PROGRESSION IN CALCULATIONS

DIVISION

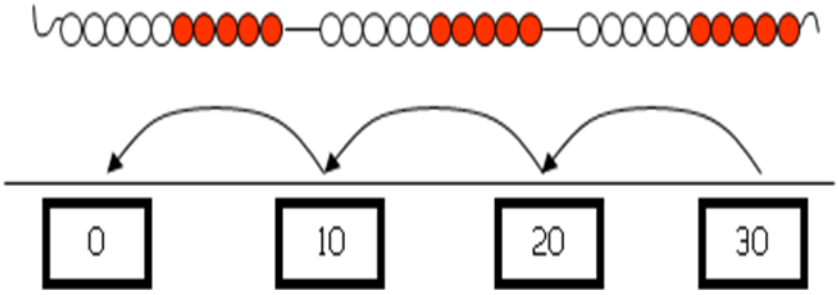
Mental Skills KS1

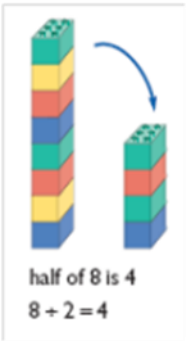
- Halve numbers to 20
- Recognise division as repeated subtraction

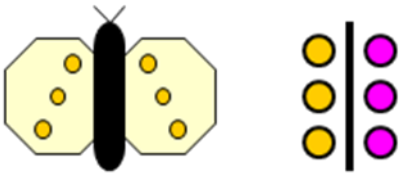
Vocabulary

group
groups of
lots of
divide
divided by
quotient
division
factor
remainder
divisible
half
halve
share

Count back in tens







Half of 6 is 3
½ of 6 = 3

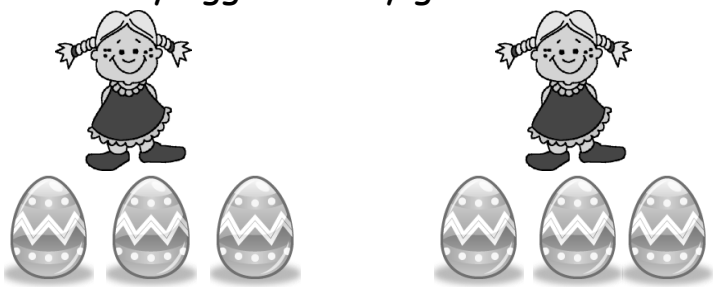
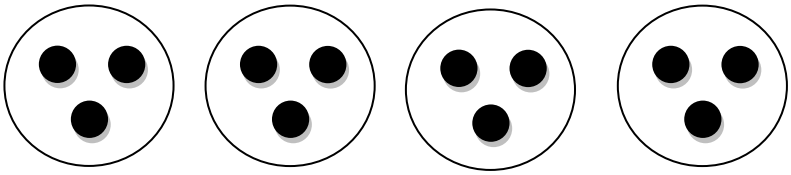
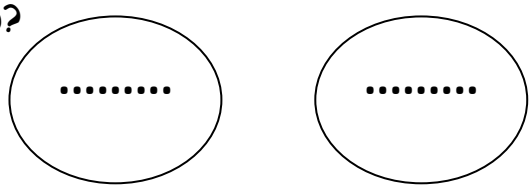
Know halves

Use known multiplication facts to work out corresponding division facts

If 2 x 10 = 20
then
20 ÷ 10 = 2
20 ÷ 2 = 10

DIVISION – as sharing

Children are taught division as sharing which then moves on to halving and quartering in KS1 and finding fractions of a quantity in KS2.

<table>
<tr><td>Year R</td><td>I have 6 beads and I need to share them between 2 children.
  </td><td>Children begin to develop an awareness of sharing equally through practical tasks such as sharing their toys and resources.</td></tr>
<tr><td rowspan="2">Year 1 (ARE)</td><td>6 Easter eggs are shared between 2 children. How many eggs do they get each?
  </td><td>More pictures! Drawing often gives children a way into solving a problem.</td></tr>
<tr><td>12 stickers are shared between 4 children. How many stickers does each child get?
  </td><td>Dots can be shared out one at a time.</td></tr>
<tr><td>Year 2 (ARE)</td><td>Halve 18
There are 18 crayons. Sarah keeps half of the crayons and gives half away. How many does she keep?
 
....</td><td>When halving, children can use 2 circles with dots to share out before being able to halve mentally.</td></tr>
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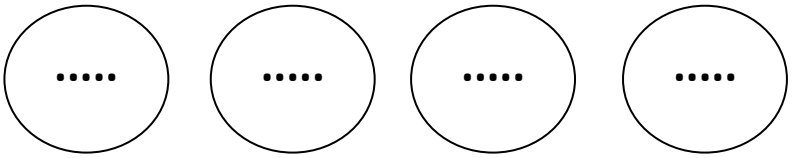
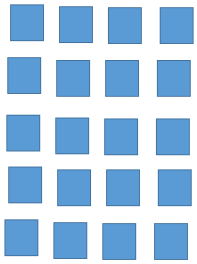
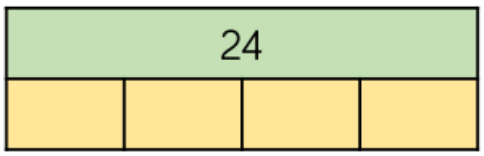
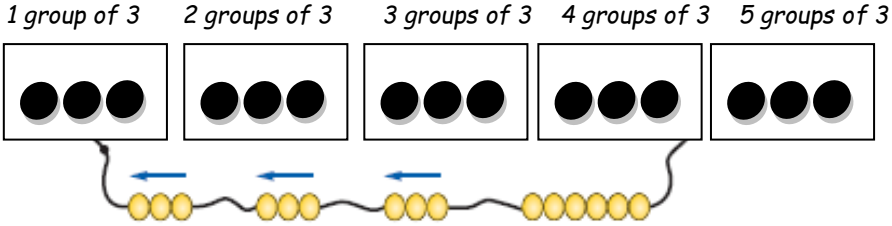
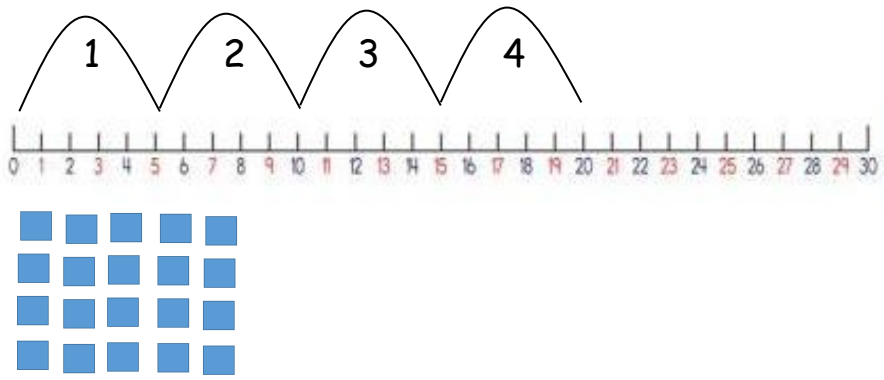
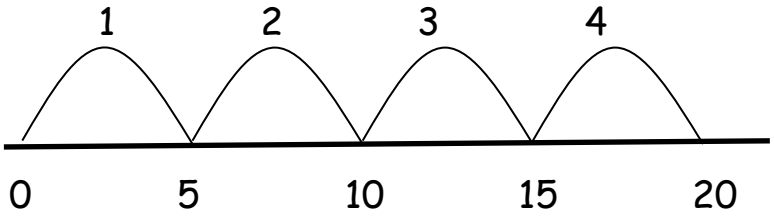
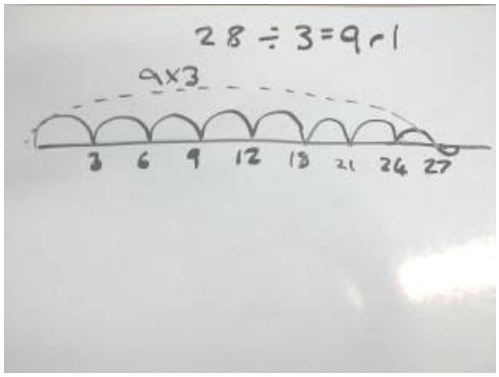
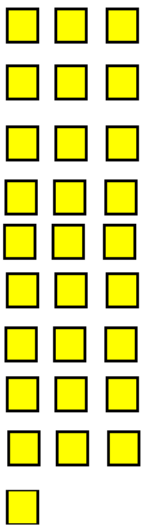
Year 2 (ARE)	Find a quarter of 20. There are 20 pages in a book. Sarah has read a quarter of them. How many pages has she read?  	When quartering, children can use 4 circles with dots to share out, then start to organise the dots into array. This leads onto mentally halving and halving again.
Year 3	 $24 \div 4 =$ ___	Children use a bar model and their known times table facts to divide. This can also be used to model finding $\frac{1}{4}$ of 24.

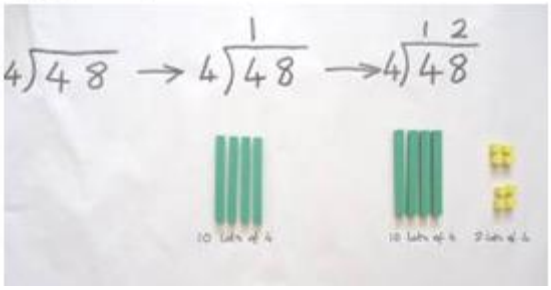
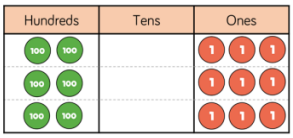
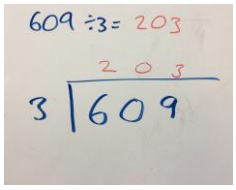
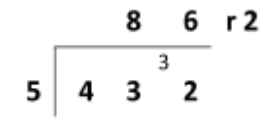
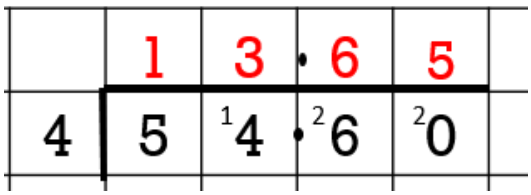
DIVISION – as grouping

Children are taught division as grouping using the language

"**How many** 3s **in** 15?"

<table>
<tr>
<td>Year R</td>
<td>I have 6 beads and I need to group them into 3s.
How many groups will I have?
   </td>
<td>Children begin to develop an awareness of grouping using practical equipment.</td>
</tr>
<tr>
<td rowspan="2">Year 1 (ARE)</td>
<td>6 ÷ 2 =
There are 6 Easter eggs. How many children can have two each?
  </td>
<td>More pictures! Drawing often gives children a way into solving a problem.</td>
</tr>
<tr>
<td>15 ÷ 3 =
3 stickers fit on one page. How many pages can you fill with 15 stickers?
 
 
  </td>
<td>Children can count up in 3s to 15; dots can be split up into groups; bead strings can be used to show the grouping.</td>
</tr>
</table>

Year 2	20 ÷ 5 = 5 stickers fit on one page. How many pages can you fill with 20 stickers? 	To work out how many 5s there are in 20, draw jumps of 5 on a number line. This shows you get 4 groups of 5 from 20. *Apparatus will also be used alongside the number line.*
Year 2 (ARE)	20 ÷ 5 = 	This can also be done on an unmarked number line, counting in multiples of the divisor. *Using & understanding the array is crucial for understanding the link between multiplication and division, as well as factors in the upper school.*
Year 3 (ARE)	28 ÷ 3 =  	Pupils solve division calculations within times tables, using knowledge of facts. Practical equipment is used to reinforce the links between multiplication and division. The number line records times table facts, using larger jumps when possible. Children move on to remainders.

Year 3 (ARE)	**Short division – 'bus stop' method** 48 ÷ 4 	In Year 3 children will be taught to use apparatus (place value counters and base ten) to model the formal method of short division ('bus stop') when dividing 2 digit numbers by a single digit number outside their times table facts. They will be expected to use their times table knowledge.
Year 4 (ARE)	609 ÷ 3 =  	In year 4, pupils will use the 'bus stop' method of short division for 3 digits by 1 digit. Place value and base 10 apparatus will be used to support this. Children will encounter remainders and the need to exchange.
Year 5 (ARE)	432 ÷ 5 becomes  Answer: 86 remainder 2	In year 5, pupils become confident with short division up to a 4digit number.
Year 6 (ARE)		In year 6 pupils extend their division to include decimals, putting in a **zero place** holder when needed, giving the remainder as a decimal.

Year 6 (ARE)

Long Division

948 ÷ 16 =

			5	9	¼
1	6	9	4	8	
	–	8	0	0	(x 50)
		1	4	8	
	–		8	0	(x 5)
			6	8	
			3	2	(x 2)
			3	6	
			3	2	(x 2)
				4	

Fact Box

1 x 16 = 16
2 x 16 = 32
5 x 16 = 80
10 x 16 = 160
20 x 16 = 320
50 x 16 = 800

In year 6 pupils divide up to 4 digit numbers by 2 digits. Big Maths uses the coin method, named after the fact box which is recorded first. Take away the largest multiples possible, recording the fact used at the side until no further multiples can be taken. Remainders should be written as fractions or decimals.

Mental Skills KS2

- Use division facts associated with multiplication facts (up to 12 x 12)
- Divide by 10, 100, 1000 and understand the effect
- Use place value, e.g. 480 ÷ 8 = 60 (*with larger numbers and decimals in higher year groups)*
- Halve numbers by partitioning and recombining e.g. 64 ÷ 2 = 30 + 2 = 32