use mathematical vocab to describe position, direction and movement. | |
| **Year Three** | *  * Draw 2D shapes. | | * Make 3D shapes using modelling materials. * Recognise 3D shapes in different orientations and describe them. | * Recognise angles as a property of shape or a description of a turn. * Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. * Identify whether angles are greater than or less than a right angle. * Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. | |  |
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| **Year**  **Four** | * Compare and classify geometric shapes. * Identify lines of symmetry in 2D shapes presented in different orientations. | |  | * Identify acute and obtuse angles and compare and order angles up to two right angles by size. Identify lines of symmetry in 2D shapes presented in different orientations. * Complete a simple symmetric figure with respect to a specific line of symmetry. | | * Describe position on a 2D grid as coordinates 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 Five** | * Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. * Use the properties of rectangle to deduce related facts and find missing lengths and angles. | | * Identify 3D shapes, including cubes * and other cuboids from 2D representations. | * Know angles are measured in degrees. * Estimate and compare acute, obtuse and reflex angles. Drawn given angles and measure them in degrees. * Identify angles at a point and one whole turn and other multiples of 90 degrees. | | * 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. |
| **Year Six** | * Draw 2D shapes using given dimensions and angles. * Compare and classify geometric shapes based on their properties and sizes. * Illustrate and name parts of circles including radius, diameter and circumference and known that diameter is twice the radius. | | * Recognise, describe and build simple 3D shapes including making nets. | * Find unknown angles in any triangles, quadrilaterals and regular polygons. * Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles. | | * Describe positions on the full coordinate grid (all four quadrants). * Draw and translate simple shapes on the coordinate plane and reflect them in the axes. |

# Statistics

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| **Reception** | N/A |  |  |
|  | **Present and Interpret** |  | **Solve Problems** |
| **Year One** |  |  |  |
| **Year**  **Two** | * Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. | * Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. * Ask and answer questions about totalling and comparing categorical data. | |
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| **Year Three** | * Interpret and present data using bar charts, pictograms and tables. | * Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables. | |
| **Year**  **Four** | * 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 Five** | * Complete, read and interpret information in tables including timetables. | * Solve comparison, sum and difference problems using information presented in a line graph. | |
| **Year Six** | * Interpret and construct pie charts and line graphs and use these to solve problems. | * Calculate and interpret the mean as an average. | |