

Mathematics Teaching Sequence – Year 3/4 mixed class

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	Year 4	
Autumn Term	Autumn Term	Key vocab for topic
<p>Number and Place value</p> <ul style="list-style-type: none"> 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 	<p>Number and Place value</p> <ul style="list-style-type: none"> 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 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 	<p>Ones Tens Hundreds Thousands Place value Partition More Less Greater than Less than Compare Equal to Order Ascending Descending Exchange Round Multiples Digits Estimate / approximately more than</p>

- Count in zeros in multiples of 50

Place value review

**Addition and subtraction
(To include appropriate reasoning using learnt facts/methods throughout:**

- Add and subtract a three digit number and ones mentally; repeat with a 3 digit number and 10s.
- Add and subtract a three digit number and 100s mentally
- 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**
- Use formal written method of column addition crossing tens/hundreds boundary
- Use concrete and pictorial resources to introduce methods of subtraction **with up to 3 digits without exchange**
- 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**

Place value review

Addition and subtraction

(To include appropriate reasoning using learnt facts/methods throughout

- 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
- **Apply place value knowledge to scale known addition number facts by 100 to add e.g. $3 + 6 = 9$ so $300 + 600 = 900$ and $900 - 600 = 300$.**
- Use the inverse to check the answers to addition and subtraction calculations

Review - addition and subtraction deciding most efficient method (mental/formal)

less than

digits
addition/add
subtraction/subtract
take away
combine/ altogether
total/sum
mental
column/exchange
place value
hundreds/ tens/ones
greatest/ largest/smallest
calculation
find the difference
inverse
commutative

- Use formal written method of column subtraction **with exchange**
- Scale known addition number facts by 10 to subtract e.g. $3 + 6 = 9$ so $90 - 60 = 30$

Review - addition and subtraction deciding most efficient method (mental/formal) (1 week)

Multiplication/division

Problem solving to run throughout using known facts and methods when reasoning

- 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
- 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 division facts) to solve problems including with simple remainders

Multiplication/division

Problem solving to run throughout using known facts and methods and the commutative and distributive properties of multiplication:

- 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
- Count from zero in multiples of 6 and 9
- 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 and use factor pair and commutativity in mental calculations
- Recall multiplication and division facts for multiplication facts for multiplication tables up to 12×12 (to run throughout year and secure automaticity by summer term)
- 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.
- 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. $2 \times 5 = 10$ so $20 \times 50 = 100$.
- Solve division problems with two digit dividends and 1 digit divisors that involve remainders.

Multiply/times/lots of/groups of
Multiplier
Product
Factors
Factor pairs
Divide/share
Dividend
Divisor
Array
Commutativity/commutative
Remainder
Associative

<p>Measures - length</p> <ul style="list-style-type: none"> 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 <p>Autumn Term review</p>	<p>Measures length (including area and perimeter)</p> <ul style="list-style-type: none"> 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 how to convert between millimetres, centimetres and metres. To solve problems involving all 4 operations and length 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 To know that the area of a 2d shape is the amount of space it takes up (enclosed within its perimeter) Solve problems about perimeter (for example, find missing lengths when one length and the total perimeter are known) Find the area of rectilinear shapes by counting squares. <p>Autumn Term review</p>	<p>Length Perimeter 2D shape Measure Calculate Area Centimetres Metres Total Compare Order 2d rectilinear</p>
<p>Spring Term</p>	<p>Spring Term</p>	
<p>Approximation and checking using addition and subtraction</p> <ul style="list-style-type: none"> 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 	<p>Number and Place Value</p> <ul style="list-style-type: none"> 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 	<p>Estimate Total Subtract Add Commutative Inverse Approximately Thousands Nearest Place value Round/rounding Negative numbers Zero</p>

Multiplication and division

- To understand when a statement represents a multiplication or a division problem and show and show how these are related
- Use the inverse to check multiplication and division problems
- Multiply a 2-digit number by a 1 digit number using known facts eg 23×3 : $3 \times 3 = 9$; $20 \times 3 = 60$

-Apply place value knowledge to known facts e.g. scale number facts by 10.

E.g. $3 \times 4 = 12$; $30 \times 4 = 120$ $12 \div 4 = 3$ $120 \div 4 = 30$

- 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)
- Divide 2 digit numbers by 1 digit numbers using partitioning e.g example $69 \div 3$
 $60 \div 3 = 20$
 $9 \div 3 = 3$
 $69 \div 3 = 23$
- Use partitioning/rearranging and knowledge of known multiples to solve 2 digit divided by 1 digit calculations (see calculation policy)

Review

Multiplication and division

- Use concrete resources (Place value counters) to demonstrate multiplying 2 and 3 digit numbers by 1 digit
- 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

Review

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

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)
- To understand how information is represented in a bar chart, including reading in scales of 2, 5 and 10
- To interpret information presented in a bar chart
- To present information in a bar chart, selecting appropriate scales

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

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

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 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 $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$
- 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

Pictogram

Data
Represent
Most common
Least common
Scale
Bar chart
Interpret
Present
Table
Tally
Compare
X-axis ; Y-axis
Frequency
Carrol and Venn diagram
Venn diagram

Fraction
Numerator
Denominator
Equivalent
Unit fraction
Non-unit fraction
Simplify
Whole
Whole number
Add
Subtract
Quantities
Greater than
Less than

<p>Review</p> <p>Measures - Money</p> <ul style="list-style-type: none"> • Find totals of money when shown 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 amounts of money using pound and pence • Subtract amounts of money using pounds and pence • Solve addition and subtraction money problems including giving change. <p>Spring term review and assess</p>	<p>Fractions and decimals</p> <ul style="list-style-type: none"> • 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 • Add fractions with the same denominator (including crossing the ones boundary) • Subtract fractions with the same denominator. • 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 <p>Review</p> <p>Measures - money</p> <ul style="list-style-type: none"> • 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 solve a range of money problems (throughout topic and at the end to combine range of skills) • Solve problems involving converting units of time and adding and subtracting units of time. 	<p>Pounds Pence Convert Order Add Subtract Change Round Estimate Cost Decimal point Calculate</p>
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Summer Term	Summer Term	
<p>Angles and properties of shape</p> <ul style="list-style-type: none"> 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 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 <p>Time</p> <ul style="list-style-type: none"> 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) 	<p>Geometry - properties of shapes</p> <ul style="list-style-type: none"> 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. 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. <p>Time</p> <ul style="list-style-type: none"> 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 Know how to convert between hours, minutes and seconds 	<p>horizontal/ Vertical Perpendicular/ Parallel 2d shape/3d shape Cm/ mm Turn/Angles/ degrees Half turn, full/complete turn Greater than/Less than Regular/irregular Vertex/vertices Faces/ sides Acute / obtuse/ Right angle Compare Classify / properties Quadrilaterals; triangles; scalene; isosceles; equilateral Symmetry/symmetric Orientation</p> <p>Time Analogue Digital 12-hour 24-hour Convert Seconds Minutes Hours Days Weeks</p>

<ul style="list-style-type: none"> • 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 <p>Statistics - Tables</p> <ul style="list-style-type: none"> • 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 <p>Review</p> <p>Measure - mass and capacity</p> <ul style="list-style-type: none"> • 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 • Know that millilitres are a smaller measure than litres and that there are 1000ml in 1l. 	<p>Statistics - Tables</p> <ul style="list-style-type: none"> • 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 <p>Review</p> <p>Measure - mass and capacity</p> <ul style="list-style-type: none"> • Know how to read a scale of different intervals • To know how to convert between grams and kilograms • Know how to convert between centimetres, metres and kilometres • Know how to convert between millilitres and litres • Solve capacity, mass and length problems using the 4 operations <p>Position and direction</p> <ul style="list-style-type: none"> -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 	<p>Fortnight Year Months Half/quarter past To/past o'clock) O'clock</p> <p>Tables Headings Timetables Duration Compare Order</p> <p>Kilogram Gram Litre Millilitre Metric Convert</p> <p>Movement Positions Translations 2D grid Coordinates Quadrant</p>
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<ul style="list-style-type: none"> • 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 <p>3d - shapes</p> <ul style="list-style-type: none"> • 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 <p>Yearly assess and review</p>	<p>Yearly assess and review</p>	<p>Plot Polygon Left/right up/down</p> <p>3d 2d Faces Vertices Nets Orientations</p>
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