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| **Year Group:** | **3** | **4** | **5** | **6** |
| **Autumn 1** | **Number-number and place value** * 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

**Number-addition and subtraction*** add and subtract numbers mentally, including:
* a three-digit number and ones
* a three-digit number and tens
* a three-digit number and hundreds

**Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Measurement*** measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
* measure the perimeter of simple 2-D shapes

**Geometry-Properties of Shapes*** draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
* identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
 | **Number-number and place value** * count in multiples of 6, 7, 9, 25 and 1000
* find 1000 more or less than a given number
* count backwards through zero to include negative numbers
* recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
* order and compare numbers beyond 1000
* identify, represent and estimate numbers using different representations
* round any number to the nearest 10, 100 or 1000

**Number-addition and subtraction*** 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

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

**Geometry-Properties of Shapes*** compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
* identify acute and obtuse angles and compare and order angles up to two right angles by size
* identify lines of symmetry in 2-D shapes presented in different orientations
* complete a simple symmetric figure with respect to a specific line of symmetry.

**Measurement*** 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
* find the area of rectilinear shapes by counting squares
* estimate, compare and calculate different measures, including money in pounds and pence
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
 | **Number-number and place value** * read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
* count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000

**Number-addition and subtraction*** add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

 **Number-multiplication and division*** identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
* know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers
* establish whether a number up to 100 is prime and recall prime numbers up to 19
* multiply and divide numbers mentally drawing upon known facts
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
* solve problems involving multiplication and division, including scaling by simple

fractions and problems involving simple rates.**Geometry-Properties of Shapes*** know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
* draw given angles, and measure them in degrees identify:
* angles at a point and one whole turn (total 360 degrees)
* angles at a point on a straight line and half a turn (total 180)
* other multiples of 90

**Measurement*** convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
* understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
* measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
* calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
 | **Number-number and place value** * read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
* round any whole number to a required degree of accuracy
* solve number and practical problems that involve all of the above

**Number-addition and subtraction, multiplication and division*** multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
* perform mental calculations, including with mixed operations and large numbers
* identify common factors, common multiples and prime numbers
* use their knowledge of the order of operations to carry out calculations involving the four operations
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
* solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

**Measurement*** solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
* convert between miles and kilometres

**Geometry-Properties of Shapes*** illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
* recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
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| **Autumn 2** | **Number-addition and subtraction*** 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.

**Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Number-Fractions*** 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
* compare and order unit fractions, and fractions with the same denominators
* solve problems that involve all of the above.

**Measurement-Time*** 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].

**Statistics*** 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. | **Number-addition and subtraction*** 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

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

**Number-Fractions (including decimals)*** 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

**Geometry-Position and direction*** describe positions on a 2-D grid as coordinates in the first quadrant
* plot specified points and draw sides to complete a given polygon.

**Geometry-Properties of Shapes*** compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
* identify acute and obtuse angles and compare and order angles up to two right angles by size

**Measurement-Time*** read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

**Statistics*** 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.
 | **Number-multiplication and division*** multiply and divide numbers mentally drawing upon known facts
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
* solve problems involving multiplication and division, including scaling by simple

fractions and problems involving simple rates.* multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
* divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

**Number-Fractions (including decimals and percentages)*** compare and order fractions whose denominators are all multiples of the same number
* identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
* read and write decimal numbers as fractions [for example, 0.71 = 71 over 100]
* recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
* round decimals with two decimal places to the nearest whole number and to one decimal place
* read, write, order and compare numbers with up to three decimal places
* solve problems involving number up to three decimal places

**Geometry-Properties of Shapes*** identify 3-D shapes, including cubes and other cuboids, from 2-D representations
* use the properties of rectangles to deduce related facts and find missing lengths and angles
* distinguish between regular and irregular polygons based on reasoning about equal sides and angles

**Statistics*** complete, read and interpret information in tables, including timetables.

  | **Number-addition and subtraction, multiplication and division*** perform mental calculations, including with mixed operations and large numbers
* use their knowledge of the order of operations to carry out calculations involving the four operations
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
* solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
* multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders

 as whole number remainders, fractions, or by rounding, as appropriate for the context **Number-Fractions (including decimals and percentages)*** use common factors to simplify fractions; use common multiples to express fractions in the same denomination
* compare and order fractions, including fractions > 1
* identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy

**Geometry-Properties of Shapes*** draw 2-D shapes using given dimensions and angles
* recognise, describe and build simple 3-D shapes, including making nets
* compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

**Statistics*** interpret and construct pie charts and line graphs and use these to solve problems
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| **Spring 1** | **Number-number and place value** * 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

**Number-addition and subtraction*** add and subtract numbers mentally, including:
* a three-digit number and ones
* a three-digit number and tens
* a three-digit number and hundreds
* 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.

**Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Measurement-Money*** add and subtract amounts of money to give change, using both £ and p in practical contexts

**Geometry-Properties of Shapes*** 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
 | **Number-number and place value*** find 1000 more or less than a given number
* count backwards through zero to include negative numbers
* recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
* order and compare numbers beyond 1000
* identify, represent and estimate numbers using different representations
* round any number to the nearest 10, 100 or 1000
* solve number and practical problems that involve all of the above and with increasingly large positive numbers
* read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

**Number-addition and subtraction*** 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
* Estimate, compare and calculate different measures, including money in pounds and pence

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
* multiply two-digit and three-digit numbers by a one-digit number using formal written layout

**Number-Fractions (including decimals)*** 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
* recognise and write decimal equivalents of any number of tenths or hundredths
* recognise and write decimal equivalents to one quarter, one half and three quarters
* 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 ones, tenths and hundredths
* round decimals with one decimal place to the nearest whole number
* compare numbers with the same number of decimal places up to two decimal places
* solve simple measure and money problems involving fractions and decimals to two decimal places.
 | **Number-number and place value** * read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
* count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
* interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
* round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
* solve number problems and practical problems that involve all of the above

**Number-addition and subtraction*** add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
* use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
* solve problems involving number up to three decimal places

**Number-multiplication and division*** multiply and divide numbers mentally drawing upon known facts
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
* solve problems involving multiplication and division, including scaling by simple

fractions and problems involving simple rates.* multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
* recognise and use square numbers and cube numbers, and the notation for squared and cubed
* calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2 ) and square metres (m2 ) and estimate the area of irregular shapes

**Number-Fractions (including decimals and percentages)*** recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, two fifths + four fifths = six fifths= 1 whole and one fifth]
* add and subtract fractions with the same denominator and denominators that are multiples of the same number

**Geometry-Position and Direction** * identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

**Measurement*** convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
* understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

  | **Number-number and place value** * read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
* round any whole number to a required degree of accuracy
* use negative numbers in context, and calculate intervals across zero
* solve number and practical problems that involve all of the above

**Number-addition and subtraction, multiplication and division*** perform mental calculations, including with mixed operations and large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
* solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

**Number-Fractions (including decimals and percentages)*** add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
* multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, one quarter × one half = one eighth]
* divide proper fractions by whole numbers [for example, one third ÷ 2 = one sixth]
* associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, three eighths)

**Measurement*** recognise that shapes with the same areas can have different perimeters and vice versa
* recognise when it is possible to use formulae for area and volume of shapes
* calculate the area of parallelograms and triangles
* calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].

**Geometry-Position and direction*** describe positions on the full coordinate grid (all four quadrants)
* draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
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| **Spring 2** | **Number-addition and subtraction*** 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

**Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Number-Fractions*** 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
* compare and order unit fractions, and fractions with the same denominators
* solve problems that involve all of the above.
* 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

**Measurement*** measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

**Statistics*** 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.
 | **Number-addition and subtraction*** 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, both written and mental, to use and why
* recognise and use factor pairs and commutativity in mental calculations

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
* multiply two-digit and three-digit numbers by a one-digit number using formal written layout

**Measurement-Time*** read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

**Measurement*** Convert between different units of measure [for example, kilometre to metre; hour to minute]
* estimate, compare and calculate different measures, including money in pounds and pence

**Geometry-Position and direction*** describe positions on a 2-D grid as coordinates in the first quadrant
* plot specified points and draw sides to complete a given polygon.
* describe movements between positions as translations of a given unit to the left/right and up/down

**Geometry-Properties of Shapes*** compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
* identify acute and obtuse angles and compare and order angles up to two right angles by size

**Statistics*** 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.
 | **Number-addition and subtraction*** add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
* use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

**Number-multiplication and division*** multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
* multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
* divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
* solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

**Number-Fractions (including decimals and percentages)*** recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, two fifths + four fifths = six fifths= 1 whole and one fifth]
* add and subtract fractions with the same denominator and denominators that are multiples of the same number
* multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
* recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal fraction

**Measurement*** convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
* understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
* estimate volume and capacity

**Statistics*** solve comparison, sum and difference problems using information presented in a line graph
 | **Number-addition and subtraction, multiplication and division*** perform mental calculations, including with mixed operations and large numbers
* use their knowledge of the order of operations to carry out calculations involving the four operations
* multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders

 as whole number remainders, fractions, or by rounding, as appropriate for the context * solve problems involving addition, subtraction, multiplication and division
* multiply one-digit numbers with up to two decimal places by whole numbers
* use written division methods in cases where the answer has up to two decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy

**Number-Fractions (including decimals and percentages)*** solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

**Algebra*** use simple formulae
* generate and describe linear number sequences
* express missing number problems algebraically
* find pairs of numbers that satisfy an equation with two unknowns
* enumerate possibilities of combinations of two variables.

**Measurement*** solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
* recognise when it is possible to use formulae for area and volume of shapes
* calculate the area of parallelograms and triangles

**Statistics*** interpret and construct pie charts and line graphs and use these to solve problems

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| **Summer 1** | **Number-number and place value** * 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

**Number-addition and subtraction*** 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.

**Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Geometry-Properties of Shapes*** draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
* identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
* 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

**Measurement*** measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
 | **Number-number and place value** * count in multiples of 6, 7, 9, 25 and 1000
* find 1000 more or less than a given number
* count backwards through zero to include negative numbers
* recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
* order and compare numbers beyond 1000
* identify, represent and estimate numbers using different representations
* round any number to the nearest 10, 100 or 1000
* solve number and practical problems that involve all of the above and with increasingly large positive numbers

**Number-addition and subtraction*** 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, both written and mental, to use and why
* estimate, compare and calculate different measures, including money in pounds and pence

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
* multiply two-digit and three-digit numbers by a one-digit number using formal written layout
* recognise and use factor pairs and commutativity in mental calculations

**Number-Fractions (including decimals)*** 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

**Measurement*** convert between different units of measure (kilometre to metre; hour to minute)
* measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
* find the area of rectilinear shapes by counting squares

   | **Number-number and place value** * count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
* interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
* round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
* solve number problems and practical problems that involve all of the above
* read Roman numerals to 1000 (M) and recognise years written in Roman numerals

**Number-addition and subtraction*** add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
* use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
* solve problems involving numbers up to three decimal places

**Number-multiplication and division*** multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
* divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
* solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

**Number-Fractions (including decimals and percentages)*** recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, two fifths + four fifths = six fifths= 1 whole and one fifth]
* add and subtract fractions with the same denominator and denominators that are multiples of the same number

**Geometry-Properties of Shapes*** know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
* draw given angles, and measure them in degrees identify:
* angles at a point and one whole turn (total 360 degrees)
* angles at a point on a straight line and half a turn (total 180)
* other multiples of 90
* use the properties of rectangles to deduce related facts and find missing lengths and angles
* distinguish between regular and irregular polygons based on reasoning about equal sides and angles

**Measurement*** estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
* solve problems involving converting between units of time
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

   | **Number-number and place value** * read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
* round any whole number to a required degree of accuracy
* use negative numbers in context, and calculate intervals across zero
* solve number and practical problems that involve all of the above

**Number-addition and subtraction, multiplication and division*** perform mental calculations, including with mixed operations and large numbers
* use their knowledge of the order of operations to carry out calculations involving the four operations
* multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders

 as whole number remainders, fractions, or by rounding, as appropriate for the context * solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

**Number-Fractions (including decimals and percentages)*** add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
* multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, one quarter × one half = one eighth]
* divide proper fractions by whole numbers [for example, one third ÷ 2 = one sixth]
* solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

**Ratio and Proportion*** solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
* solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
* solve problems involving similar shapes where the scale factor is known or can be found
* solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
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| **Summer 2** | **Number-addition and subtraction*** 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.

 **Number-multiplication and division*** recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
* to write and calculate mathematical statements for multiplication and division using the multiplication tables, including for 2 digit numbers times one digit numbers, using mental and progressing to written methods
* to solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems

**Number-Fractions*** 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
* add and subtract fractions with the same denominator within one whole [for example, five sevenths + one seventh = six sevenths]
* recognise and show, using diagrams, equivalent fractions with small denominators
* solve problems that involve all of the above

**Measurement-Time*** 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].

**Statistics*** 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.
 | **Number-addition and subtraction*** 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, both written and mental, to use and why
* recognise and use factor pairs and commutativity in mental calculations

**Number-multiplication and division*** 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
* solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
* multiply two-digit and three-digit numbers by a one-digit number using formal written layout

**Measurement-Time*** read, write and convert time between analogue and digital 12- and 24-hour clocks
* solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

**Measurement*** Convert between different units of measure [for example, kilometre to metre; hour to minute]
* estimate, compare and calculate different measures, including money in pounds and pence

**Geometry-Position and direction*** describe positions on a 2-D grid as coordinates in the first quadrant
* plot specified points and draw sides to complete a given polygon.
* describe movements between positions as translations of a given unit to the left/right and up/down

**Geometry-Properties of Shapes*** compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
* identify acute and obtuse angles and compare and order angles up to two right angles by size
* identify lines of symmetry in 2D shapes presented in different orientations

**Statistics*** 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.
 | **Number-addition and subtraction*** add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

**Number-multiplication and division*** multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
* solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
* multiply and divide numbers mentally drawing upon known facts
* solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

**Number-Fractions (including decimals and percentages)*** recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal fraction
* solve problems which require knowing percentage and decimal equivalents of one half, one quarter, one fifth, two fifths and four fifths and those fractions with a denominator of a multiple of 10 or 25.

**Measurement*** measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
* calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
* solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

 **Statistics*** complete, read and interpret information in tables, including timetables.
* solve comparison, sum and difference problems using information presented in a line graph
 | **Number-addition and subtraction, multiplication and division*** perform mental calculations, including with mixed operations and large numbers
* use their knowledge of the order of operations to carry out calculations involving the four operations
* multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders

 as whole number remainders, fractions, or by rounding, as appropriate for the context * solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

**Number-Fractions (including decimals and percentages)*** use common factors to simplify fractions; use common multiples to express fractions in the same denomination
* add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
* multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, one quarter × one half = one eighth]
* solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

**Algebra*** use simple formulae
* generate and describe linear number sequences
* express missing number problems algebraically
* find pairs of numbers that satisfy an equation with two unknowns
* enumerate possibilities of combinations of two variables.

**Measurement*** solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

**Statistics*** interpret and construct pie charts and line graphs and use these to solve problems
* calculate and interpret the mean as an average
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