## Division

## dividend $\div$ divisor $=$ quotient

Division is the inverse (opposite) of multiplication.

In Key Stage 1, the main focus for division is making links with knowledge of equal groups and then on understanding the two types of division: grouping and sharing.

## Grouping and sharing

Grouping - putting the same number of objects into groups e.g. make groups of 4.
Sharing - sharing out objects into a fixed number of groups e.g. put them into 4 groups.

## Year 1

Teaching uses concrete resources for children to actually make groups with. There is no use of the division symbol and activities are purely practical to ensure a good understanding of equal groups.

## Grouping

In this example, children make groups of three.
There are 12 flowers.
Lulu uses 3 flowers in each bouquet
How many bouquets does she get?


She gets 4 bouquets.

Sharing

## Year 2

Children start by recapping the two types of division: grouping and sharing. Then they move on to using this in calculations and are introduced to the division symbol. Both types of division lead to the same calculation.

The learning is kept very practical with sharing and grouping of different objects and then writing a calculation to match.

$$
\begin{array}{l|l}
10101610 & 10161610 \\
10161610 & 16101616 \\
10101010 & 10101610
\end{array}
$$

Put into groups of 2
There are $\qquad$ groups.

Put into 2 equal groups.
There are $\square$ 10 in each group.

In this example, children put the cars into 4 boxes.
There are 12 toy cars.
Put the toy cars equally into 4 boxes,
How many toy cars are there in each box?


There are 3 toy cars in each box.

## Following this learning in Key Stage 1, the curriculum then splits into two strands of division:

1. learning times-tables facts
2. Dividing larger numbers

These are taught as separate topics. Times-tables are always taught first as children must be secure in these to be able to access the larger number division.

## 1. Learning times-table facts

The following table summarises which times-tables are taught in each year group for the first time. Each times-table is taught as both multiplication and division.

| Year 1 | None - the focus is on securing addition and subtraction facts |
| :--- | :--- |
| Year 2 | $2 \mathrm{~s}, 5 \mathrm{~s}$ and 10 s |
| Year 3 | $3 \mathrm{~s}, 4 \mathrm{~s}$ and 8 s |
| Year 4 | $6 \mathrm{~s}, 7 \mathrm{~s}, 9 \mathrm{~s}, 11 \mathrm{~s}$ and 12 s |
| Year 5 | No new content taught but children should be constantly revising all tables up to $12 \times 12$ to ensure they are fluent. This is essential for work on <br> harder multiplication, fractions and decimals. |
| Year 6 |  |

## Similar strategies are used across all year groups to ensure that children have a deep understanding of how times-tables work and how to calculate them efficiently.

## Making links with multiplication - fact families

When children learn their times-tables, they learn the family of facts which includes two multiplication and two division facts. The children are taught to spot the connections between the calculations and use this to help them solve the division. This works because multiplication and division are the inverse of each other (opposites). For example, if they know that two groups of three makes six, then they know that when six is divided into two groups, there are three in each.


## 2. Dividing larger numbers

## Partitioning

## Year 3

Children partition the dividend into two parts (at this point it is kept as tens and ones) and then divide each part by the divisor.


Step 2 Divide 8 ones by 2.


Step 3 Add the results.

$68 \div 2=30+4=34$
6 tens $\div 2 \quad 8$ ones $\div 2$

Sometimes, the number can't be divided when partitioned into tens and ones. In these cases, children use their knowledge of times tables to partition in a more useful way.

## Year 4

Children start by recapping previous learning of partitioning 2-digit numbers to divide.
Then they move onto using the same method, but with 3 -digit numbers.


Method 1


Take 300 from 321.21 is left. Take 21 from 21. That's all!


Sometimes, the number cannot be divided exactly and there may be a remainder. Children use the same method, but notice that there will be an

## Year 5

Children start by recapping the previous learning on partitioning 3 -digit numbers to divide. Then they move onto using this strategy with 4-digit numbers with and without remainders.

$1968 \div 6=328$


## Written strategies

The main written strategies for solving division problems are long division and short division. This should only be used when the calculation is too difficult to solve mentally.
Long division is taught first as it links closely to the partitioning strategy above and it shows better understanding of the method. Following this, short division is introduced as a quicker and sometimes more efficient way to solve problems.

| Year $\mathbf{3}$ | Year $\mathbf{4}$ |  |
| :--- | :--- | :--- |
| We have made the | Children start by recapping the partitioning method and then they | $\frac{\text { Year } \mathbf{5}}{\text { After a recap of the learning from year 4, children progress }}$ l |

decision to remove written methods from our Year 3 curriculum. This is because children need to be fluent and confident in their mental strategies before attempting written ones.
learn this alongside long division. Each "part" in the partitioning method, is a "part" that gets divided and subtracted in the long division strategy. Each part is the largest amount that can be divided by the divisor.
This strategy differs from the other operations in that you have to start with the largest value first to ensure that all parts can be divided.

onto dividing more challenging 4-digit numbers.

## Long division

This is taught alongside the partitioning strategy (as in Year 4) as the two are very closely linked. Each part is divided and then subtracted from the dividend.
$1968 \div 6=$




$$
6 \begin{array}{r}
328 \\
1968 \\
-1800 \\
\hline 1668 \\
-\quad 120 \\
\hline 488 \\
-\quad 48 \\
\hline
\end{array}
$$

## Short division

This is often preferred by the children as a more efficient strategy. As before, the largest value digit is divided first by finding the largest multiple of the divisor. Any that are left over are re-named into the next place to be divided again. In the example below, when 46 tens is divided by 6 , there are 7 tens remainder 4 tens. These 4 tens are then renamed as 40 ones, which are added to the nine ones that are already there, to make 49 ones.

Children encounter remainders for the first time in Year 4, when the dividend does not divide exactly and there are some left over.



