

CHUNKING

What is chunking and why do we use this method in school?

During KS1, children have learnt about groups of objects.

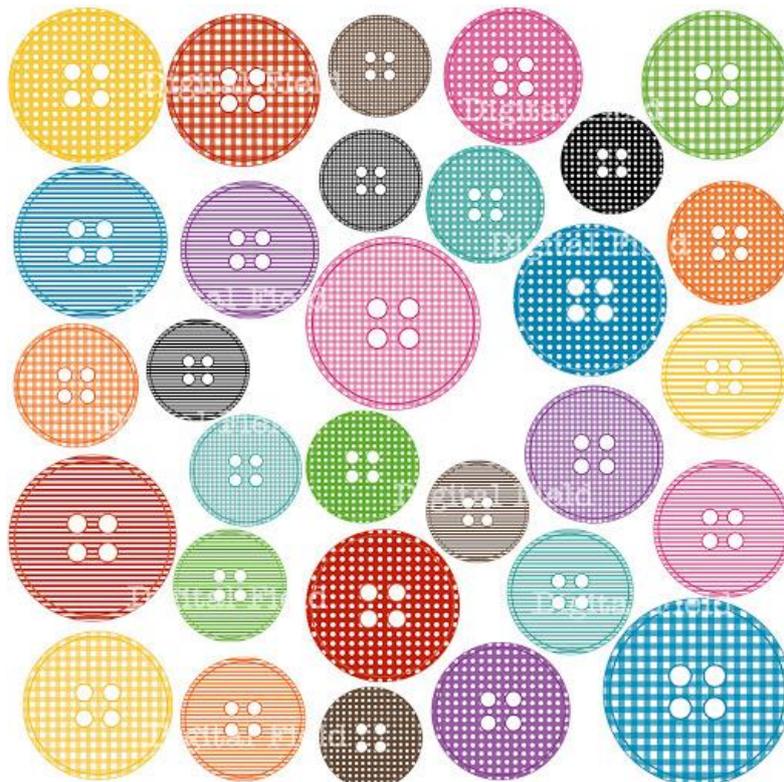
For example:

1. Put these objects into 3 equal groups.



Clip art picture credit: Emily Peterson

2. How many groups of 5 can you make?



Their first experience of division is repeated subtraction.

$$30 - 5 = 25, 25 - 5 = 20, 20 - 5 = 15, 15 - 5 = 10, 10 - 5 = 5, 5 - 5 = 0$$

To discover how many groups of 5 they can make, they have to take away 1 group of 5 at a time until all the buttons have been sorted into groups. When they've grouped all the buttons into 5s, they can count the groups to find out how many groups they've made altogether.

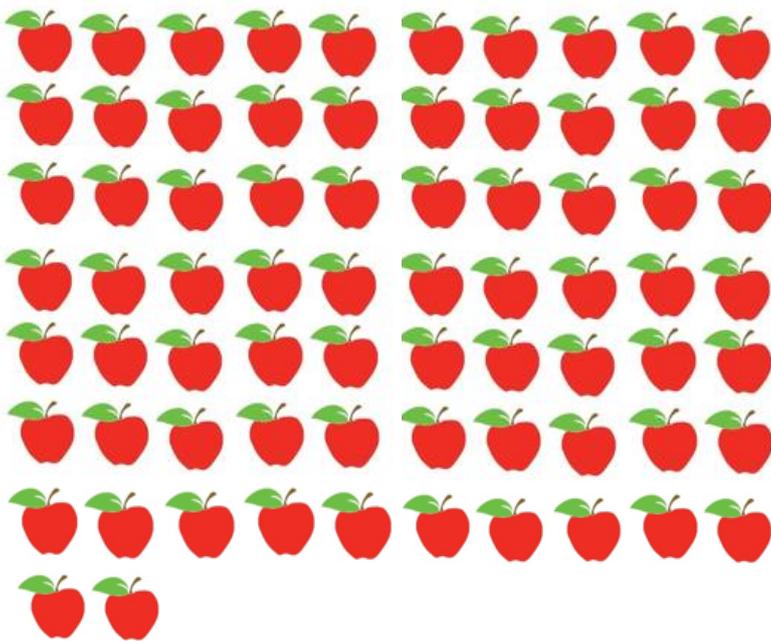
Although they do not realise this yet, this is 30 divided by 5.

Chunking

Our written method of division is called chunking (sometimes referred to as the 'bus stop method'). It builds on children's existing knowledge of repeated subtraction and their times tables. Unlike older methods such as long division, the method can be learnt very practically with concrete resources. The children's understanding of grouping and repeated subtraction should underpin this method.

Rather than continuously taking off one group at a time, like in the buttons example above, chunking encourages children to look for big chunks that they can remove in one go. In Year 3, children begin by looking for chunks (or groups) of 10.

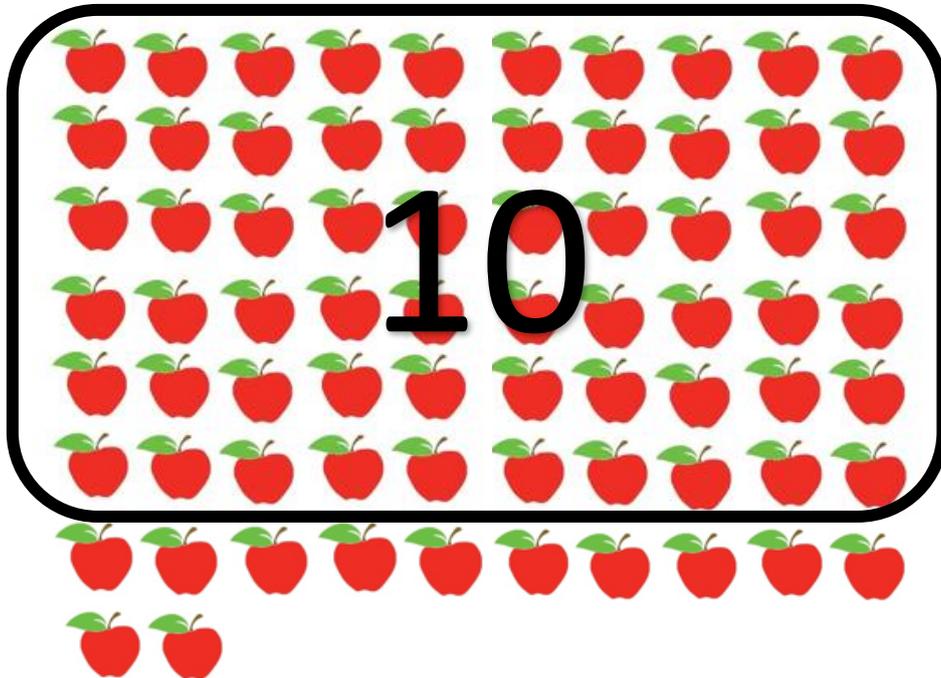
Example:



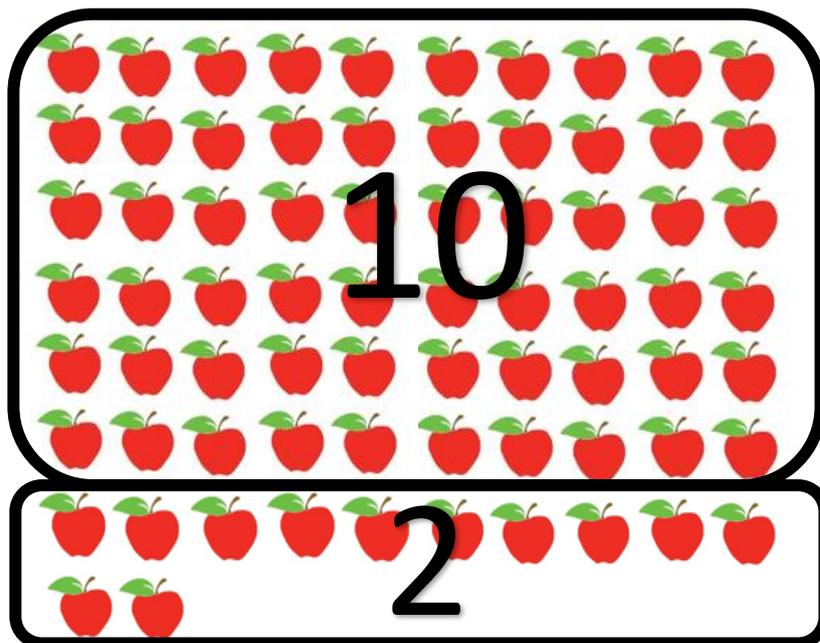
There are 72 apples in a shop. The shopkeeper would like to put the apples into bags of 6. How many bags will the shopkeeper need?

The shopkeeper wants to put the apples into groups of 6. There are 72 apples in total.

Instead of removing 6 apples at a time, children are encouraged to see that within the 72 apples, there are definitely 10 groups of 6.



The question is asking 'How many groups of 6 are there in 72?' Straight away, we know that there are definitely 10 groups of 6. We can take this chunk away and see how many more groups of 6 are left.



Once we've taken away 10 groups of 6, we are left with 12 apples. How many groups of 6 are in 12? There are 2 groups.

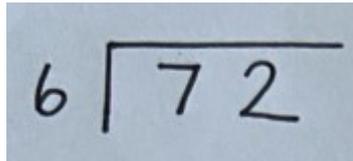
We have taken away one chunk of 10 and one chunk of 2. This means that we've taken away 12 chunks altogether.

To answer our question, the shopkeeper will need **12 bags**.

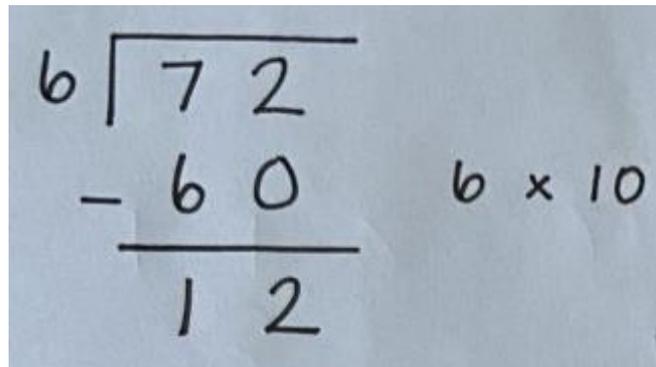
Now let's see how this looks using our written method.

Steps to Success for Chunking

1. Write out your division question into the bus stop.


$$6 \overline{) 72}$$

2. Start by taking away a chunk of **10** groups, using column subtraction. If the divisor is 6, take away ten groups of 6. Remember to write the number sentence at the side so that you can remember how many chunks you have taken away at the end.


$$\begin{array}{r} 6 \overline{) 72} \\ - 60 \\ \hline 12 \end{array} \quad 6 \times 10$$

3. Have a look at how many you have got left. Can you take away another chunk of 10 groups? If you can, remove another chunk of 10, writing the number sentence at the side.

4. Look at the answer to your column subtraction. Using your times tables, work out the next chunk that you can take away.

Remember to write the number sentence at the side.

$$\begin{array}{r} 6 \overline{) 72} \\ - 60 \\ \hline 12 \end{array}$$

5. If you get to 0 then you are done.

6. Circle how many groups you have made to find your answer.

$$\begin{array}{r} 12 \\ 6 \overline{) 72} \\ - 60 \\ \hline 12 \\ - 12 \\ \hline 00 \end{array}$$

6×10

6×2

$72 \div 6 = 12$

7. Check your number sentences. The divisor always comes first (so 6 for this example) and the chunks second. If you switch the numbers in the sums, your answer may be wrong.

Here are some WAGOLL questions:

$$\begin{array}{r} 21 \\ 3 \overline{) 63} \\ - 30 \\ \hline 33 \\ - 30 \\ \hline 03 \\ 3 \\ \hline 00 \end{array} \quad \begin{array}{l} (3 \times 10) \\ (3 \times 10) \\ (3 \times 1) \end{array}$$

$$\begin{array}{r} 14 \\ 4 \overline{) 56} \\ - 40 \\ \hline 16 \\ - 16 \\ \hline 00 \end{array} \quad \begin{array}{l} (4 \times 10) \\ (4 \times 4) \end{array}$$