

Year 6 - Maths

Number - Place Value

To read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

- I can remember reading and writing numbers to 1000
- I can remember reading and writing numbers to 100,000
- I can read and write number to 1,000,000
- I can read and write numbers to 10,000,000
- I can recognise the value of each digit up to 10,000,000
- I can use terms: units; tens, hundreds, thousands, ten thousands, hundred thousands, one million and ten million correctly
- I can partition any number up to 10,000,000 showing the value of each digit
- I can compare numbers up to 10,000,000
- I can order numbers up to 10,000,000

To round any whole number

- I can round a decimal number to the nearest whole number
- I can round a 3-digit number to the nearest 10
- I can round any 5-digit number to the nearest thousand
- I can round any 6-digit number to the nearest ten thousand
- I can round any 7-digit number to the nearest hundred thousand
- I can round any 8-digit number to the nearest million
- I can given a rounded number, work out what the original number could have been
- I can given a rounded number, work out what the smallest and largest original number could have been

To use negative numbers in context and calculate intervals across zero

- I can interpret temperatures at minus °C on a thermometer
- I can calculate the interval from -20 to + 100
- I can calculate the interval from + 30 to -30
- I can add any 2 negative numbers together
- I can deal with negative numbers in a problem solving format
- I can express what happens when subtracting a negative number from another negative number

Number - Addition, Subtraction, Multiplication & Division

To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method

- I can multiply TU \times U
- I can multiply HTU \times U
- I can multiply ThHTU \times U
- I can multiply a 4-digit number by a TU number
- I can multiply a 4-digit number by a TU number using a written formal method

To divide numbers up to 4 digits by a two-digit whole number using the formal written method

- I can divide numbers with up to 4-digits by a single-digit number with and without remainders
- I can divide numbers with up to 4-digits by a 2-digit number up to 20 without remainder
- I can divide numbers with up to 4-digits by a 2-digit number up to 20 with remainder
- I can divide numbers with up to 4-digits by any 2-digit number with and without remainder
- I can use rounding up to express answers as a whole number
- I can solve problems which involve dividing by a 2-digit number

To perform mental calculations, including with mixed operations and large numbers

- I can recall rapidly all the number facts associated with the times tables to $\times 12$
- I can confidently respond instantaneously to any times table (to $\times 12$) question you are given
- I can recognise multiples of 10 from an original times table fact
- I can expand instantaneous responses to include multiples of 10
- I can double and halve large numbers
- I can multiply or divide when halves or quarters are involved
- I can explain how to tackle a problem with several different operations
- I can quickly get my head around a reasoning and thinking style problem
- I can respond logically to problems that are presented to you
- I can tackle a problem with several different operations knowing which to deal with first

To identify common factors, common multiples and prime numbers

- I can explain what a prime number is
- I can identify what a factor is
- I can identify what a multiple is
- I can name all prime numbers to 100
- I can identify common factors in two given numbers
- I can identify common multiples in two given numbers

To use their knowledge of the order of operations to carry out calculations involving the four operations

- I can explain that when I have a number sentence with more than one operation then the answer can differ according to the order you deal with operations
- I can explain that by using a bracket around certain operations in a multi-operation number sentence it can alter the outcome
- I can explain the rules associated with BODMAS when deciding on the order of operations
- I can apply the rules of BODMAS to solve number sentence problems

Number - Addition, Subtraction, Multiplication & Division

To solve addition and subtraction multi-step problems

- I can read problems carefully and look for key words before attempting to solve it
- I can work out an approximate answer before tackling a problem
- I can solve word problems involving addition with numbers up to 10,000,000
- I can solve word problems involving subtraction with numbers up to 10,000,000
- I can solve word problems with mixed operations with numbers up to 10,000,000
- I can check the reasonableness of my answer

To solve multiplication and division multi-step problems

- I can read problems carefully and look for key words before attempting to solve it
- I can work out an approximate answer before tackling a problem
- I can solve word problems involving multiplication with numbers up to 10,000,000
- I can solve word problems involving division with numbers up to 10,000,000
- I can solve word problems with mixed operations with numbers up to 10,000,000
- I can check the reasonableness of my answer

To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

- I can appreciate why estimating can sometimes be a good option
- I can think of different situations when estimating would be sensible
- I can use rounding when it is appropriate to do so
- I can explain when to estimate and make decisions based on that estimation
- I can explain the reasoning behind your estimating

Number - Fractions (including decimals and percentages)

To use common factors to simplify fractions and use common multiples to express fractions in the same denominator

- I can recognise $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ in other fractional forms
- I can when it is possible, simplify a fraction to its lowest form

To compare and order fractions, including fractions > 1

- I can compare fractions by rewriting them so that they have the same denominator
- I can order fractions so that the lowest fraction comes first
- I can change an improper fraction into a mixed fraction
- I can find the fractional value of a given amount of money, length, mass or capacity

To add and subtract fractions with different denominators and mixed numbers

- I can add and subtract fractions with the same denominator
- I can work out the common denominator for a pair of fractions with different denominators
- I can add any 2 fractions with different denominators
- I can add 2 mixed numbers where the fractional values have different denominators
- I can subtract 2 fractions with different denominators
- I can subtract 2 mixed numbers where the fractional values have different denominators
- I can solve problems involving fractions with different denominators in real contexts

To multiply simple pairs of proper fractions, writing the answer in its simplest form

- I can reduce any fraction to its simplest form
- I can write an improper fraction as a mixed number
- I can multiply a whole number by a fraction
- I can multiply a whole number by a fraction and express the answer in its simplest form
- I can multiply two fractions together
- I can multiply two fractions together and express the answer in its simplest form
- I can multiply two improper fractions
- I can multiply two improper fractions and express the answer in its simplest form

To divide proper fractions by whole numbers

I can write an improper fraction as a mixed number

I can divide a whole number by a fraction

I can divide a proper fraction by a whole number

I can divide a proper fraction by a whole number and give the answer in its simplest form

To associate a fraction with division and calculate decimal fraction equivalents

- I can identify 0.1 is the same as $\frac{1}{10}$
- I can identify 0.2 is the same as $\frac{1}{5}$
- I can identify 0.5 is the same as $\frac{1}{2}$
- I can identify 0.25 is the same as $\frac{1}{4}$
- I can identify 0.75 is the same as $\frac{3}{4}$
- I can calculate the decimal fraction equivalent for all fractional values where the denominator is 3, 4, 5, 6, 8 or 10

To identify the value of each digit in numbers given to three decimal places

- I can write numbers involving three decimal places
- I can read numbers involving three decimal places
- I can recognise the place value of: tenths, hundredths and thousandths

Number - Fractions (including decimals and percentages)

To multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places

- I can recognise the value of each digit in a number including tenths, hundredths and thousandths
- I can multiply and divide a number by 10 and 100 giving an answer to one decimal place
- I can multiply and divide a number by 10 and 100 giving an answer to two decimal places
- I can multiply and divide a number by 1000 giving an answer to one or two decimal place
- I can multiply and divide a number by 10 giving an answer to three decimal places
- I can multiply and divide a number by 100 giving an answer to three decimal places
- I can multiply and divide a number by 1000 giving an answer to three decimal places
- I can answer word problems related to multiplying and dividing by 10, 100 and 1000 when there are decimals involve

To multiply one-digit numbers with up to two decimal places by whole numbers

- I can multiply units and tenth x units
- I can multiply units, tenths and hundredths x units

To use written division methods in cases where the answer has up to two decimal places

- I can divide numbers with up to 4-digits by a 1 or 2-digit numbers up to 20 with remainder
- I can divide numbers with up to 4-digits by any 1 or 2-digit number with and without remainder
- I can divide numbers up to 4-digits carrying the whole remainders to the tenths
- I can divide numbers up to 4-digits carrying the whole remainders to the tenths and hundredths
- I can divide numbers up to 4-digits giving an answer to two decimal places

To recall and use equivalences between simple fractions, decimals and percentages

- I can remember that $\frac{1}{10}$ can be represented as 0.1
- I can remember that $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ can be represented as 0.25, 0.5 and 0.75 respectively
- I can solve problems by finding 0.1, 0.25, 0.5 and 0.75 of given amounts
- I can represent fractions with denominators of 2, 3, 4, 5, 6, 8 or 10 as decimal fractions
- I can remember and understand the term 'percent'
- I can workout what the percentage of a given fraction or decimal fraction is
- I can find the percentage of a given amount

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

- I can show an understanding that quantities change at the same rate
- I can find equivalent ratios
- I can solve problems involving two quantities where the scale factor is known
- I can solve problems involving two quantities where the scale factor can be found
- I can solve problems involving missing values using multiplication
- I can solve problems involving missing values using division

To solve problems involving the calculation of percentages

- I can recognise 50% as being a half of the original value
- I can recognise 25% as being a quarter of the original value
- I can recognise 75% as being three quarters of the original value
- I can recognise 10% as being a tenth of the original value
- I can find 1% of a value by dividing by 100
- I can find 25%, 50% and 75% of any given value
- I can find 10%, 20%, 30%, etc. of a given value
- I can find any percentage of a given value

To solve problems involving similar shapes where the scale factor is known or can be found

- I can find equivalent ratios
- I can solve problems involving similar shapes where the scale factor is known
- I can solve problems involving similar shapes where the scale factor can be found

To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

- I can relate fractions to multiplication and division
- I can simplify fractions by cancelling common factors
- I can find fractions of a whole number quantities
- I can solve problems involving grouping unequal groups
- I can solve problems involving sharing unequal groups

To generate and describe linear number sequences

- I can explain what an equation is
- I can work out calculations when given value of 2 letters
- I can use rules algebraically for known relationship
- I can solve problems which require you to think algebraically
- I can use known facts to calculate two unknowns

To use simple formulae and express missing number problems algebraically

- I can explain what an equation is
- I can find a missing number in an equation involving addition
- I can find a missing number in an equation involving subtraction
- I can explain that the expression $2a$ means 2 times the value of a
- I can work out equations involving missing amounts

To find pairs and of numbers that satisfy an equation with two unknowns

- I can explain what an equation is
- I can work out calculations when given value of 2 letters
- I can use rules algebraically for known relationship
- I can solve problems which require you to think algebraically
- I can use known facts to calculate two unknowns

To find possibilities of combinations of two variables

- I can explain what an equation is
- I can work out calculations when given value of 2 letters
- I can use rules algebraically for known relationship
- I can solve problems which require you to think algebraically
- I can use known facts to calculate two unknowns

To solve problems involving the calculation and conversion of units of measure

- I can use convert between cms and metres and metres and Km using decimal notation up to 3 decimal places
- I can use convert between grams. and Kg using decimal notation up to 3 decimal places
- I can use convert between ml. and litres using decimal notation up to 3 decimal places
- I can convert between seconds and minutes and minutes and hours and between days and weeks and months
- I can convert between miles and Km and answer problems related to this
- I can answer questions related to speed using both miles and Km and converting between both

To use, read, write and convert between standard units

- I can explain how many ml make a litre; grams in a Kg; metres in a Km and centimetres in a metre
- I can explain that there are 60 seconds in each minute and 60 minutes in an hour
- I can know that measuring temperature in centigrade often involves negative numbers
- I can convert between smaller units of measure and larger ones for length; mass and volume
- I can convert between any measurement of time

To convert between miles and kilometres

- I can explain the relationship between miles and kilometres
- I can explain the number of kilometres in 1 mile
- I can recall the formula for converting m:km
- I can use the formula to calculate distances
- I can use a conversion graph

To recognise that shapes with the same areas can have different perimeters and vice versa

- I can work out the area of a given square or rectangle
- I can work out the perimeter of a given square or rectangle
- I can find out two rectangles that may have the same perimeter but a different area
- I can solve problems related to area and perimeter

To recognise when it is possible to use formulae for area and volume of shapes

- I can tell someone how to work out the area of a square
- I can tell someone how to work out the area of a rectangle
- I can tell someone how to work out the area of a right-angled triangle
- I can tell someone how to work out the volume of a cube
- I can tell someone how to work out the volume of a cuboid
- I can identify when it is possible to apply a formula to work the area of an irregular 2D shape
- I can identify when it is possible to apply a formula to work the volume of an irregular 3D shape

To calculate the area of parallelograms and triangles

- I can use the formula to work out the area of a right-angled or an isosceles triangle
- I can use the formula to work out the area of a parallelogram

To calculate, estimate and compare volume of cubes and cuboids using standard

- I can explain that volume is measured in cm^3 or m^3
- I can use cubes to work out the volume of a given shape
- I can estimate the volume of shapes
- I can check the accuracy of volume estimates

To draw 2-D shapes using given dimensions and angles

- I can draw a square accurately once given the length of the side
- I can draw a rectangle accurately once given the lengths of the pair of sides
- I can draw an equilateral triangle accurately once given the length of the side
- I can draw an isosceles triangle accurately once given the length of the side and angles
- I can draw a right-angled triangle accurately once given the length of the side and one angles
- I can draw any triangles once given the length of the sides or angles or a combination of sides and angles
- I can draw a regular pentagon; hexagon and octagon

To recognise, describe and build simple 3-D shapes, including making nets

- I can describe what a net for a cube looks like
- I can create a cube using knowledge of what the net looks like
- I can describe what a net for a cuboid looks like
- I can create a cuboid using knowledge of what the net looks like
- I can describe what a net for a cylinder and cone looks like
- I can create a cylinder and cone using knowledge of what the net looks like
- I can describe what a net for a square based and triangular based pyramid looks like
- I can create a square-based and triangular pyramid using knowledge of what the net looks like

To compare and classify geometric shapes based on their properties and sizes

- I can classify triangles in terms of their properties
- I can show understanding that an equilateral triangle has three angles of 60° and three equal sides
- I can show understanding that an isosceles triangle has two sides which are equal and two angles which are equal
- I can describe a right angled triangle according to properties
- I can describe a square and oblong in terms of their properties
- I can recognise the properties of rectangles such as parallelogram; trapezium; rhombus
- I can show understanding that the total of the three angles of any triangle totals 180°
- I can use a protractor to measure individual angles of a triangle
- I can draw a triangle given size of sides and angle sizes
- I can show understanding that the four angles of any quadrilateral totals 360°
- I can work out the size of an angle in a quadrilateral by using a protractor to measure it

To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

- I can identify the line across the centre of a circle as the diameter
- I can identify the distance from the centre to the arc of a circle as the radius
- I can name the distance around the outside of a circle as the circumference
- I can express that the diameter of a circle is twice its radius

To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

- I can work out given 2 angles of a triangle, what the third one is
- I can work out given one angle of an isosceles triangle, what the other angles are
- I can find given three angles of a quadrilateral, the fourth
- I can find given one angle of a parallelogram the other three
- I can find given one angle of a trapezium the other three
- I can find given one angle on two intersecting lines the other three
- I can work out what the sum of the internal angles of a pentagon; hexagon and octagon are

Year 6 - Maths

Geometry - Position & Direction

To describe positions on the full coordinate grid

- I can explain how the 4 quadrants are formed and named
- I can read coordinates in all 4 quadrants
- I can plot points using coordinates in all four quadrants
- I can create shapes by plotting points in all four quadrants
- I can use the four quadrants of the grid to draw different shapes

To draw and translate simple shapes on the coordinate plane, and reflect them in the axes

- I can reflect a shape in any of the axes and re-plot
- I can translate a shape into any of the quadrants, or across quadrants

Year 6 - Maths

Statistics

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

- I can read, interpret and create a pictogram
- I can read, interpret and create a bar chart
- I can read, interpret and create a line graph
- I can read pie charts with scales
- I can construct your own pie charts and make decisions about the scales

To calculate and interpret the mean as an average

- I can explain the term mean is the average
- I can find the average of a given set of numbers
- I can when given the mean, find a missing number from a given set of numbers
- I can find the average of a given set of numbers when presented in a problem solving format
- I can deduce information from sets of figures given when checking the mean