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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. |
| **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 |
| **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. |
| **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 |
| **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. |
| **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 |