Maths Long Term Plan – Year 3

Year 3 Maths	
National Curriculum Objectives Year 3	Key Links
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.	Year 3 – White Rose Maths Maths Guidance Year 3 (Gov.uk) Mathematics Programmes of Study: Key Stage 1 and 2 (Gov.uk)

Topics		N.C Objectives	Small Steps	Key Vocabulary
Autumn 1	Number: Number and Place Value	Pupils should be taught to: • count from 0 in multiples of 4, 8, 50 and 100; • find 10 or 100 more or less than a given number • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 1000 • identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words • solve number problems and practical problems involving these ideas	• Hundreds • represent numbers to 1000 • 100s, 10s, 1s • number line to 1000 • find 1,10,100 more or less than a given number • compare objects to 1000 • compare numbers to 1000 • order numbers • counts in 50s	'more', 'less', 'equal to =', 'less than <', 'greater than >', 'order', 'compare', 'place value' hundreds

<u>Maths Progression:</u>

Year 2:

- Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and nonstandard partitioning.
- Reason about the location of any two digit number in the linear number system, including identifying the previous and next multiple of 10.

Year 4:

- Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.
- Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and nonstandard partitioning.
- Reason about the location of any four digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.
- Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.

Topics		N.C Objectives	Small Steps	Key Vocabulary
Autumn 1 and Autumn 2	Number: Addition and Subtraction	Pupils should be taught to: ● add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds ● add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction ● estimate the answer to a calculation and use inverse operations to check answers ● solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	● add and subtract multiples of 100 ● add and subtract 3-digit and 1-digit numbers - not crossing 10 ● add and subtract 3-digit and 1-digitnumbers - crossing 10 ● subtract a 1-digit number from a 3-digit number - crossing 10 ● add and subtract 3-digit and 2-digitnumbers - not crossing 100 ● add and subtract 3-digit and 2-digit numbers - crossing 100 ● subtract a 2-digit number from a 3-digit numbers - crossing 100 ● add and subtract 100s ● spot the pattern - making it explicit ● add and subtract a 2-digit and 3-digit numbers - not crossing 10 or 100 ● add a 2-digit and 3-digit number - crossing 10 or 100 ● subtract a 2-digit number from a 3-digit numbers - crossing 10 or 100 ● add two 3-digit numbers - not crossing 10 or 100 ● add two 3-digit numbers - crossing 10 or 100 ● subtract a 3-digit number from a 3-digit number - no exchange ● subtract a 3-digit number from a 3-digit number - exchange ● estimate answers to calculations ● check answers	'add', addition', 'subtract', 'subtraction', 'hundreds', 'tens', 'ones', 'left', 'left over', 'greater than', 'less than', 'fewer' and 'more' exchange', 'pattern', 'variation', 'total', 'altogether', 'regroup' and 'partition' place value', 'approximate', 'estimate', 'fact family' and 'bar model', and discuss working 'logically' and using 'function machines'

Maths Progression:

Year 2:

- Add and subtract across 10
- Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?".
- Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.
- Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two digit numbers.

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 answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Topics		N.C Objectives	Small Steps	Key Vocabulary
Autumn 2 / Spring 1	Number: Multiplication and Division	Pupils should be taught to: • 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 multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	• multiplication - equal groups • multiply by 3 • divide by 3 • the 3 times table • multiply by 4 • divide by 4 • the 4 times table • multiply by 8 • divide by 8 • the 8 times table • comparing statements • related calculations • multiply 2-digits by 1 digit • divide 2-digits by 1-digit • scaling • how many ways? • equal grouping, unequal groups, and sharing equally.	multiply, multiplication fact, times table, array divide, division statement, whole, left over, and remainder. multiplication, division, greater than, less than, equal, remainder, share, partition, compare, equally, least, most, tens (10s), ones (1s), exchange

Maths Progression:

Year 2:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Year 4:

- recall multiplication and division facts for multiplication tables up to 12 × 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
- 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.
- Solve integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Topics		N.C Objectives	Small Steps	Key Vocabulary
Autumn 2/Spring 1	Number: Multiplication and Division	Pupils should be taught to: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	• recognise equal groups • make equal groups • add equal groups • make arrays • multiplication sentences using the x symbol • multiplication sentences from pictures • use arrays • 2/5/10 times table • make equal groups - sharing • make equal groups – grouping • divide by 2/5/10	equal groups'; 'equal parts'; 'same'; 'different'; 'more than'; 'in total'; 'multiplication x'; 'repeated addition'; 'skip counting'; 'number in a group'; 'number of groups'; 'times-table'; 'array'; 'rows'; 'columns'; 'number line'

Maths Progression:

Year 1:

- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Year 3:

- 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 multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Topics		N.C Objectives	Small Steps	Key Vocabulary
Spring 1	Measurement: Money	Pupils should be taught to: ● add and subtract amounts of money to give change, using both £ and p in practical contexts.	● pounds and pence ● covert pounds and pence ● add money ● subtract money ● give change	add, subtract, total, less, more, difference, convert, amount, cost, change, pounds (£), pence (p).

Maths Progression:

Year 2:

- recognise and use symbols for pounds (£) and pence (p)
- 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

Year 4:

- estimate, compare and calculate different measures, including money in pounds and pence

Topics		N.C Objectives	Small Steps	Key Vocabulary
Spring 2	Statistics	Pupils should be taught to: • interpret and present data using bar charts, pictograms and tables • solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	• pictograms • bar charts • tables	bar chart', 'table' 'pictogram': symbol, altogether, most, least, compare, half way, smallest, between, order, largest, total, column, row, order

<u>Maths Progression:</u>

Year 2:

- 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

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

Topics		N.C Objectives	Small Steps	Key Vocabulary
Spring 2	Measurement: Length and Perimeter	Pupils should be taught to: • measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes	• measure length • equivalent lengths - m & cm • equivalent lengths - mm & cm • compare lengths • add lengths • subtract lengths • measure perimeter • calculate perimeter	length, height, width, long, wide, perimeter, tall, high, ruler, longer, shorter, greater than (>), less than (<), compare, convert, equivalent, equal, measurement , 'metres', 'centimetres' and 'millimetres'.

<u>Maths Progression:</u>

Year 2: (length)

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =

Year 4:

- Convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.

Topics		N.C Objectives	Small Steps	Key Vocabulary
Spring 2/Summer 1	Number: Fractions	Pupils should be taught to: • count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • recognise and show, using diagrams, equivalent fractions with small denominators • add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7] • compare and order unit fractions, and fractions with the same denominators • solve problems that involve all of the above	• making the whole • tenths • count in tenths • tenths as decimals • fractions on a number line • fractions of set of objects • equivalent fractions • compare fractions • order fractions • add fractions • subtract fractions	partition, split, share, group, combine, represent fractions, denominator, numerator, fractional part, and whole number. non-unit fraction', 'denominator' and 'numerator': calculate, compare, difference, equal parts, share, measure, greater than (>), equal to (=), less than (<), equivalent, fraction, whole number.) inequality

Maths Progression:

Year 2:

- recognise, find, name and write fractions 1/3 , 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity
- write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2

Year 4:

- 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 one hundred and dividing tenths by ten.
- 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
- recognise and write decimal equivalents of any number of tenths or hundredths
- solve simple measure and money problems involving fractions and decimals to two decimal places

Topics		N.C Objectives	Small Steps	Key Vocabulary
Summer 1	Measurement: Time	Pupils should be taught to: • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock,a.m./p.m., morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year • compare durations of events [for example to calculate the time taken by particular events or tasks].	• months and years • hours in a day • telling the time to 5 minutes • telling the time to the minute • using am and pm • 24-hour clock • finding the duration • comparing durations • start and end times • measuring time in seconds	o'clock, a.m./p.m., morning, afternoon, noon and midnight leap year, midnight, midday, noon, morning, afternoon, evening, night, halfway, Roman numerals, digital, am, pm, 12-hour clock, 24-hour clock, stopwatch, start time, end time, January, February, March, April, May, June,

				July, August, September, October, November, December

Maths Progression:

Year 2:

- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour 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 4:

- Convert between different units of measure [for example, kilometre to metre; hour to minute]

Topics		N.C Objectives	Small Steps	Key Vocabulary
Summer 2	Measurement: Properties of Shape	Pupils should be taught to: • draw 2-D shapes and make 3-D shapes using modelling materials • recognise 3-D 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	• turns and angles • right angles in shapes • compare angles • draw accurately • horizontal and vertical • parallel and perpendicular • recognise and describe 2D shapes • recognise and describe 3d shapes • make 3d shapes	triangle, rectangle, and square horizontal, vertical, perpendicular, parallel, clockwise, and anti-clockwise quadrilateral, parallelogram, rhombus and trapezium

<u>Maths Progression:</u>

Year 2:

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects

Year 4:

- Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.
- Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal.
- Find the perimeter of regular and irregular polygons.
- Identify line symmetry in 2D shapes presented in different orientations.
- Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.

Topics		N.C Objectives	Small Steps	Key Vocabulary
Summer 2	Measurement: Mass, Capacity and Temperature	Pupils should be taught to: ● measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml	• measure mass • compare mass • add and subtract mass • measure capacity • compare capacity • add and subtract capacity	weight, weigh, kilograms (kg), estimate, measure, grams (g), compare, order mass', 'scale', 'interval' 'convert' measurement, scale, measure, interval, amount, order, convert, compare, estimate, more than (>), less than (<), equal to (=).) capacity', 'millilitres', 'litres' and 'equivalent'

Maths Progression:

Year 2:

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =

Year 4:

- Topic starts in Year 5

Key Texts	2 x 2 = Boo! by Loreen Leedy Beanstalk: the measure of a giant by Ann McCallum Equal Shmequal by Virginia Kroll EARTH DAY - HOORAY! - Stuart. J. Murphy Recommendations from MathsThroughStories.org - for specific topics