


Maths Long Term Plan Year 3


Year 3 Maths	
National Curriculum Objectives for Year 3	Key Links
<p>Pupils should be taught: The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.</p>	<p style="text-align: center;"> https://resources.whiterosemaths.com/resources/year-3/ https://www.mathletics.com/uk/ </p> <p style="text-align: center;"> Recap knowledge: Column method Times tables Links between multiplication and division Inverse operations </p>

	Topics	Working towards	Expected progress	Greater depth / extension	Key vocabulary
<u>Autumn 1</u>	Number: Place Value	<ul style="list-style-type: none"> • Continue number sequences • Recognise numbers in a variety of ways • Partition numbers into hundreds, tens and ones • Read simple numbers up to 1000 in numerals and words • Count in multiples of 4, 8, 50 and 100 from zero • Find 10 more or less than a given number up to 100 • Find 100 more or less than a given number up to 500 	<ul style="list-style-type: none"> • Read numbers up to 1000 in numerals and words • Recognise multiples of four • Recognise multiples of eight • Recognise multiples of 50 • Recognise multiples of 100 • Find missing numbers in a given sequence • Solve problems involving multiples • Solve problems involving place value • Solve problems involving partitioning • Solve problems involving comparing and ordering numbers 	<ul style="list-style-type: none"> • Identify and sort numbers using set criteria • Partition numbers in a variety of ways • Read numbers up to 1000 in numerals and words 	Place value Hundreds Tens Ones Partition Greater than Less than Equal to Multiples Compare Order Represent Numerals


	<p>Number: Addition and Subtraction</p>	<ul style="list-style-type: none"> • Compare numbers using inequality and equality signs • Order numbers up to 1000; • Solve simple problems involving place value of three digit numbers. <ul style="list-style-type: none"> • Secure fluency in addition and subtraction facts that bridge ten, through continued practice • Calculate number bonds of 100 • Understand the inverse relationship between addition and subtraction, and how both relate to the part– part– whole structure • Understand and use the commutative property of addition, and understand the related property for subtraction • Add and subtract up to three-digit numbers using columnar methods. 	<ul style="list-style-type: none"> • Solve problems involving numbers in different representations • Solve place value problems involving measures <ul style="list-style-type: none"> • Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why • Continue to practise both mental methods to aid fluency. 	<ul style="list-style-type: none"> • Use reasoning about number facts to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations; • Confidently record addition and subtraction in columns including decimals. 	<p>Three digit number Digits Estimate Written form Expanded method Place holder Difference Subtract Minus Add Altogether Total Part whole model Number bonds Inverse Exchange</p>
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<p>Progression</p> 	<p>Year 2 expectations: Number: Place value - • Count forwards and backwards in steps of two, three and five from zero • Count forwards and backwards in steps of ten from any number • Know the value of the tens and ones in a two-digit number • Partition two-digit numbers into different combinations of tens and ones • Identify, represent and estimate two-digit numbers using a range of representations • Compare numbers using and = signs • Order numbers up to 100 • Read and write numbers to at least 100 in numerals and in words Number: Addition and subtraction - • recall number facts to and within ten and related subtraction facts • Use these to derive number facts to and within 20 and 100 • add and subtract within 100: a two-digit number and ones, a two-digit number and tens, two two-digit numbers • add three one-digit numbers using efficient strategies • understand that addition is commutative but subtraction is not, and explain what this means • use the inverse relationship between addition and subtraction to solve problems and check answers to calculations • solve addition and subtraction problems, in the context of quantities and measures, using equipment, pictures and mentally</p> <p>Year 4 expectations: Number: Place value – • count in multiples of 6, 7, 9, 25 and 1000 • find 1000 more or less than a given number • count backwards through 0 to include negative numbers • know that ten hundreds are equivalent to one thousand, and that 1000 is ten times the size of 100, and use this to work out how many hundreds there are in other four-digit multiples of 100 • recognise the place value of each digit in a four-digit number • compose and decompose four-digit numbers using standard and non-standard partitioning, writing the related addition calculation, and being able (with standard partitioning) to subtract any single place value part from the whole number • order and compare numbers beyond 1000 • identify, represent and estimate numbers using different representations • reason about the location of any four-digit number, including identifying the previous and next multiple of 100 and</p>
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	<p>1000 • round any number to the nearest 10, 100 or 1000 • divide 1000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1000 with 2, 4, 5 and 10 equal parts • solve number and practical problems that involve all of the above and with increasingly large positive numbers • read Roman numbers to 100 (I to C).</p> <p>Number: Addition and subtraction - Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction • Estimate and use inverse operations to check answers to a calculation • Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why • Continue to practise mental methods to aid fluency.</p>				
<p>Cross curricular links / examples</p>	<p>PSHE- Democracy- Voting in Britain: Link to School Parliament, classroom monitors, Science ambassadors, eco warriors- counting votes- use place value knowledge to compare and order votes</p> <p>Stone Age- Iron Age- develop a pre historic counting system</p> <p>Stone Age to Iron Age- understand concept of very large numbers and importance of the number 0 to help us (make comparison with inefficiency of tally to help us see large amounts written down)</p> <p>Stone Age Boy- tally counting on cave wall</p> <p>Population growth in local area– compare numbers</p>				
<p>Autumn 2</p>	<p><i>Continued</i> Number: Addition and Subtraction</p> <p>Number: Multiplication and Division</p>	<ul style="list-style-type: none"> Recall multiplication and division facts for the 3x, 4x and 8x tables. Use multiplication facts from the 3x, 4x and 8x tables to solve word problems. Begin to identify patterns in the 3x, 4x and 8x tables when presented visually (e.g. coloured on a hundred square). Multiply multiples of 10 using known facts up to 12x. Use the grid method to multiply two and three-digit numbers. Use number lines to solve division problems beyond known facts. Solve missing number problems using known facts. Solve simple scaling and correspondence problems using facts from the 3x, 4x and 8x tables. 	<ul style="list-style-type: none"> Recall multiplication and division facts for the 3x, 4x and 8x tables with increasing speed and accuracy. Use multiplication and division facts from the 3x, 4x and 8x tables to solve word problems with more than one step. Identify patterns in known multiplication tables. Multiply multiples of 10 (including three-digit numbers) mentally using known facts. Use the grid method to solve multiplication problems which go beyond known facts. Begin to use expanded multiplication when working with numbers beyond known facts. Use number lines to solve division problems beyond known facts with increasing accuracy and speed. Begin to use the bus stop method as a written method for division. Solve missing number problems which go beyond known facts. 	<ul style="list-style-type: none"> Quickly and accurately recall multiplication and division facts for the 3x, 4x and 8x tables. Solve mathematical problems and puzzles using known multiplication and division facts; identifying and explaining patterns and making predictions. Multiply multiples of 10 mentally. Use a range of written methods for multiplication and division with increasing confidence. 	<p>Multiply Times</p> <p>Lots of Groups of Repeated addition</p> <p>Array double Product Multiplied by Groups Grouping Sharing Share equally Equal groups Halving Doubling Inverse operation</p>


			<ul style="list-style-type: none"> • Solve scaling problems with increasing accuracy, beginning to work out the scale used from the measurements. • Spotting patterns when solving correspondence problems and beginning to predict the number of possibilities. 		
Progression 	<p>Year 2 expectations: Number: Multiplication and division - • Recall and use multiplication and division facts for the two, five and ten times tables • recognise odd and even numbers up to 100 and use reasoning to explain how to identify larger odd and even numbers • write expressions and calculations using the multiplication (x), division (÷) and equals (=) symbols • understand that multiplication is commutative but that division is not • demonstrate that multiplication and division are inverse • recall doubles and halves of numbers up to 20 • link doubling and halving to multiplying and dividing by two and use this to solve problems.</p> <p>Year 4 expectations: Number: Multiplication and division - • Recall multiplication and division facts for multiplication tables up to 12 × 12 with increasing speed and accuracy • begin to calculate multiples of numbers beyond 12 × 12 • use a range of mental calculation strategies for multiplication and division with increasing accuracy including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • use factor pairs and inverses when solving multiplication and division problems • use the expanded method and short method to multiply two-digit and three digit by one digit numbers • calculate using the short written method for division for two-digit and three digit by one-digit numbers, including those with remainders • use partitioning and rounding and adjusting to solve two-digit by one-digit number problems with increasing confidence • use multiplication and division facts to scale up and down • solve division problems involving fractions.</p>				
Cross curricular links / examples	<p>Link multiplication to repeated addition- link with efficient way of counting amounts Iron Age hill fort- development of farming settlements and keeping livestock – use multiplication to help the farmer find how many animals at the settlement. Help the farmers to place the animals into equal groups</p>				
Spring 1	<i>Continued Number: Multiplication and Division</i> Measure: Money	<ul style="list-style-type: none"> • Compare money amounts up to 50p. • Make different money combinations, using coins up to 50p. • Choose the correct symbol < > or = to compare the money amounts. • Add together up to three items in pence, where the total equals up to 50p. • Add together up to three items in pounds, where the total equals up to £100. 	<ul style="list-style-type: none"> • Compare money amounts up to £1. • Make different money combinations, using coins up to £1. • Add together up to three items in pence, where the total equals up to £1. • Add together up to three items in pounds, where the total equals up to £15. 	<ul style="list-style-type: none"> • Compare money amounts up to £1.50. • Make different money combinations, using coins up to £1.50. • Work out missing money amounts where the total and one amount is given. • Add together up to three items in pounds, where the total equals up to £25. 	Amount Change Coin Notes Pence Penny Pounds Convert Cost Value Combinations


	<p>Geometry: Properties of Shape</p>	<ul style="list-style-type: none"> • Calculate the change required when paying for a single and several items, paying with 50p. • Draw 2D shapes, make and describe 3D shapes and recognise 3D shapes in different orientations. • Recognise angles as a property of shape or a description of a turn and identify right angles. • Identify horizontal and vertical lines. 	<ul style="list-style-type: none"> • Calculate the change required when paying for a single and several items, paying with £1. • Describe the properties of 3D shapes using the vocabulary faces, edges and vertices. • 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 pairs of perpendicular and parallel lines. 	<ul style="list-style-type: none"> • Calculate the change required when paying for a single and several items, paying with £2. • Identify 3D shapes from their nets and be able to sort 2D and 3D shapes on Venn and Carroll diagrams. • Identify acute and obtuse angles. • Compare and classify geometric shapes, based on the property of lines. 	<p>More than Less than Equal to</p> <p>Angles Right angle Acute angle Obtuse angle Quarter turn Half turn Three quarter turn Whole turn Horizontal Vertical Parallel Perpendicular 2d 3d Sides Vertices Edges Faces Straight line Curved line Triangle Quadrilateral Pentagon Hexagon Heptagon Octagon Nonagon Decagon Tetrahedron Circle Prism Sphere Cylinder Pyramid</p>
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Progression 	Year 2 expectations: Measure: Money - • recognise the symbols for pounds (£) and pence (p) and use different coins to make the same amount • 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 context involving addition and subtraction of money of the same unit, including giving change. Geometry: Properties of Shape - • name common 2D and 3D shapes, use general terms to name groups of shapes, such as quadrilateral, polygon and polyhedron • recognise regular and irregular polygons in different sizes and orientations • describe the properties of 2D and 3D shapes using the language sides, vertices, edges and faces • identify vertical lines of symmetry in 2D shapes • identify 2D faces on 3D shapes • sort 2D and 3D shapes by their properties • read and write some shape names • create 2D shapes using geoboards and draw polygons using straight lines • make 2D and 3D shape patterns • create and describe 3D shape structures Year 4 expectations: Measure: Money - • Add and subtract up to three money amounts, • convert money amounts written in pence to decimal notation, e.g. 547p = £5.47 and vice versa (less than £15). Geometry: Properties of Shape - • compare and classify triangles and quadrilaterals based on their mathematical properties • identify, compare and order angles up to 180° using the vocabulary acute and obtuse • complete a symmetrical image or pattern with a horizontal or vertical line of symmetry.				
Cross curricular links / examples	PSHE- money- having a budget at the shops Money- concept of bartering in Egypt Ancient Egypt- link pyramids with 3d shapes Art- use 2d shapes to produce art work in style of Kandinsky Identify horizontal and vertical lines in paintings, identify right angles in pictures				
Spring 2	Measurement: Length and Perimeter	<ul style="list-style-type: none"> • Estimate and measure in exact centimetres. • Estimate and measure in exact metres. • Estimate and measure in multiples of 10mm. • Measure and draw lines in centimetres and millimetres, to the nearest 5mm. 	<ul style="list-style-type: none"> • Estimate and measure to the nearest centimetre. • Estimate and measure to the nearest metre. • estimate and measure in multiples of five millimetres. • Measure and draw lines in mixed units (centimetres and millimetres). 	<ul style="list-style-type: none"> • Estimate and measure in whole and half centimetres. • estimate and measure in whole and half metres. • estimate and measure in multiples of one millimetres. • order sets of mixed measurements. 	Metre Centimeter Millimeter Mixed measures Height Length Width Perimeter compare Further

	<p>Number: Fractions</p>	<ul style="list-style-type: none"> • Solve word problems by adding and subtracting two measurements in centimetres. • Solve addition problems involving metres by adding two three-digit numbers totalling up to 350m. • Solve subtraction problems involving metres by subtracting two three-digit numbers, not involving exchanging. • Solve addition and subtraction problems involving millimetres by adding three amounts. • Use $=$ to compare two single unit length measurements. • Order single unit length measurements. • Measure the perimeter of rectangles and squares. • Calculate the perimeter of rectangles and squares, all side measurements given. • Draw two different rectangles whose perimeters are the same. <ul style="list-style-type: none"> • Use resources to add and subtract fractions with the same denominator • Use resources to compare and order fractions • Share objects to find a fraction of a set of objects <ul style="list-style-type: none"> • Identify pairs of equivalent fractions on a fraction wall. 	<ul style="list-style-type: none"> • Solve word problems by adding and subtracting three measurements in centimetres. • Solve addition problems involving metres by adding two three-digit numbers totalling up to 550m. • Solve subtraction problems involving metres by subtracting two three-digit numbers, involving exchanging. • Solve addition and subtraction problems involving millimetres by adding four amounts. • Use $<$ $>$ and $=$ to compare two mixed unit length measurements. • Order mixed unit length measurements. • Calculate the perimeter of squares, perimeter given. <ul style="list-style-type: none"> • Add and subtract fractions with the same denominator • Compare and order simple fractions; • Use resources to identify equivalent fractions • draw number lines to round decimals to the nearest whole number • compare fraction number lines and number sequences • use resources to support finding a fraction of a set of objects or number. 	<ul style="list-style-type: none"> • solve length problems involving calculating a missing number. <ul style="list-style-type: none"> • Use $<$ or $>$ to compare groups of fractions; • Place fractions appropriately on a blank number line • Understand the link between tenths as fractions and as decimals • Calculate unit and non-unit fractions of sets of objects or numbers • Recall equivalents for unit and non-unit fractions; 	<p>Higher Longer Shorter Taller Estimate Calculate Find the difference Find the total</p> <p>Numerator Denominator Unit fraction Non unit fraction Equivalent Halves Thirds Quarters Fifths Sixths Eighths Tenths Decimals rounding Number line</p>
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Progression 	<p>Year 2 expectations:</p> <p>Measurement: Length and Height - • use standard units to estimate and measure length/ height (cm/m) to the nearest unit accurately; compare and order length using the symbols < > and = • read scales on rulers and measuring vessels in divisions of ones, twos, fives and tens.</p> <p>Number: Fractions - understand that fractions are equal parts of a whole • name, find and write 1/3 of a shape or quantity • name, find and write 1/4, 2/4 = 1/2 and 3/4 of a shape or quantity; identify how many halves, thirds and quarters make a whole • recognise the equivalence of one-half and two-quarters; complete simple fraction sentences; count in halves.</p> <p>Year 4 expectations:</p> <p>Measurement: Length and Perimeter - •Convert between: millimetres, centimetres, metres and kilometres (below 30 units) • order mixed units of length measurement with decimal notation; solve length problems, calculating the difference (kilometres with one decimal place) between two distances – answers up to 120km •order a set of four mixed mass measurements which contain tenths or hundredths • measure the sides of rectangles and squares in centimetres and add the measurements together to calculate the perimeter with accuracy •use a formula to calculate the perimeters of squares and rectangles in centimetres and metres •calculate the area of rectangles and squares by recalling multiplication knowledge.</p> <p>Number: Fractions - •find groups of equivalent fractions by multiplying • recognise hundredths and count in steps of multiple hundredths using a hundred square if needed • add and subtract fractions up to and over one whole using fraction bars • identify fraction and decimal equivalents for halves, quarters and tenths • use place value grids to divide by 10 and 100 • draw number lines to round decimals to the nearest whole number • compare decimals with same number of decimal places • solve a variety of problems involving fractions selecting support where needed.</p>				
Cross curricular links / examples	<p>Geography- measure distance between locations using km and m, compare measures</p> <p>PE- Perimeter of the playground; compare distance of jumps</p> <p>Science- investigate if a longer femur bone means you can jump further</p> <p>Ancient Egypt- length of the River Nile</p> <p>Rivers in UK – compare lengths</p>				
<u>Summer 1</u>	<i>Continued</i> Number: Fractions Measurement: Time	<ul style="list-style-type: none"> • Identify whether events could be a.m. or p.m. or both. • Use vocabulary such as o'clock, a.m. and p.m., morning, afternoon, noon and midnight. • State how many days there are in each month and how many days in a year and a leap year. • Calculate the number of days from one date to another, up to 20 days. • Compare the times of events in minutes and seconds. 	Read the time in minute intervals on an analogue clock. <ul style="list-style-type: none"> • Read digital clocks in five minute intervals and state the time in analogue form. • Read clocks with Roman numerals in five minute intervals. • Order times which use a.m. and p.m. • Calculate the number of days from one date to another, up to 50 days. • Calculate and compare the length of events using digital times in ten minute intervals. 	Read clocks with Roman numerals – minute intervals. <ul style="list-style-type: none"> • Write a definition for time vocabulary such as: o'clock, a.m. and p.m., morning, afternoon, noon and midnight. • Calculate the number of days from one date to another, over 100 days. • Calculate and compare the length of events using digital times in five minute intervals 	a.m and p.m 12 hour time 24 hour time Roman numerals Analogue Digital Hours Minutes Seconds O'clock Half past Quarter past Quarter to Middyday midnight

		<ul style="list-style-type: none"> • Calculate and compare the length of events using digital times in fifteen minute intervals. • Read the time in five minute intervals on an analogue clock. • Read digital clocks in fifteen minute intervals and state the time in analogue form. • Read clocks with Roman numerals in fifteen minute intervals 			Noon Year Leap year Weeks Days Months calendar
Progression 	Year 2 expectations: Position and direction links - •distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns in clockwise and anticlockwise directions. Measurement: Time - •read and write the time on an analogue clock to the nearest 5 minutes •know there are 60 minutes in one hour and 24 hours in one day •compare and sequence time intervals. Year 4 expectations: Measurement: Time - •Convert 12-hour times to 24-hour and 24-hour to 12- hour (5 minute intervals) •begin to solve simple problems involving conversion of digital and analogue times •solve time problems which involve conversion from hours and minutes to minutes and vice versa (times 5 minute intervals).				
Cross curricular links / examples	Geography- map work – direction relating quarter turns to North, East, South, West Time- compare times in capital cities around the world Compare times taken to travel from country to country with different modes of transport Science- light- day and night around the world				
Summer 2	Measurement: Mass and capacity Statistics	<ul style="list-style-type: none"> •Read scales to measure mass, in intervals of 10g, 20g, 100g, 250g • Add and subtract in kilograms, adding up to 250kg and subtraction not involving exchanging. • Read scales to measure capacity, in intervals of 10ml and 25ml. •Collect data in a tally chart • Collate data into a frequency table • Create simple bar charts and pictograms 	<ul style="list-style-type: none"> •Children read scales to measure mass in intervals of 25g and 200g. • Add and subtract in kilograms, adding up to 1000kg and subtraction involving exchanging. • Read scales to measure capacity in intervals of 20ml. • Create scaled bar charts and pictograms • Create Venn and Carroll diagrams • Create a table of information • Ask and answer two-step questions about charts, tables and diagrams 	<ul style="list-style-type: none"> • Draw their own scale to mark given masses. • Add in kilograms, adding totals over 1000kg. • Mark cylinders to given capacity measures. •Ask and answer more complex two-step • With some support - compose questions about charts, tables and diagrams. 	Mass Gram Kilogram Capacity Volume Milliliter Litre Lighter Heavier Scales Intervals Data Bar chart Tally chart

		<ul style="list-style-type: none"> • Ask and answer one-step questions about simple charts, tables and diagrams. 			Frequency Pictogram Symbol Table Axis interpret
Progression 	<p>Year 2 expectations:</p> <p>Measurement: Mass and capacity - • use standard units to estimate and measure length/ height (cm/m), mass (g/kg), temperature (°C), capacity (litres/ml) to the nearest unit accurately •compare and order length, mass, volume/capacity using the symbols and = •read scales on rulers, scales, thermometers, and measuring vessels in divisions of ones, twos, fives and tens •solve measurement problems involving all four operations.</p> <p>Statistics - complete and interpret a table, tally chart, one-to-one pictogram, many-to-one pictogram and block diagram •read scales in divisions of ones, twos, fives and tens and use this to interpret many-to-one pictograms •ask and answer comparison questions by counting the number of objects in each category and finding totals or the difference.</p> <p>Year 4 expectations:</p> <p>Measurement: Mass and capacity - •Draw their own scale to mark given masses •add in kilograms, adding totals over 1000kg •mark cylinders to given capacity measures.</p> <p>Statistics - •identify the difference between discrete and continuous data, interpret discrete and continuous data •present data as grouped bar charts •begin to interpret data in time graphs and line graphs •answer comparison, sum and difference questions about data presented in tables, pictograms, grouped bar charts and climate graphs •interpret and present data in a two-circle Venn diagram and a Carroll diagram.</p>				
Cross curricular links / examples	<p>Science- weigh rocks – compare and order</p> <p>Science- Interpret and present data using bar charts, pictograms and tables – Science experiments</p> <p>Solve one-step and two-step questions e.g. “How many more?” and “How many fewer?” using information presented in scaled bar charts, pictograms and tables</p>				