

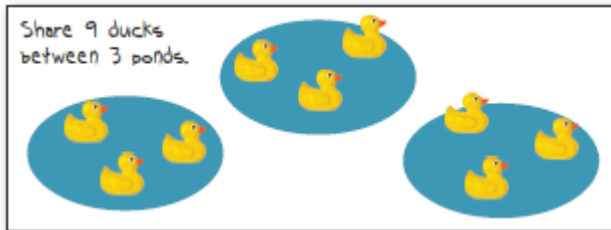


Division

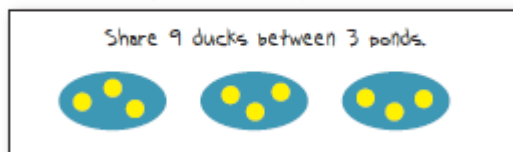
Vocabulary: Division, share, group, divide, divide into, divided by, share equally.

Stage 1 (Foundation Stage - Year 1)

Early division involves sharing equally in practical and real-life contexts.



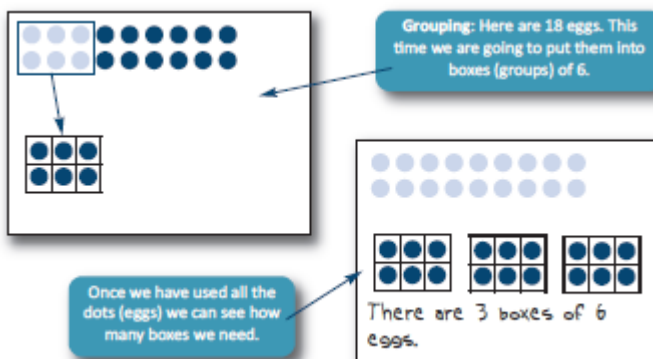
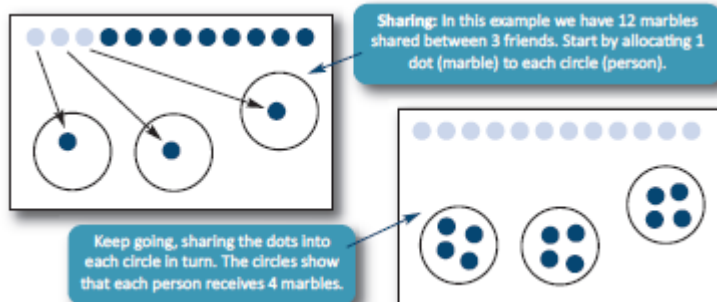
The same problem can be represented with symbols:



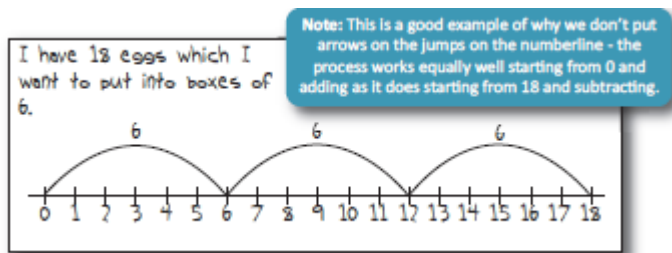
Stage 2 (around Year 2)

At stage 2, children develop their understanding of division as two separate processes:

- sharing (eg 12 marbles shared between 3 friends)
- grouping (eg 18 eggs are put into boxes of 6)



In the same way we can use repeated addition to show the same process, that is, we repeatedly add groups of 6 until we can't any longer. It is easiest to show this on a numberline.



Examples of sharing and grouping problems:

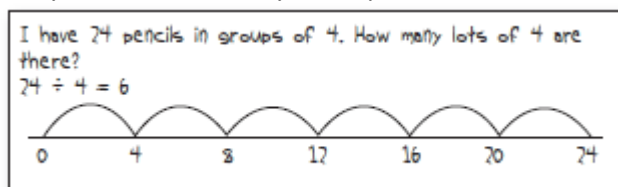
Sharing: Three friends found some conkers and shared them out. If there were 18 conkers altogether, how many did they get each?

Grouping: If there are 32 children waiting to go on a rollercoaster and each car holds 8 people, how many cars will they fill?

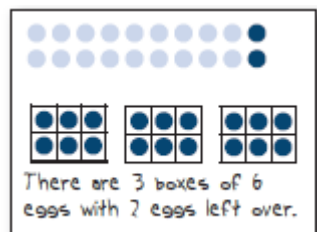
At stage 2 children experience divisions which “work”. We deal with the idea of items left over, or **remainders**, at stage 3.

Stage 3 (around Year 3)

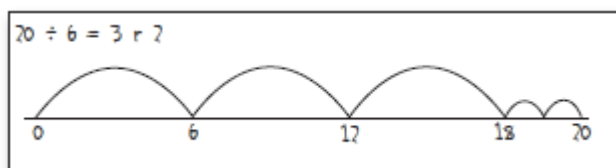
Firstly, children can carry out repeated addition on a blank numberline for a calculation with no remainder.



Then they can see the effect of having a remainder. So, repeating the earlier example of putting eggs in boxes but this time with 20 eggs:

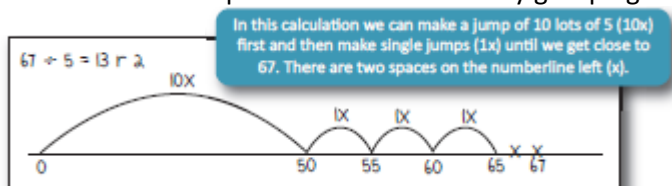


Or on a numberline:



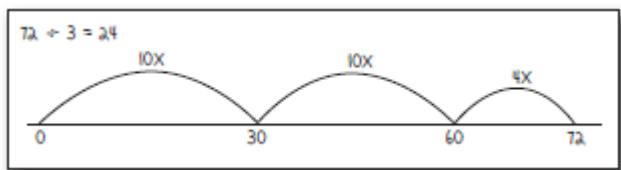
Stage 4 (Year 3 - Year 4)

Stage 4 makes this process more efficient by grouping some of the individual steps into one, for example:



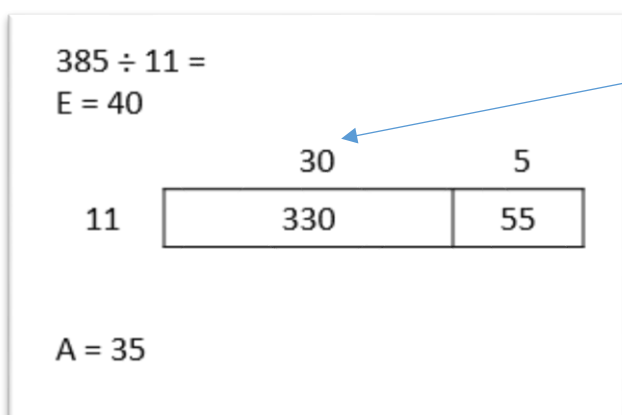
Stage 5 (end Year 4 - Year 6)

By grouping more than one step as the numbers get larger we can make several larger jumps to the target number. This process is known as **chunking**.



Stage 6 (reverse grid method)

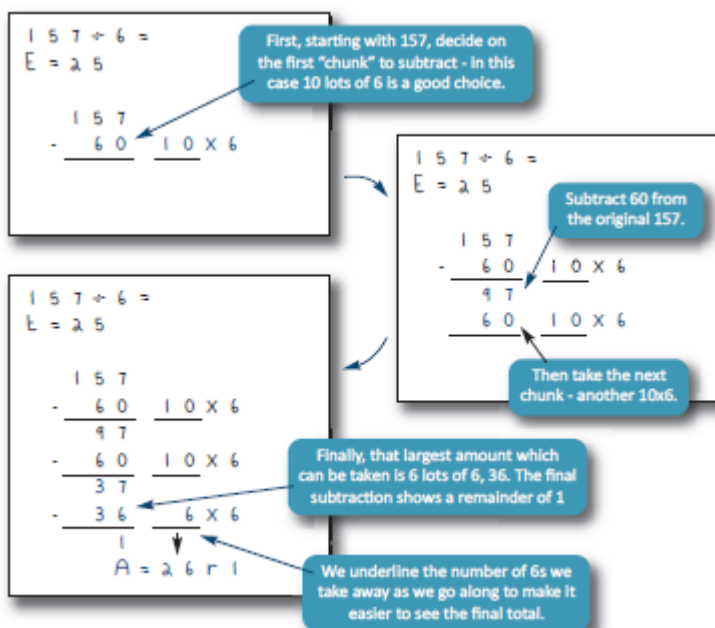
This method uses partitioning to support division. Children rely on mental facts that they already know.



Using facts that you know in multiplying firstly by tens and then ones. In this case 30 lots of 11 and then 5 lots of 11.

Stage 7

This leads to the first written method which is known as the chunking method as we repeatedly subtract “chunks” of the number.



Chunking can also be used with decimals:

$$87.5 \div 7 =$$

$$E = 10$$

87.5	
- 70.0	10 x 7
17.5	
- 14.0	2 x 7
3.5	
- 3.5	0.5 x 7
0	

$A = 12.5$

Remember to keep the decimal points lined up underneath each other.

Stage 6 (Year 6)

There are two formal written methods used at this stage:

- short division ($HTO \div O$)
- long division ($HTO \div TO$)

First, short division:

$$291 \div 3 =$$

$$E = 100$$

3)	291
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$$291 \div 3 =$$

$$E = 100$$

3)	291
		97

$A = 97$

$$291 \div 3 =$$

$$E = 100$$

3)	291
		9
		27
		21

$A = 97$

First calculate the number of 3s in 29 - in reality this is the number of threes in 290.

There are 9 threes, making 27...

...with 2 left over which is carried into the next column as tens.

Finally, calculate the number of threes in 21.

Finally, long division (which is a form of chunking) allows us to tackle calculations where we want to divide by a two-digit number.

$$563 \div 24 =$$

$$E = 600 \div 25 = 24$$

24)	563
- 480		
83		

$$563 \div 24 =$$

$$E = 600 \div 25 = 24$$

24)	563
- 480		
83		
- 72		
11		

$A = 23 r 11$

Start by finding the number of 24s in 56 (we know there are no 24s in 5). 2×24 is 48, so our first chunk is 480. We can therefore put 2 in the tens column at the top (our answer) and subtract our chunk, leaving 83 to do next.

Next we look for the number of 24s in 83. As 3×24 is 72, we can put these 3 lots of 24 into our answer and again subtract the chunk of 72. With 11 remaining, there are no more 24s available.