

# Year 6 Mathematics outcomes



## Number & Place Value

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

*I can read, write, order and compare numbers to at least 10,000,000 (ten million) and say the value of each digit.*

**Round any whole number to a required degree of accuracy.**

*I can round any number to a required degree of accuracy.*

**Use negative numbers in context, and calculate intervals across zero.**

*I can use negative numbers in context when looking at temperature or money: counting in jumps forwards and backwards through 0.*

Solve number and practical problems that involve ordering and comparing numbers to 10,000,000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero.

*I can solve number and practical problems that involve ordering and comparing numbers to 10,000,000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero.*

Demonstrate an understanding of place value including decimals e.g.  $28.13 = 28 + ? + 0.03$ .

*I can show an understanding of place value including*

## Multiplication & Division

**Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.**

*I can multiply numbers of up to 4 digits by a two-digit number using a formal written method.*

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.

*I can divide numbers of up to 4 digits by a two-digit number using a formal written method of long division, showing remainders, fractions or rounding as appropriate.*

**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.**

*I can divide numbers of up to 4 digits by a two-digit number using a formal written method of short division, showing remainders, fractions or rounding as appropriate.*

Perform mental calculations, including with mixed operations and large numbers.

*I can mentally calculate using a mix of the four operations and increasingly large numbers.*

Identify common factors, common multiples and prime numbers.

*I can identify common factors, multiples and prime numbers.*

Use his/her knowledge of the order of operations to carry out calculations involving the four operations.

*I can use the order of importance of the four operations when answering questions.*

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

*I can solve addition and subtraction multi-step problems, deciding which operations and methods to use and explain why they were suitable.*

Solve problems involving addition, subtraction, multiplication and division.

*I can 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.**

*I can use estimating to check answers and problem solving.*

## Algebra

**Use simple formulae e.g. perimeter of a rectangle or area of a triangle.**

*I can use simple formulae.*

Generate and describe linear number sequences.

*I can create and describe linear sequences.*

Express missing number problems algebraically.

*I can record missing number problems algebraically.*

Find pairs of numbers that satisfy an equation with two unknowns.

*I can find pairs of numbers which complete an equation with two unknowns.*

Enumerate possibilities of combinations of two variables.

*I can create a list of possibilities of the combination of two variables.*

## Addition & Subtraction

Perform mental calculations with mixed operations to carry out calculations involving the four operations.

*I can mentally calculate using a mix of the four operations.*

**Solve multi-step problems in contexts, deciding which operations and methods to use and why e.g. find the change from £20 for three items that cost £1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left?**

*I can solve problems with more than one step and operation and explain why I used them.*

Solve problems involving addition and subtraction.

*I can solve addition and subtraction word and practical problems.*

**Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.**

*I can use estimation to check answers to calculations and determine an appropriate degree of accuracy.*

## Fractions

Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.

*I can use common factors and multiples to simplify fractions and express fractions in the same denomination.*

Compare and order fractions, including fractions  $> 1$ .

*I can compare and order fractions including those bigger than 1.*

Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

*I can add and subtract fractions with different denominators and mixed numbers.*

Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g.  $1/4 \times 1/2 = 1/8$ .

*I can multiply simple pairs of proper fractions, writing the answer in the simplest form such as  $1/4 \times 1/2 = 1/8$ .*

Divide proper fractions by whole numbers e.g.  $1/3 \div 2 = 1/6$ .

*I can divide proper fractions by whole numbers such as  $1/3 \div 2 = 1/6$ .*

Associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as  $7/21$  and that this is equal to  $1/3$ , and 0.375 is equivalent to  $3/8$ .

*I can link a fraction with division and work out decimal fractions such as knowing that 7 divided by 21 is the same as  $7/21$  and that this is equal to  $1/3$ , and 0.375 is  $3/8$  as a simple fraction.*

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.

*I can explain the place value of any digit in a number with up to 3 decimal places and multiply or divide these by 10, 100 or 1000.*

Multiply one-digit numbers with up to two decimal places by whole numbers.

*I can multiply numbers less than 10 with up to 2 decimal places by whole numbers.*

**Solve problems which require answers to be rounded to specified degrees of accuracy.**

*I can solve problems which require answers to be rounded to specified degrees of accuracy.*

**Use written division methods in cases where the answer has up to two decimal places.**

*I can use written division methods for numbers with up to two decimal places*

**Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts e.g. one piece of cake that has been cut into 5 equal slices can be expressed as  $1/5$  or 0.2 or 20% of the whole cake.**

*I can use equivalences between simple fractions, decimals*

## Position & Direction

Describe positions on the full coordinate grid (all four quadrants).

*I can describe positions in all four quadrants on a full coordinate graph.*

**Draw and translate simple shapes on the coordinate plane, and reflect them in the axis.**

*I can draw and translate simple shapes on the coordinate plane and reflect these in the axis.*

## Statistics

**Interpret and construct pie charts and line graphs and use these to solve problems.**

*I can interpret and construct pie charts and line graphs. I can use these to solve problems.*

**Calculate and interpret the mean as an average.**

*I can calculate and interpret the mean as an average.*

## Measurement

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

*I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three places if I need to.*

**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 up to three decimal places.**

*I can use, read, write and convert between standard units. I can convert measurement of length, mass, volume and time from a smaller unit to a larger unit and vice versa. I can do this using decimal notation up to three decimal places.*

Convert between miles and kilometres.

*I can convert between miles and kilometres.*

Recognise that shapes with the same area can have different perimeters and vice versa.

*I can recognise that shapes with the same area can have different perimeters and vice versa.*

Recognise when it is possible to use formulae for the area and volume of shapes.

*I can recognise when it is possible to use formulae to find the areas or volumes of shapes.*

Calculate the area of parallelograms and triangles.

*I can calculate the areas of parallelograms and triangles.*

Calculate, estimate and compare the volume of cubes and cuboids using standard units, including cubic centimetres ( $\text{cm}^3$ ) and cubic metres ( $\text{m}^3$ ), and extending to other units e.g.  $\text{mm}^3$  and  $\text{km}^3$ .

*I can calculate, estimate and compare volumes of cubes and cuboids using standard units, including cubic centimetres ( $\text{cm}^3$ ), and cubic metres ( $\text{m}^3$ ). I can extend this to other units e.g.  $\text{mm}^3$  and  $\text{km}^3$ .*

## Properties of Shape

Draw 2-D shapes using given dimensions and angles.

*I can draw 2-D shapes using dimensions and angles I am given.*

Recognise, describe and build simple 3-D shapes, including making nets.

*I can 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.**

*I can compare and classify geometric shapes based on their properties and sizes. I can also find unknown angles in any triangles, quadrilaterals or regular polygons.*

Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

*I can illustrate and name parts of circles, including radius, diameter and circumference. I 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.

*I can recognise angles where they meet at a point, are on a straight line or are vertically opposite. I can then find any*

## Ratio & Proportion

Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts e.g. find  $7/9$  of 108.

*I can solve problems that involve the relative sizes of two things where the missing number can be found by multiplying or dividing by whole numbers.*

**Solve problems involving the calculation of percentages e.g. of measures, such as 15% of 360 and the use of percentages for comparison.**

*I can solve problems involving the calculation of percentages. I can also use percentages for comparisons.*

Solve problems involving similar shapes where the scale factor is known or can be found.

*I can solve problems involving shapes where the scale factor is known or can be found.*

**Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.**

*I can solve problems involving unequal sharing and grouping. I can use my knowledge of fractions and multiples to do this.*