**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
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|  | **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.
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| **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.
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| **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.
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| **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.
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| **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.
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| **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.
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**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.
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|  | **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.
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| **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.
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| **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.
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| **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.
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| **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.
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**Multiplication and Division**

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| **EYFS**  | * Finds doubles.
* Halves and shares.
* Identifies odds and evens.
* Solve problems including doubling and halving.
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|  |  | **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.
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| **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.
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| **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.
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| **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.
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**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.
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| **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.
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| **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.
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| **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.
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| **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.
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| **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.
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| **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.
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**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
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|  |  | **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.
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| **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.
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| **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.
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# 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.
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|  |  | **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.
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| **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.
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| **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.
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| **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.
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| **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.
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# 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.
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| **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.
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| **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.
 |