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| **Place Value** |
|  | **Year 3**  | **Year 4**  | **Year 5**  | **Year 6**  |
| **Place value:** **Counting**  | Count from 0 in multiples of 4, 8, 50 and 100.  Find 10 or 100 more or less than a given number  | Count in multiples of 6, 7, 9, 25 and 1000.  Count backwards through zero to include negative numbers  | Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000  Count forwards and backwards with positive and negative whole numbers, including through zero  |   |
| **Place Value:** **represent**  | identify, represent and estimate numbers using different representations  Read and write numbers up to 1000 in numerals and words  | identify, represent and estimate numbers using different representations  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  | Read, write (order and compare) numbers to at least 1,000,000 and determine the value of each digit.  Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.  | Read, write (order and compare) numbers to at least 10,000,000 and determine the value of each digit.   |
| **Place Value:** **Use PV and compare.**  | Recognise the place value of each digit in a three digit number (hundreds, tens and ones) Compare and order numbers up to 1000   | Find 1000 more or less than a given number.  Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones)  Compare and order numbers beyond 1000  | (Read, Write), order and compare numbers to at least 1,000,000 and determine the value of each digit.  | (Read, Write), order and compare numbers to at least 10,000,000 and determine the value of each digit.  |
| **Place value:** **Problems and rounding**  | Solve number problems and practical problems involving these ideas  | Round any number to the nearest 10, 100 or 1000.  Solve number and practical problems that involve all of the above with increasingly large positive numbers  | Interpret negative numbers in context.  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  | Round any whole number to a requires degree of accuracy.  Use negative numbers in context, and calculate intervals across zero.  Solve number problems that involve all of the above.  |
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| **Addition and Subtraction** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Addition and subtraction:**  **Recall, represent, Use**  | estimate the answer to a calculation and use inverse operations to check answers  | estimate and use inverse operations to check answers to a calculation.  | use rounding to check answers to calculations and determine in the context of a problem levels of accuracy  |   |
| **Addition and Subtraction:** **Calculations**  | add and subtract numbers mentally including: a 3 digit number and ones a 3 digit number and 10s a three digit number and hundreds.  Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction  | add and subtract numbers with up to four digits using formal written methods of columnar addition an subtraction where appropriate.  | 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  | 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.  |
| **Addition and Subtraction:** **Solving Problems**  | solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction  | solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.  | 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 and a combination of these including understanding the meaning of the equals sign  | solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why  |
|  | **Multiplication and Division** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Multiplication and Division:** **Recall, Represent, Use**  | recall and use multiplication and division facts for the three four and eight multiplication tables  | recall multiplication and division facts for multiplication tables up to 12 x 12  use place value known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers  recognise and use factor pairs and commutativity mental calculations  | identify multiples and factors including finding all factor pairs of a number and common factors of 2 numbers  know and use vocabulary of prime numbers, prime factors and composite(non prime) numbers  establish whether a number up to 100 is prime and recall prime numbers up to 19  recognise and use square numbers and cube numbers the notation for squared and cubed.  | identify common factors, common multiples and prime numbers  use estimation to check to answers to calculations and determine, in the context of a problem. an appropriate degree of accuracy.  |
| **Multiplication and Division:** **calculation**  | Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers times one digit numbers, using mental and progressing to formal written methods  | multiply two digit and three digit numbers by a one digit number using formal written layout  | multiply numbers up to four digits by a one or two digit number using a formal written method including long multiplication for two digit numbers  multiply and divide numbers mentally drawing upon known facts  divide numbers up to four digits by a one digit number using formal written method of short division and interpret remainders appropriately for the context   multiply and divide whole numbers and those involving decimals by 10,100 and 1000  | multiply multi digit numbers up to four digits by a two digit whole number using the formal written method of long multiplication  divide numbers up to four 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  divide numbers up to four digits by a two digit number using the formal written method of short division where appropriate, interpreting remainders according to the context  perform mental calculations including with mixed operations and large numbers  |
| **Multiplication and Division:** **Solve Problems**  | solve problems including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects  | solve problems involving multiplying and adding, including using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects  | solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes   solve problems involving multiplication and division, including scaling by simple fraction and problems involving simple rates  | solve problems involving addition subtraction multiplication and division  |
| **Multiplication and Division:** **Combined Operations**  |   |   | solve problems involving addition subtraction multiplication and division and a combination of these, including understanding the meaning of the equals sign  | use their knowledge of the order of operations to carry out calculations involving the four operations  |
| **Fractions, decimals and percentages** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Fractions:** **Recognise and Write**  | count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one digit numbers in or quantity's by 10  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  | count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10  | identify name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths  recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements>1 as mixed number for example  |   |
| **Fractions:** **Compare**  | recognise an show using diagrams, equivalent fractions with small denominators  compare and order unit fractions, and fractions with the same denominators  | recognise an show using diagrams, families of common equivalent fractions  | compare and order fractions whose denominators are all multiples of the same number  | use common factors to simplify fractions; use common multiples to express fractions in the same denomination nomination  fractions compare and under order fractions, including fractions>1  |
| **Fractions:** **Calculations**  | add and subtract fractions with the same denominator within one whole for example 5/7 +1/7 = 6/7  |   |   |   |
| **Fractions:** **Solve Problems**  | solve problems that involve all of the above  | solve problems involving increasingly hard fractions to calculate quantities, and fractions to divide quantities, including non unit fractions where the answer is a whole number  |   |   |
| **Decimals:** **Recognise and write**  |   | recognise and write decimal equivalents of any number of tenths or hundredths   recognise andwrite decimal equivalent to 1/4 ½, 3/4  | read and write decimal numbers as fractions for example 0.71 = 71/100   recognise and use thousandths and relate them to tenths hundredths and decimal equivalents  | identify the value of each digit in numbers given to three decimal places  |
| **Decimals:** **Compare**  |   | 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  | 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  |   |
| **Decimals:** **Calculations and Problems**  |   | find the effect of dividing a one or two digit number by 10 and 100 identifying the value of the digits in the answers as ones, tenths and hundredths  | solve problems involving number up to three decimal places  | multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places  multiply 1 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 specific degrees of accuracy  |
| **Fractions, Decimals and Percentages**  |   | solve simple measure and money problems involving fractions and decimals to two decimal places  | recognise the percent symbol and understand that percent relates to number of parts per hundred and write percentages as a fraction with the denominator 100 and as a decimal  Solve problems which require knowing percentage and decimal equivalents of ½, 1/4 , 1/5, 2/5, 4/5 and those fractions with the nominator of a multiple of 10 or 25  | associate a fraction with division and calculate decimal fraction equivalents for a simple fraction  recall and use equivalence is between simple fractions decimals and percentages including in different contexts  |

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| **Ratio and Proportion** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Ration 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 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  |
| **Algebra** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Algebra**  |   |   |   | use simple formula  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  |
| **Measures** |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Using Measure**  | Measure, compare, add and subtract lengths (m/cm/mm); mass (kg,g); volume/capacity (l/ml)  | convert between different units of measure  estimate compare and calculate different measures  | convert between different units of metric measure  understand and use approximate equivalence is between metric units an common imperial units such as inches pounds and pints   use all four operations to solve problems involving measure using decimal notation including scaling  | 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 notations up to three decimal places  convert between miles and kilometres  |
| **Measurement: Money**  | add and subtract amount of money to give change using both pounds and pence in practical context  | Estimate, compare and calculate different measures including money in pounds and pence  | use all four operations to solve problems involving measure for example money  |   |
| **Measurement:** **Time**  | tell and write the time from an analogue clock including using Roman numerals from I too 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, am/pm ,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 a particular event or task  | 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  | solve problems involving converting between units of time  | use read write and convert between standard units converting measurements of time from a smaller unit of measure to a larger unit and vice versa  |
| **Measurement:** **Perimeter, Area, Volume**  | measure the perimeter of simple 2D shapes  | measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres  find the area of rectilinear shapes by counting squares  | 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 and estimate the area of irregular shapes  estimate volume for example using one centimetre cubed blocks to build cuboids including cubes and capacity for example using water  | recognise that shapes with the same area 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 and cubic metres and extending to other units  |
| Geometry |
|  | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Geometry:** **2D shapes**  | draw 2D shapesidentify and describe the properties of 2D shapes, including the number of sides and line of symmetry in a vertical line identify 2D shapes on the surface of 3D shapes )for example a circle on a cylinder and a triangle on a pyramid)compare and sort common 2D shapes and everyday objects | compare and classify geometric shapes including quadrilaterals and triangles based on their properties and size  identify lines of symmetry in 2D shapes presented on different orientations  | distinguish between regular and irregular polygons based on reasoning about equal sides and angles   use the properties of rectangles to juice related facts and find missing lengths and angles  | draw 2D shapes using given dimensions and angles  compare and classify geometric shapes based on their properties and sizes  illustrate and name parts of circles including radius and diameter and circumference and know that the diameter is twice the radius  |
| **Geometry:** **3D shapes**  | make 3D shapes using modelling materials recognise 3D shapes in different orientations and describe them  |   | identify 3D shapes including cubes and other cuboids from 2D representations  | recognise describe and build simple 3D shapes including making nets  |
| **Geometry:** **Angles and lines**  | recognise angles as a property of shape or a description of a turn   identify right angles recognise that two right angles make half a turn three make 3/4 of a turn and four a complete turn; identify whether angles are greater than or less than a right angle   identify horizontal and vertical lines and pairs of perpendicular and parallel lines  | identify acute and obtuse angles and compare and order angles up to two right angles by size   identify lines of symmetry in 2D shapes represented in different orientations  complete a simple symmetrical figure with respect to a specific line of symmetry  | 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 angles at a point on a straight line and half a turn   other multiples of 90 degrees  | find unknown angles in any triangles, quadrilaterals and regular polygons  recognise angles where they meet at a point, on a straight line or are vertically opposite and find missing angles  |
| **Geometry:** **Position and Direction**  |   | describe positions on a 2D grid as coordinates in the first quadrant  describe movements between positions as translations of a given unit to the left/ right and up/ down  plot specified points and draw sides to give to complete a given Polygon  | identify describe an represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed  | describe positions on the full coordinate grid all 4 quadrants  draw and translate simple shapes on the coordinate plane, and reflect them in the axes  |
| **Statistics:** **Present and interpret**  | interpret and present data using bar charts, pictograms and tables  | interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs  | complete read and interpret information in tables including timetables  | interpret and construct pie charts and line graphs and use these to solve problems  |
| Statistics |
|  | Year 3 | Year 4 | Year 5 | Year 6 |
| **Statistics:** **Solve Problems**  | solve one step and two step questions (for example How many more? and How many fewer?) using information presented in scaled bar chart and pick to grammes and tables  | solve comparison, sum and difference problems using information presented in bar charts, pictograms ,tables and other graphs  | solve comparison, sum and difference problems using information presented in a line graph  | calculate and interpret the mean as an average  |