Mathematics Teaching Sequence – Year 3

Children should engage with appropriate number and practical problems **throughout each topic**.

Statements highlighted in yellow have been identified as 'ready to progress' objectives: key concepts which are essential building blocks for the next steps in learning. These objectives must be embedded across the year so that children are fluent.
Resources to support teaching of these specific objectives can be found here:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf
https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/

Year 3	
Autumn Term	**Key vocab for topic**
Number and Place value • Count from 0 in multiples of 100 • Identify, represent and estimate numbers using different representations (part whole, estimate on number line, partition) • Recognise the place value of each digit in a three-digit number (partition). • Know that ten 10s are equivalent to 100. Apply this to work out how many 10s there are in other 3 digit multiples of 10. • Read and write numbers up to 1000 in numerals and in words • Reason about the location of any 3 digit number, including finding the previous and next multiple of 10 or 100 from a given number (100 or 10 more or less) and crossing hundreds and tens boundaries, eg 10 less than 204. • Compare and order numbers up to 1000 • Count from zero in multiples of 50. **Place value review** **Addition and subtraction** **(Include appropriate problem solving and reasoning using learnt number facts, place value and methods throughout e.g. missing numbers, 2 step word problems, explain and prove)** • Add and subtract a three digit number and ones mentally • Add and subtract a 3 digit number and 10s mentally • Add and subtract a 3 digit number and 100s mentally • Add numbers with up to 3 digits:	hundreds tens ones place value more less greater than less than compare equal to order estimate exchange partition Multiples Digits Estimate more than less than digits addition/add subtraction/subtract/take away combine total mental mentally column exchange place value

-Use concrete and pictorial resources to introduce methods of addition with up to 3 digits **without crossing the tens/hundreds boundary** (to develop conceptual understanding) -Use formal written method of column addition **without crossing tens/hundreds boundary** -Use concrete and pictorial resources to introduce conceptual understanding methods of addition with up to 3 digits **crossing the tens/hundreds boundary** (to develop conceptual understanding) • Calculate the complements to 100 e.g. 46 + ? = 100. • Use formal written method of column addition **crossing tens/hundreds boundary** • Scale known addition number facts by 10 e.g. 8 + 6 = 14 so 80 + 60 = 140. • Subtract numbers with up to 3 digits: -Use concrete and pictorial resources to introduce methods of subtraction with up to 3 digits **without exchange** (to develop conceptual understanding) -Use formal written method of column subtraction **without exchange** -Use concrete and pictorial resources to introduce conceptual understanding of subtraction with up to 3 digits **with exchange** -Use formal written method of column subtraction **with exchange** • Scale known addition number facts by 10 to subtract e.g. 3 + 6 = 9 so 90 – 60 = 30 • Use inverse operations to check answers to addition and subtraction calculations applying knowledge of the commutative law.	hundreds tens ones smallest altogether sum calculation find the difference Inverse Commutative estimate inverse approximate/ly nearest (hundred, ten) part/whole Number bonds
Review - addition and subtraction deciding most efficient method (mental/formal) **Multiplication/division** • Count from zero in multiples of 3, 4 and 8 • Recognise when groups are equal/unequal • To know that multiplication is repeated addition in equal groupings • Recall the multiplication facts for the 3 times table	Multiplication/ times/ lots of/ groups of/product/repeated addition Division/share equal/repeated subtraction Divisor Share equally Array Commutative Inverse Estimate Remainder

• To know that division is splitting a whole number into groups of equal size • Recall the division facts for the 3 times table • Recall the multiplication facts for the 4 times table • Recall the division facts for the 4 times table • Recall the multiplication facts for the 8 times table • Recall the division facts for the 8 times table • To know that not all numbers can be divided equally and this might result in a remainder • Use knowledge of 2, 5, 10, 3, 4 and 8 times tables (multiplication and corresponding division facts) to solve problems including with simple remainders. **Measures (lengths)** • To know that there are 10mm in 1cm • To know that there are 100cm in 1m • Measure (read) lengths in millimetres, centimetres and metres • To compare and order lengths when represented in different ways (eg 23cm and 34mm) • To add and subtract units of length	Scaling Cm Mm Convert Exchange Equivalent Equal to Compare Order Greater than Less than Standard units
Spring Term **Place value review and approximation** • Estimate the answer to addition and subtraction using approximation 67 + 31 is approximately 100 **Multiplication and division** • To understand when a statement represents a multiplication or a division problem and show and show how these are related • Multiply a 2-digit number by a 1digit number using known facts eg 23 x 3 3x3 =9 20 x 3 = 60 23 x 3 = 69 • Apply place value knowledge to known facts e.g. scale number facts by 10. E.g. 3 x 4 = 12; 30 x 4= 120	Estimate Total Subtract Add Commutative Inverse Approximately Multiplication/ times/ lots of/ groups of/product/repeated addition Division/share equal/repeated subtraction Divisor Share equally Array Commutative Inverse Estimate Remainder Scaling

12 ÷ 4 = 3 120 ÷ 4 = 30 • Multiply a 2 digit number by a 1 digit number using expanded method • Multiply a 2 digit number by a 1 digit number using compact method (short multiplication) • Use the inverse to check multiplication and division problems • Divide 2 digit numbers by 1 digit numbers using partitioning e.g example 69 ÷ 3 60 ÷ 3 = 20 9 ÷ 3 + 3 69 ÷ 3 = 23 • Use partitioning/rearranging and knowledge of known multiples to solve 2 digit divided by 1 digit calculations (see calculation policy)	Column multiplication Short multiplication Partitioning
Review	
Statistics • To know that a pictogram represents data in pictures and that a picture can represent more than 1 • To interpret data on a pictogram (including using keys when the picture represents more than 1) (including answering questions which uses addition and subtraction (how many more…)) • To present data in a pictogram including when the picture represents more than 1) • Read scales of 2, 5, 10 and 4 intervals. • To understand how information is represented in a bar chart, including in scales of 2, 5, 10 and 4. • To interpret information presented in a bar chart • To present information in a bar chart, selecting appropriate scales	Pictogram Data Represent Most common Least common Scale Bar chart Interpret Present Table Tally Compare X-axis Y-axis Frequency Carrol diagram Venn diagram
Fractions • Interpret and write proper fractions to represent 1 or parts of a whole (that is divided into equal parts) by: • Knowing, recognising and writing a unit fraction of a whole shape) • Finding unit fraction of a whole set of objects/amount/quantities using known division facts. • To know, recognise and write non-unit fractions of a whole shape	Fraction Denominator Numerator Equal Equivalent Quarters Halves Unit fraction Non-unit fractions Amount Whole

• To find a non-unit fraction of a whole set of objects/ amount • To make a whole using unit and non-unit fractions with the same denominator • Recognise that tenths arise from dividing an object into 10 equal parts • Count up and down in tenths up to and beyond a whole • Recognise that tenths arise from dividing 1 digit numbers or quantities by 10, representing this in a division sentence **Fractions** • Recognise and show, using diagrams, equivalent fractions with small denominators • Reason about the location of any fraction within 1 by comparing and ordering unit fractions • Reason about the location of any fraction within 1 by comparing and ordering fractions with the same denominator. • Add and subtract fractions with the same denominator within one whole • Solve problems involving fractions **Review**	Tenth Fraction Denominator/Numerator Equal/ Equivalent Quarters Halves Unit fraction Non-unit fractions Amount Whole Tenth
Summer Term	
Money • Know that total of money can be shown in notes and coins and recorded in pounds and pence • Find total of money shown in notes and coins and record in pounds and pence. • Convert between pounds and pence (e.g. five 20p coins = £1, 20 5p coins = £1 • Add and subtract amounts of money using pound and pence • Solve addition and subtraction money problems including giving change **Angles and properties of shape** • Identify and draw horizontal and vertical lines • Identify and draw pairs of perpendicular and parallel lines, including finding these in 2d shapes • Draw 2d shapes • Measure the perimeter of simple 2d shapes • Recognise that angles are a property of shape or a description of turn	Pounds Pence Convert Order Add Subtract Change Round Estimate Cost Decimal point Calculate Horizontal/ Vertical Perpendicular/ Parallel 2d shape/3d shape Perimeter Cm/ Mm Turn/Angles Right angle Degrees

• Identify right angles and know that this is a quarter turn. • Identify right angles in 2D shapes presented in different orientations. • Recognise that 2 right angles make a half-turn, three make three quarters of a turn and 4 make a complete turn • Identify whether angles are greater or less than a right angle **Review** **Time** • To know the number of seconds in a minute, and the number of days in each month, year and leap year. • Tell and write the time from a 12 hour analogue clock • Tell and write the time from a 12 hour analogue clock using Roman Numerals • Tell and write the time from an analogue 24 hour clock (using correct vocabulary of am, pm, morning, afternoon, noon and midnight) • Estimate and read time with increasing accuracy to the nearest minute • Compare duration of events (eg calculate the time taken by particular events or tasks) • Record and compare time in terms of seconds, minutes and hours **Statistics - Tables** • Interpret information presented in a table (including using addition and subtraction to answer questions, comparing and ordering and working out duration) • Present information in a table **Review** **Measure - mass and capacity** • Know how to read a scale of different intervals • To know that grams is a smaller measure of mass than kilograms and that there are 1000 grams in a kilogram • Use scales to measure mass in grams and kilograms • Represent mass in kilograms and grams (eg 1240 grams = 1kg and 240grams) • Compare mass in kilograms and grams • Solve mass problems using the 4 operations	Half turn, Three quarter turn, Full/complete turn Greater than/Less than Symmetry/symmetrical Classify Regular/irregular Vertex/vertices Faces/ sides Acute/obtuse Orientation Seconds Minutes Hours 24 hour/12 hour clock Hands Analogue Am/pm To/past Half past Quarter to/from O'clock Morning, noon, afternoon and midnight Digital Table Tally Interpret Compare Order Fractions Kg/g Mass Scales Compare Smaller larger Millilitres and litres Capacity

• Know that millilitres are a smaller measure than litres and that there are 1000ml in 1l. • Measure in litres and millilitres using different scale intervals • Represent capacity in litres and millilitres • Compare capacity in litres and millilitres • Solve capacity problems using the 4 operations **3d shapes** • Recognise and describe properties of 3d shapes • Recognise 3d shapes in different orientations and describe them • Construct 3d shapes using eg using nets and modelling materials **Yearly assess and review**	3d 2d Faces Vertices Nets Orientations

Facts (Declarative knowledge)	Processes (methods)
Number and Place value • Count from 0 in multiples of 100 • Identify numbers using different representations (part whole, estimate on number line, partition)	**Number and Place value** • Count from 0 in multiples of 100 • Represent and estimate numbers using different representations • Recognise the place value of each digit in a three-digit number (partition) • Read and write numbers up to 1000 in numerals and in words • Find 100 or 10 more or less than a given number (including crossing hundreds and tens boundaries, eg 10 less than 204) • Compare and order numbers up to 1000 • Count in zeros in multiples of 50
Addition and subtraction • Know that concrete and pictorial can be used to aid addition and subtraction. • Know that formal methods can be used for written addition and subtraction.	**Addition and subtraction** • Add and subtract a three digit number and 100s/tens/ones mentally. • Use concrete, pictorial then formal written method of addition up to 3 digits without (then with) crossing tens/hundreds boundary. • Subtract (using concrete, pictorial and formal written method) up to 3 digits without (then with) exchange.
Approximation and checking using addition and subtraction • Know that estimation and inverse operations can be used to check answers to addition and subtraction calculations.	**Approximation and checking using addition and subtraction** • Estimate the answer to addition and subtraction using approximation 67 + 31 is approximately 100 • Use inverse operations to check answers to addition and subtraction calculations.
Multiplication/division • Know when groups are equal/unequal • To know that multiplication is repeated addition in equal groupings • Recall the multiplication facts for the 3 times table • Know that division is splitting a whole number into groups of equal size • Recall the multiplication and division facts for the 3,4 and 8 times table	**Multiplication/division** • Count from zero in multiples of 3, 4 and 8 • Use knowledge of 2, 5, 10, 3, 4 and 8 times tables (multiplication and division facts) to solve problems including with simple remainders

• To know that not all numbers can be divided equally and this might result in a remainder	
Spring Term **Measures (lengths)** • To know that there are 10mm in 1cm and 100cm in 1m **Multiplication and division** • Know when a statement represents a multiplication or a division problem and show and show how these are related • Know that multiplication can use a expanded or compact method. • Know that division can involve partitioning/rearranging using knowledge of multiples. **Statistics** • To know that a pictogram represents data in pictures and that a picture can represent more than 1 • To understand how information is represented in a bar chart, including in scales of 2, 5 and 10 **Fractions** • To know, recognise and write a unit fraction in shapes • To know, recognise and write non-unit fractions of a shape	**Measures (lengths)** • Measure (read) lengths in millimetres, centimetres and metres • To compare and order lengths when represented in different ways (eg 23cm and 34mm) • To add and subtract units of length **Multiplication and division** • Use the inverse to check multiplication and division problems • Multiply a 2-digit number by a 1digit number using known facts • Multiply a 2 digit number by a 1 digit number using expanded and compact method (short multiplication) • Divide 2 digit numbers by 1 digit numbers using partitioning e.g example • Solve 2 digit divided by 1 digit calculations (see calculation policy) **Statistics** • To interpret data on a pictogram (including using keys when the picture represents more than 1) and a bar chart (including answering questions which use addition and subtraction • Present data in a pictogram including when the picture represents more than 1) and bar charts, selecting appropriate scales. **Fractions** • Interpret and write proper fractions to represent 1 or parts of a whole (that is divided into equal parts) by: • To find a unit fraction of a set of objects/amount

• Know that tenths arise from dividing an object into 10 equal parts • Know that tenths arise from dividing 1 digit numbers or quantities by 10, representing this in a division sentence • Recognise and show, using diagrams, equivalent fractions with small denominators	• To find a non-unit fraction of a set of objects/ amount • To make a whole using unit and non-unit fractions with the same denominator • Count up and down in tenths up to and beyond a whole • Recognise and show, using diagrams, equivalent fractions with small denominators • Compare and order unit fractions • Compare and order fractions with the same denominators • Add and subtract fractions with the same denominator within one whole • Solve problems involving fractions
Summer Term	
Money • Know that total of money can be shown in notes and coins and recorded in pounds and pence **Angles and properties of shape** • Identify horizontal and vertical lines, parallel and perpendicular lines. • Recognise that angles are a property of shape or a description of turn • Identify right angles and know that this is a quarter turn. • Recognise that 2 right angles make a half-turn, three make three quarters of a turn and 4 make a complete turn • Identify whether angles are greater or less than a right angle **Time** • To know the number of seconds in a minute, and the number of days in each month, year and leap year.	**Money** • Find total of money shown in notes and coins and record in pounds and pence. • Convert between pounds and pence (e.g. five 20p coins = £1, 20 5p coins = £1 • Add and subtract amounts of money using pound and pence • Solve addition and subtraction money problems including giving change **Angles and properties of shape** • Draw horizonal and vertical lines and pairs of perpendicular and parallel lines, including finding these in 2d shapes • Draw 2d shapes • Measure the perimeter of simple 2d shapes **Time** • Tell and write the time from a 12 hour analogue clock (and using Roman numerals). • Tell and write the time from an analogue 24 hour clock (using correct

	vocabulary of am, pm, morning, afternoon, noon and midnight) • Estimate and read time with increasing accuracy to the nearest minute • Compare duration of events (eg calculate the time taken by particular events or tasks) • Record and compare time in terms of seconds, minutes and hours
Statistics - Tables • Know that information can be presented in a table.	**Statistics - Tables** • Interpret information presented in a table (including using addition and subtraction to answer questions, comparing and ordering and working out duration)
Measure - mass and capacity • Know how to read a scale of different intervals • To know that grams is a smaller measure of mass than kilograms and that there are 1000 grams in a kilogram • Know that millilitres are a smaller measure than litres and that there are 1000ml in 1l. • Measure in litres and millilitres using different scale intervals	**Measure - mass and capacity** • Use scales to measure mass in grams and kilograms • Represent mass in kilograms and grams (eg 1240 grams = 1kg and 240grams) • Compare mass in kilograms and grams • Solve mass problems using the 4 operations • Represent and compare capacity in litres and millilitres • Solve capacity problems using the 4 operations
3d - shapes • Recognise and describe properties of 3d shapes • Recognise 3d shapes in different orientations and describe them	**3d - shapes** • Construct 3d shapes using eg using nets and modelling materials