Number

Count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number

Count, read and write numbers to 100 in numerals

Count in multiples of 2s, 5s and 10s

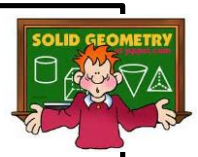
Given a number, identify one more and one less

Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least

Read and write numbers from 1 to 20 in numerals and words

Year 1
End of year expectations

Geometry (including position and direction)



Recognise and name common 2-D and 3-D shapes, including:

- 2-D shapes e.g. oblong, square, circle, triangle
- 3-D shapes e.g. cube, cuboid, pyramid, sphere

Describe position, direction and movement, including whole, half, quarter and three-quarter turns e.g. describing a route using language such as forward, backward, left and right

Fractions

Recognise, find and name half as 1 of 2 equal parts of an object, shape or quantity
Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity

Addition and Subtraction

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=)

Represent and use number bonds and related subtraction facts within 20 e.g. 5 + 2 = 7, 7 – 2 = 5, 7 – 5 = 2

Add and subtract one-digit and two-digit numbers to 20, including 0

Solve one-step problems that involve addition and subtraction using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9

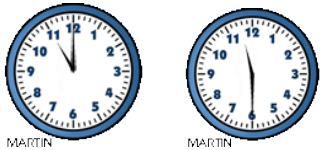
Multiplication and Division

Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with support of the support of an adult

Measurement

Compare, describe and solve practical problems for:

- Lengths and heights e.g. long/short, longer/shorter, tall/short, double/half
- Mass/weight e.g. heavy/light, heavier than/lighter than
- Capacity and volume e.g. full/empty, more than, less than, half, half full, quarter
- Time e.g. quicker, slower, earlier, later



Measure and begin to record the following:

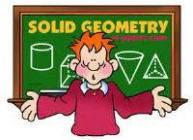
- Lengths and heights
- Mass/weight
- Capacity and volume
- Time (hours, minutes, seconds)
- Recognise and know the value of different denominations of coins and notes
- Sequence events in chronological order using language such as after, next, first, today, yesterday, tomorrow, morning, afternoon, evening

Recognise and use language relating to dates, including days of the week, weeks, months and years

Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Year 2
End of year expectations

Number
Count in steps of 2, 3, and 5 from zero, and in tens from any number, BOTH forwards and backwards
Recognise the place value of each digit in a two-digit number (tens and ones)
Identify, represent and estimate numbers
Compare and order numbers from 0 up to 100; use < (less than) > (more than) and = (equals) signs
Read and write numbers up to at least 100 in numerals AND in words
Use place value and number facts to solve problems



Geometry (including position and direction)
Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line
Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
Compare and sort common 2-D and 3-D shapes and everyday objects
Order and arrange combinations of mathematical objects in patterns and sequences
Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

Fractions
Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of object or a quantity
Write simple fractions, for example ½ of 6 = 3 and recognise the equivalence of ½ and 2/4

Statistics
Interpret and construct simple pictograms, tally charts, block diagrams and tables
Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
Ask-and-answer questions about totalling and comparing categorical data

Addition and Subtraction
Use concrete objects and pictorial representations to solve problems, mentally and on paper, with addition and subtraction including money and measures
Read and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 e.g. 1 + 6 = 7 so 10 + 60 = 70 or 70 – 10 = 60 and 7 – 1 = 6
Add and subtract numbers using concrete objects, pictorial representations, and mentally including adding or subtracting one or ten to/from a two-digit number, adding and subtracting two two-digit numbers and adding three one-digit numbers
Know and show that addition of numbers can be done in any order and that subtraction of one number from another cannot
Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve number problems

Multiplication and Division


Recall and use multiplication AND division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x) and division (÷) and equals (=) signs
Show that multiplication of two numbers can be done in any order and division of one number by another cannot
Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context e.g. money and measures

Measurement
Choose and use appropriate standard units to estimate length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
Compare and order lengths, mass, volume/capacity and record the results using >, < and =
Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
Find different combinations of coins that equal the same amounts of money
Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
Compare and sequence intervals of time
Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
Know the number of minutes in an hour and the number of hours in a day

Year 3
End of year expectations

Number and Place Value

Count in 4s, 8s, 50s and 100s from any number
Read and write numbers up to 1000 in numbers and words
Compare and order numbers up to 1000
Recognise the place value of each digit in three-digit numbers (hundreds, tens and ones)
Find ten more or ten less than a given number
Identify, estimate and represent numbers in different ways
Solve number problems and practical problems that involve all of the above

Measurement

Compare and measure: lengths (mm. cm. m), masses (g,kg), volumes/capacities (ml,l)
Estimate, tell and write the time on an analogue clock to the nearest minute (12 and 24 hour)
Know and use facts about time e.g. 60 minutes in an hour, 365 days in a year/366 in a leap year and vocabulary about time e.g. am/pm
Compare time in terms of seconds, minutes and hours using vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
Calculate durations of time for example to calculate the time taken between particular events
Measure the perimeter of simple 2-D shapes
Add and subtract amounts of money, using both pounds and pence (including giving change)
Add and subtract in the context of length, mass and capacity/volume

Calculation

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 an efficient written method
Estimate the answers to a calculation and use the inverse to check answers
Solve missing number problems using number facts, place value, and more complex addition and subtraction

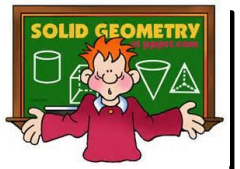
Multiplication and Division

Recall and use multiplication and division facts for the 3, 4, and 8 multiplication tables
Multiply and divide numbers mentally and using an efficient written method (up to TU x U and TU ÷ U)
Solve problems, including missing number problems, involving multiplication and division, including scaling problems

Fractions

Count up and down in tenths
Understand what tenths mean
Recognise, find and write fractions of a set of objects e.g. ¼ of 12 pencils or ¾ of 20 shells
Recognise and show, using diagrams, equivalent fractions
Compare and order fractions with the same denominator
Add and subtract fractions with the same denominator within one whole e.g. 5/7 + 1/7 = 6/7
Solve problems that involve all of the above

Geometry



Identify horizontal, vertical, perpendicular an parallel lines in shapes
Draw 2-D shapes using given dimensions and angles
Make and describe 3-D shapes
Recognise angles within a shape as a right angle, less than a right angle or greater than a right angle and as an angle of turn

Statistics

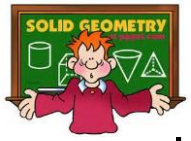
Solve one-step and two-step questions (e.g. 'How many more?' and 'How many fewer?') using information presented in scaled bar charts, pictograms and tables

Year 4
End of year expectations

Number

Count in multiples of 6, 7, 9, 25 and 1,000
Find 1,000 more or less than a given number
Count backwards through 0 to include negative numbers
Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)
Order and compare numbers beyond 1,000
Identify, represent and estimate numbers using different representations
Round any number to the nearest 10, 100 or 1,000
Solve number and practical problems that involve all of the above and with increasingly large positive number

Geometry



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 2 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
Describe positions on a 2-D 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 complete a given polygon

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

Calculation

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

Multiplication and Division

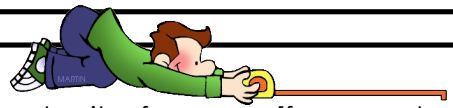
Recall multiplication and division facts for multiplication tables up to 12 × 12
Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
Recognise and use factor pairs and commutativity in mental calculations
Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
Divide two-digit numbers by a single digit (leading to short division)
Solve problems involving multiplying and division, including scaling problems
Solve problems involving division including questions such as 3 cakes shared equally between 10 children.

Fractions

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 100 and dividing tenths by 10
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
Recognise and write decimal equivalents of any number of tenths or hundreds
Recognise and write decimal equivalents to 1/4, 1/2, 3/4

Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
Round decimals with 1 decimal place to the nearest whole number
Compare numbers with the same number of decimal places up to 2 decimal places
Solve simple measure and money problems involving fractions and decimals to 2 decimal places

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 shapes, made up of rectangles, by counting squares
Estimate, compare and calculate different measures, including money in pounds and pence
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

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 from any given number up to 1,000,000
Interpret negative numbers in context e.g. temperature, count forwards and backwards with positive and negative whole numbers, including through 0
Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
Solve number problems/practical problems that involve all of the above
Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals

Fractions

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
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, 2/5 + 4/5 = 6/5 = 1 1/5]
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
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
round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
read, write, order and compare numbers with up to 3 decimal places
solve problems involving number up to 3 decimal places
recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction
solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5and those fractions with a denominator of a multiple of 10 or 25

Year 5
End of year expectations

Calculation

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
Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Multiplication and Division

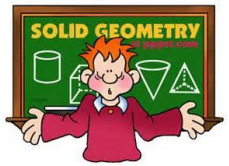
Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
Establish whether a number up to 100 is prime and recall prime numbers up to 19
Multiply numbers up to 4 digits by a 1- or 2-digit number using a formal written method, including long multiplication for 2-digit numbers
Multiply and divide numbers mentally, drawing upon known facts e.g. 720 ÷ 90 = 8
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
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)
Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Year 5
End of year expectations

Geometry

Identify 3-D shapes, including cubes and other cuboids, from 2-D representations

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 1 whole turn (total 360°)
- 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

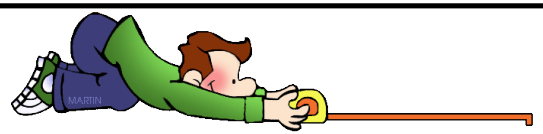
Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

Statistics

Solve comparison, sum and difference problems using information presented in a line graph

Complete, read and interpret information in tables, including timetables

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), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes

Estimate volume [for example, using 1 cm^3 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 and Place Value

Read, write, order and compare numbers up to 10,000,000 determine the value of each digit
Round any whole number to a required degree of accuracy
Use negative numbers in context e.g. temperature, and calculate intervals across 0
Solve number and practical problems that involve all of the above

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
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, 1/4 × 1/2 = 1/8]
Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 =1/6]
associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]
Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
Multiply one-digit numbers with up to 2 decimal places by whole numbers
Use written division methods in cases where the answer has up to 2 decimal places
Solve problems which require answers to be rounded to specified degrees of accuracy
Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Year 6
End of year expectations

Calculation
Addition, 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

Divide numbers up to 4 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 identify common factors, common multiples and prime numbers

Use knowledge of the order of operations to carry out calculations involving the 4 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

Ratio and Proportion

Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts

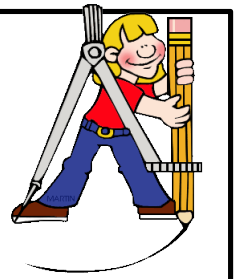
Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison

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

Year 6
End of year expectations

Geometry



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

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

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

Algebra

Use simple formulae e.g. l x w (length x width) to find area

Generate and describe linear number sequences

Express missing number problems algebraically

Find pairs of numbers that satisfy an equation with 2 unknowns

Enumerate possibilities of combinations of 2 variables

Measurement

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 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 3 decimal places

Convert between miles and kilometres
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 (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]

Statistics

Interpret and construct pie charts and line graphs and use these to solve problems
Calculate and interpret the mean as an average