Mathematics Teaching Sequence – Year 4

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 4	**Key vocab for topic**
Autumn Term	
Number and Place value • Count from 0 in multiples of 1000 • Identify, represent and estimate numbers using different representations (part whole, estimate on number line, partition, bar-model) • Recognise the place value of each digit in a four-digit number (partition). • Know that 10 hundreds = 1 thousand; 1000 = 10 times greater than 100. Apply this to identify how many 100s are in 4-digit multiples of 100. • Read and write numbers up to 1000 in numerals and in words • Reason about the location of any 4-digit number e.g. find 1000 more or less than a given number (including crossing thousands boundaries) • Compare and order numbers beyond 1000 • Estimate the position of numbers of a number line. • Round any number to the nearest 10, 100 or 1000 • Count from zeros in multiples of 25 **Place value review** **Addition and subtraction** (To include appropriate reasoning using learnt facts/methods throughout e.g. missing numbers, 2 step worded problems, explain and prove – see reasoning and problem solving doc.) • Use formal written method of column addition to add numbers with up to 4 digits, including crossing the tens/hundreds/thousands boundary • Use formal written method of column subtraction including with exchange to subtract numbers with up to 4 digits • Use rounding to estimate.	Ones Tens Hundreds Thousands Place value Partition More Less Greater than Less than Compare Equal to Order Ascending Descending Exchange Round Multiples Digits Estimate Addition/add Subtraction/subtract/take away More than Less than Digits Total/sum Combine Mental (method) Formal method Column Exchange Place value Inverse Altogether Calculation Commutativity/commutative

• Apply place value knowledge to scale known addition number facts by 100 to add e.g. 3 + 6 = 9 so 300 + 600 = 900 and 900 – 600 = 300 - **arithmetic** • Use the inverse to check the answers to addition and subtraction calculations **Review - addition and subtraction** **Multiplication and division (to be taught through arithmetic, times table precision teaching and time table clubs throughout Autumn term).** • Recall multiplication and division facts for multiplication facts for multiplication tables up to 12 x 12 (to run throughout year and secure automaticity by summer term) • Count from zero in multiples of 6 and 9. • Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1 and dividing by 0 and 1 and multiplying 3 numbers together. • Multiply and divide whole numbers by 10 and 100 (know that this is equivalent to making the number 10 or 100 times the size). **Measures – length including area and perimeter** • To know that there are 1mm = 0.01; 1cm = 0.1m; 1m = 0.01km • To know how to convert between millimetres, centimetres, metres and km. • To solve problems involving all 4 operations and length • Multiply and divide by 10 and 100 – recap after teaching through arithmetic. • To know that the area of a 2d shape is the amount of space it takes up. • Find the area of rectilinear shapes by counting squares. • To know that perimeter is the distance around a 2d shape • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Solve problems about perimeter (for example, find missing lengths when one length and the total perimeter are known) **Autumn Term review**	Multiply/times/lots of/groups of Multiplier Product Factors Factor pairs Divide/share Dividend Divisor Array Commutativity/commutative Remainder Associative Perimeter 2D shape Measure Calculate Area Centimetres Metres Total

<u>Spring Term</u> **Number and Place Value** • Round any number to the nearest 1000 • To know that numbers lower than zero are called negative numbers and that they represent how far from zero a number is (and therefore -8 is smaller than -1). • Read Roman numerals to 100 and know that over time the numeral system changed to include the concept of zero and place value **Multiplication and division** Problem solving to run throughout using known facts, methods and the commutative and distributive properties of multiplication: • To know what a factors and multiples are. • Know and show that factor pairs multiply together to create a multiple. • Recognise and use factor pairs' commutativity in mental calculations. • Represent multiplying 2 and 3 digit numbers by 1 digit using concrete resources (place value counters). • Represent multiplication of up to 3 digits by 1 digit numbers pictorially, using knowledge of place value • Use expanded method to multiply up to 3 digit x 1 digit numbers. • Multiply 2 digit and 3 digit numbers by a one digit number using formal written method of multiplication. • Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit by one-digit, integer scaling problems and harder correspondence problems. • Solve division problems with two-digit dividends and 1-digit divisors that involve remainders. **Review through weekly arithmetic papers.** **Statistics** • Interpret and present discrete data using appropriate graphical measures such as bar charts • Interpret and present continuous data using appropriate graphical methods including simple time line graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Thousands Nearest Place value Round/rounding Negative numbers Zero Roman numerals (I, V, X, L, C) Multiply/times/lots of/groups of Multiplier Product Factors Factor pairs Divide/share Divisor Array Commutativity/commutative Remainder Associative Scaling Correspondence Expanded method Formal written method Interpret Present Data Discrete data Bar charts Continuous data Time line graph Compare Sum

	Difference Pictograms Tables
Fractions and decimals • recognise and show, using diagrams, families of common equivalent fractions • simplify simple fractions less than 1 whole • Understand that numbers greater than 1 can involve a fraction • Reason about the location of mixed numbers in the number system. • Convert mixed numbers to improper fractions and vice versa. • Add fractions with the same denominator (including crossing the ones boundary) • Subtract fractions with the same denominator. • Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers. • Find fractions of quantities, including unit and non-unit fractions. • 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.	Fraction Numerator Denominator Equivalent Unit fraction Non-unit fraction Simplify Whole Whole number Add Subtract Quantities Greater than Less than
Fractions and decimals • Recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. • Count up and down in hundredths and understand the relative size compared to tenths, ones and hundreds. • Recognise and write decimal equivalents of any number of tenths or hundredths • Compare and order numbers with the same number of decimal places up to 2 decimal places • Round decimals with one decimal place to the nearest whole number • Recognise and write decimal equivalents to 1/4, 1/2 and 3/4 • 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 one, tenths and hundredths. **Review**	Hundredths Tenths Ones Divide/dividing Decimals Equivalent Compare Decimal places Place value Round Equivalent One quarter Half Three quarters Digits

Summer Term	
Measures - money • Write money in pounds and pence using a decimal point (relating the pence to part of a whole pound) • Know that there are one hundred pennies in £1 and convert between pounds and pence. • Order different amounts of money • Add and subtract amounts of money, including solving multi-step money problems • Calculate change, knowing that this is the difference between what you pay with and what an item costs • Round money to the nearest pound • Use rounding to estimate money • Use the above skills to solver a range of money problems (throughout topic and at the end to combine range of skills)	Pounds Pence Convert Order Add Subtract Change Round Estimate Cost Decimal point Calculate
Geometry - properties of shapes • Identify acute, obtuse and right angles • Compare and order angles, up to 2 right angles by size • Compare and classify quadrilaterals based on their properties and sizes • Identify scalene, equilateral and isosceles triangles. • Compare and classify triangles based on their properties and sizes. • Identify regular polygons, including equilateral triangles and squares e.g. equal angles and lengths. • Identify and reflect shapes in lines of symmetry in 2D shapes presented in different orientations • Complete a simple symmetric figure with respect to a specific line of symmetry.	Angles Acute Obtuse Right angle Compare Classify Quadrilaterals Properties Triangles Scalene Equilateral Isosceles Symmetry/symmetric 2D shapes Orientation Line of symmetry
Review	
Measures - time • Read, write and convert time between an analogue and digital 12-hour clock. • Read, write and convert time between an analogue and digital 24 hour clock. • Know that there are 60 seconds in a minute, 60 minutes in an hour and 24 hours in a day • Convert between minutes and hours • Know that there are 7 days in one week, 14 days in a fortnight, and 12 months in a year • Solve problems involving converting units of time and adding and subtracting units of time.	Time Analogue Digital 12-hour 24-hour Convert Seconds Minutes Hours Days Weeks Fortnight Year Months Half/quarter past To/past o'clock) O'clock

Statistics - tables • Interpret information presented in timetables (including timelines, time sequences) using addition and subtraction to answer questions, comparing and ordering and working out duration. • Complete missing information in timetables **Review** **Measure - mass and capacity** -Know how to read a scale of different intervals -To know how to convert between: Grams and kilograms Millilitres and litres -Solve capacity problems using the 4 operations **Position and direction** • Describe movements between positions as translations of a given unit to the left/right, up and down • Describe positions on a 2D grid as coordinates in the first quadrant • Plot specified points and draw sides to complete a given polygon **Yearly review and assess**	Table Titles Headings Timelines Timetables Duration Compare Order Scale Intervals Covert Grams Kilograms Millilitres Litres capacity Movement Positions Translations 2D grid Coordinates Quadrant Plot Polygon Left/right up/down

Year 4

Key facts (declarative knowledge)	Processes (methods)

Number and Place value • Identify, represent and estimate numbers using different representations (part whole, estimate on number line, partition, bar-model) • Know that 10 hundreds = 1 thousand; 1000 = 10 times greater than 100. Apply this to identify how many 100s are in 4-digit multiples of 100. • Recognise the place value of each digit in a four-digit number (partition). **Addition and subtraction** • Know that formal written method of column addition can be used to add/subtract numbers with up to 4 digits, including crossing the tens/hundreds/thousands boundary and exchanging. • Know that the inverse can be used to check answers to addition and subtraction calculations **Multiplication/division** • To know that a multiple is a number that can be divided by another certain number of times without a remainder and appears in a sequence when counting in equal intervals of that number. • To know that a factor is a number that divides into a given number with no remainders and that factor pairs multiply together to create a multiple • Recognise factor pair and commutativity in mental calculations. • Recall multiplication and division facts for multiplication tables up to 12 x 12	**Number and Place value** • Count from 0 in multiples of 1000 • Represent and estimate numbers using representations. • Read and write numbers up to 1000 in numerals and in words • Find 1000 more or less than a given number (including crossing thousands boundaries) • Compare and order numbers beyond 1000 • Round any number to the nearest 10, 100 or 1000 • Count from zeros in multiples of 25 • Round any number to the nearest 10 or 100 • **Addition and subtraction** • Use formal written method of column addition to add numbers with up to 4 digits, including crossing the tens/hundreds/thousands boundary • Use formal written method of column subtraction including with exchange to subtract numbers with up to 4 digits • Use the inverse to check the answers to addition and subtraction calculations **Multiplication/division** • Count from zero in multiples of 6 and 9 • Use factor pair and commutativity in mental calculations. • Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1 and dividing by 0 and 1, multiplying 3 numbers together. • Solve division problems with two digit dividends and 1 digit divisors that involve remainders. • Multiply and divide whole numbers by 10 and 100 (know that this is equivalent to making the number 10 or 100 times the size). • Apply place value knowledge to scale known multiplication facts by 10 and 100 e.g. 2 x 5 = 10 so 20 x 50 = 100.

Measures length (including area and perimeter) • To know that there are 1mm = 0.01m • To know that there are 1cm = 0.1m • To know that there are 1m = 0.01km • To know that perimeter is the distance around a 2d shape in cm and m • To know that the area of a 2d shape is the amount of space it takes up (enclosed within its perimeter) • Know that the area is the surface of the shape.	**Measures length (including area and perimeter)** • To know how to convert between millimetres, centimetres and metres. • To solve problems involving all 4 operations and length • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • Solve problems about perimeter (for example, find missing lengths when one length and the total perimeter are known) • Find the area of rectilinear shapes counting squares.

Spring Term **Number and Place Value** • To know that numbers lower than zero are called negative numbers and that they represent how far from zero a number is (and therefore -8 is smaller than -1). • know that over time the numeral system changed to include the concept of zero and place value **Multiplication and division** • To know multiplication is repeated addition (revision). • To know and understand the distributive law. **Statistics** • Know that data can be presented on bar charts and time graphs. **Fractions and decimals** • recognise, using diagrams, families of common equivalent fractions • Know that numbers greater than 1 can involve a fraction • Recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten. • Recognise and write decimal equivalents of any number of tenths or hundredths • Recognise and write decimal equivalents to 1/4, 1/2 and 3/4	**Spring Term** **Number and Place Value** • Round any number to the nearest 1000 • Read Roman numerals to 100 **Multiplication and division** • Multiply 2 and 3 digit numbers by 1 digit using concrete resources. • Represent multiplication of up to 3 digits by 1 digit numbers pictorially, using knowledge of place value. • Use expanded method to multiply up to 3 digit x 1 digit numbers • Multiply 2 digit and 3 digit numbers by a one digit number using formal written method of multiplication • Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit by one-digit, integer scaling problems and harder correspondence problems **Statistics** • Interpret and present data using bar charts and simple time graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs **Fractions and decimals** • simplify simple fractions less than 1 whole • Reason about the location of mixed numbers in the number system. • Convert mixed numbers to improper fractions and vice versa. • Add and subtract fractions with the same denominator (including crossing the ones boundary) • Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.

	• Find fractions of quantities, including unit and non-unit fractions • 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 • Count up and down in hundredths and understand the relative size compared to tenths, ones and hundreds. • Compare numbers with the same number of decimal places up to 2 decimal places • Round decimals with one decimal place to the nearest whole number • Find the effect of dividing a one or two digit number by 10 and 100, identifying the value of the digits in the answer as one, tenths and hundredths
<u>Summer Term</u>	
Measures - money • Write money in pounds and pence using a decimal point (relating the pence to part of a whole pound) • Know that there are one hundred pennies in £1 and convert between pounds and pence. **Geometry - properties of shapes** • Identify acute, obtuse and right angles • Identify scalene, equilateral and isosceles triangles. • Identify lines of symmetry in 2D shapes presented in different orientations **Measures - time** • Read and write time between an analogue and digital 12-hour clock and digital 24 hour clock. • Know that there are 60 seconds in a minute, 60 minutes in an hour and 24 hours in a day	**Measures - money** • Order different amounts of money • Add and subtract amounts of money, including solving multi-step money problems • Calculate change, knowing that this is the difference between what you pay with and what an item costs • Round money to the nearest pound • Use rounding to estimate money **Geometry - properties of shapes** • Compare and order angles, up to 2 right angles by size • Compare and classify quadrilaterals and triangles based on their properties and sizes • Complete a simple symmetric figure with respect to a specific line of symmetry. **Measures - time** • Convert time between an analogue and digital 12-hour clock and digital 24 hour clock. • Convert between minutes and hours

• Know that there are 7 days in one week, 14 days in a fortnight, and 12 months in a year **Statistics - Tables** • Know that data can be represented in timetables (including timelines, time sequences) using addition and subtraction to answer questions, comparing and ordering and working out duration. • Know that duration is the length of time. **Measure - mass and capacity** • Know that scales can have different intervals. • Know that there are 1000g in 1kg. • Know how to convert between millilitres and litres • Solve capacity, mass and length problems using the 4 operations **Position and direction** • Know what a translation is.	• Solve problems involving converting units of time and adding and subtracting units of time. **Statistics - Tables** • Interpret information presented in timetables (including timelines, time sequences) using addition and subtraction to answer questions, comparing and ordering and working out duration. • Complete missing information in timetables **Measure - mass and capacity** • Know how to read a scale of different intervals • To know how to convert between grams and kilograms • Know how to convert between millilitres and litres • Solve capacity, mass and length problems using the 4 operations **Position and direction** • Describe movements between positions as translations of a given unit to the left/right, up and down • Describe positions on a 2D grid as coordinates in the first quadrant • Plot specified points and draw sides to complete a given polygon.