

Year 4 - Maths

Number - Number and Place Value

Pupils should be taught to:

- 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
- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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
- 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
- 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)

Pupils should be taught to:

- 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

- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
- 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 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

Measurement

Pupils should be taught to:

- 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
- 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.

Geometry – Properties of shapes

Pupils should be taught to:

- 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.

Geometry - Position and Direction

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Note: Please see appendices for Year 4 Termly Instant Recall Facts

Year 4 Calculations

Addition

Key Instant Recall Facts

In preparation for secure methods of calculation, children will develop instant recall of the following facts during Year 4:

- Number bonds to 100

Missing number / digit problems- continue to develop using larger numbers.

Mental methods should continue to develop, supported by a range of models and images, including the number line.

Written methods (progressing to 4 digits)

As Year 3, use expanded column addition modelled with place value counters, progressing to calculations with 4 digit numbers.

Compact written method

Extend to numbers with at least 4 digits.

$$\begin{array}{r} 2634 \\ + 4517 \\ \hline 7151 \\ \hline 1 \quad 1 \end{array}$$

Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.

Extend to up to two places of decimals (same number of decimal places) and adding several numbers (with different numbers of digits).

$$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ \hline 1 \quad 1 \end{array}$$

$$\begin{array}{r} 162 \\ 73 \\ + 8 \\ \hline 243 \\ \hline 1 \quad 1 \end{array}$$

Year 4 Calculations

Subtraction

Key Instant Recall Facts

In preparation for secure methods of calculation, children will develop instant recall of the following facts during Year 4:

- Number bonds to 100

Missing number problems e.g.

$$456 + \blacksquare = 710 \quad 1 \blacksquare 7 + 6 \blacksquare = 200 \quad 60 + 99 + \blacksquare = 340 \quad 200 - 90 - 80 = \blacksquare$$

$$225 - \blacksquare = 150 \quad \blacksquare - 25 = 67 \quad 3450 - 1000 = \blacksquare \quad \blacksquare - 2000 = 900$$

Mental methods should continue to develop, supported by a range of models and images, including the number line.

Written methods (progressing to 4 digit numbers)

Decomposition Method

Once the children have a **secure understanding** that the remaining tens are changed to units then the **decomposition method** can be developed for larger numbers and numbers where decomposition is required in the hundreds, thousands etc.

$$\begin{array}{r} 4 \quad 1 \\ \cancel{5} \quad 3 \quad 2 \\ - 2 \quad 9 \quad 1 \\ \hline 2 \quad 4 \quad 1 \end{array}$$

Also where more than one decomposition is required.

$$\begin{array}{r} 7 \quad 13 \quad 1 \\ \cancel{8} \quad \cancel{4} \quad 3 \quad 9 \\ - 5 \quad 6 \quad 4 \quad 8 \\ \hline 2 \quad 7 \quad 9 \quad 1 \end{array}$$

*We say: 5 take away 9 we can't do
change 1 ten into units and add to the units column
the tens column is now 70
15 take away 9 equals 6
7 tens take away 4 tens equals 3 tens
30 add 6 equals 36*

This method can then be used to:

- Subtract two 2-digit numbers
- Subtract two 3-digit numbers
- Subtract numbers with decimals in context
(e.g. money)
- Subtract 4/5-digit numbers
- Subtract 4/5-digit numbers with decimals

Year 4 Calculations

Multiplication

Key Instant Recall Facts

In preparation for secure methods of calculation, children will develop instant recall of the following facts during Year 4:

- Multiplication facts for 6x, 9x, 11x and 7x tables.

Missing number problems

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits.

■ $2 \times 5 = 160$

Mental methods

- Counting in multiples of 6,7,9,25 and 1000, and steps of 1/100.
- Solving practical problems where children need to scale up.
- Relate to known number facts e.g. how tall would a 25cm sunflower be if it grew 6 times taller?
- Multiplying by 10 and 100:

Multiplying by 10

To ensure that the children have a secure understanding of what they are doing when they multiply by 10, we: explain that we are using place value.

We say:

- *move each digit one place to the left*

$65 \times 10 =$

H	T	U
	6	5
6	5	0

We say:

- *the six tens become six hundreds.*
- *five units become five tens.*
- *put a zero in the units column to hold the place value.*

Multiplying by 100

To ensure that the children have a secure understanding of what they are doing when they multiply by 100, we say:

- *move each digit two places to the left.*

$$65 \times 100 =$$

Th	H	T	U
		6	5
6	5	0	0

We say:

- *the six tens become six thousands.*
- *five units become five hundreds.*
- *put a zero in the tens column and the units column to hold the place value.*

Written methods

Continue with method from Year 3 but now developing with

- three digits by one digit

Use expanded bracket method at first, then move to short method when secure.

$$\begin{array}{r} 328 \\ \times 6 \\ \hline 192 \text{ (6} \times 2\text{)} \\ + 480 \text{ (6} \times 80\text{)} \\ \hline 1968 \text{ (6} \times 300\text{)} \\ \hline 1968 \end{array}$$

$$\begin{array}{r} 382 \\ \times 6 \\ \hline 2292 \\ 41 \end{array}$$

- four digits by one digit

Some children may be ready for long multiplication of two digit by two digit. Use brackets to support this method.

Year 4 Calculations

Division

Key Instant Recall Facts

In preparation for secure methods of calculation, children will develop instant recall of the following facts during Year 4/5:

- Division facts $\div 6$, $\div 9$, $\div 11$, $\div 7$, $\div 12$

\div = signs and missing numbers

Continue using a range of equations as in Year 2/3 but with appropriate numbers.

Sharing, grouping and using a number line

Children will continue to explore division as sharing and grouping, and to represent calculations on a number line until they have a secure understanding. By Year 5, the children should be encouraged to stop using the number line. Children should progress in their use of written division calculations:

Towards a written method

We can use **multiplication facts that we already know** to work out bigger division calculations using **short division** of a 2-digit number divided by a 1-digit number with whole numbers.

e.g.

$$\begin{array}{r} 23 \\ 3 \overline{)69} \end{array}$$

We say: How many 3s go into 6?
How many 3s go into 9?
so $69 \div 3 = 23$

Leading to:

$$\begin{array}{r} 26 \\ 3 \overline{)78} \\ \quad 1 \end{array}$$

We say: How many 3s in 7? 2 remainder 1. Add the 1 in front of the next number. So 8 becomes 18.

How many 3s in 18?
so $78 \div 3 = 26$

Leading to **short division** of a 2-digit number divided by a 1-digit number where there is a remainder.

$$\begin{array}{r} 26 \text{ r}1 \\ \underline{3 \overline{)79}} \\ 6 \\ \underline{19} \\ 18 \\ \underline{18} \\ 1 \end{array}$$

Leading to:

- Using the **short division** method to divide a 4/5 digit number by a 1 digit number with no remainder
- Using the **short division** to divide a 4/5 digit number by a 1 digit number where there is a remainder