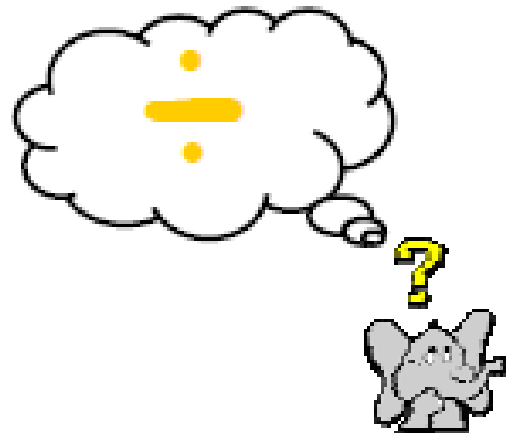


Progression in Teaching Division

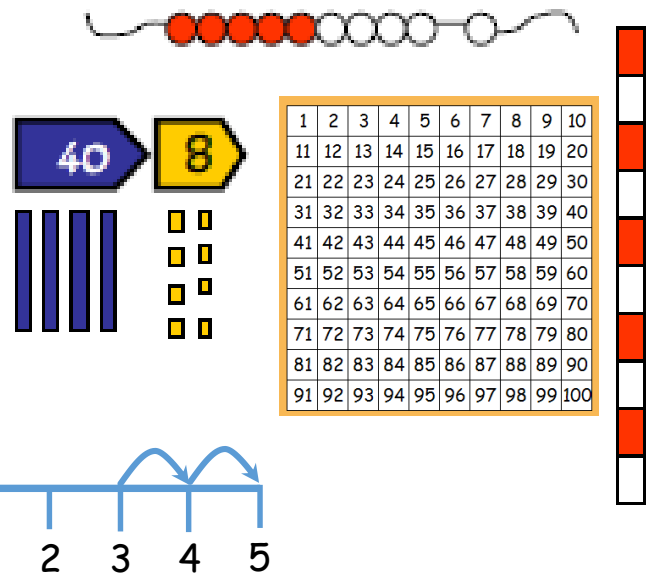
Mental Skills

- Recognise the size and position of numbers
- Count back in different steps 2s, 5s, 10s
- Halve numbers to 20
- Recognise division as repeated subtraction
- Quick recall of division facts
- Use known facts to derive associated facts
- Divide by 10, 100 and 1000, understanding the effect
- Divide by multiples of 10



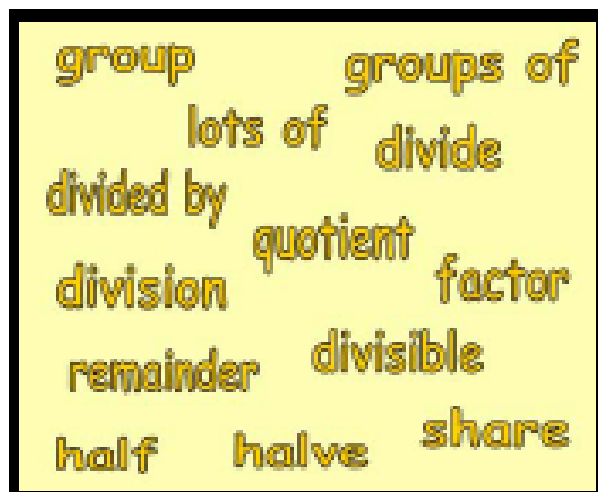
Models and images

- Counting apparatus
- Arrays
- 100 squares
- Number tracks
- Numbered number lines
- Marked but unnumbered lines
- Empty number lines
- Multiplication squares
- Models and images charts
- ITPs - Multiplication Grid, Number Dials, Grouping, Remainders

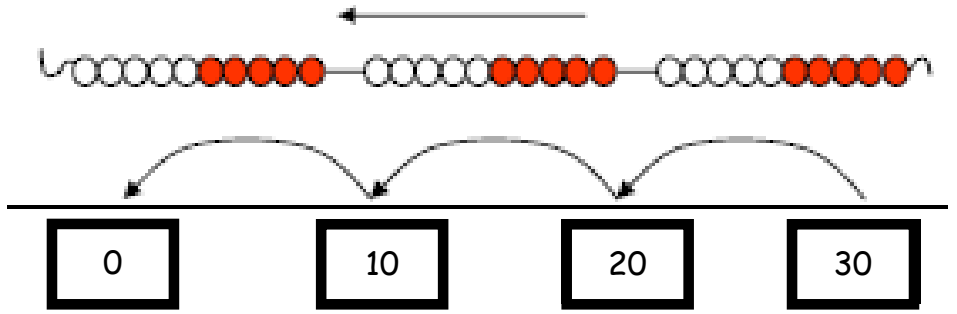


Vocabulary

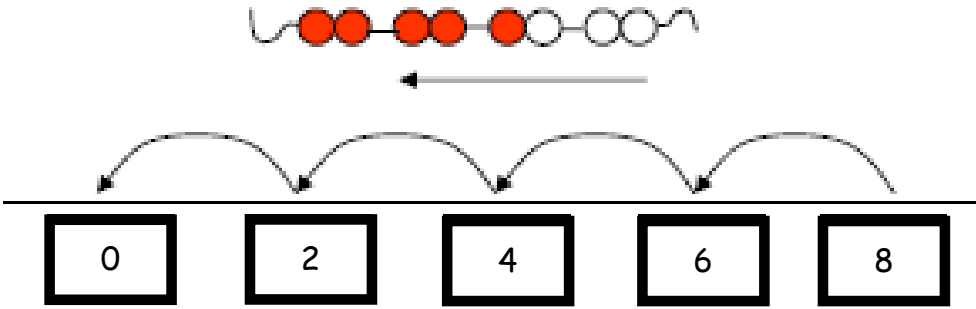
- lots of
- groups of
- share
- group
- halve
- half
- divide
- division
- divided by
- remainder
- factor
- quotient
- divisible



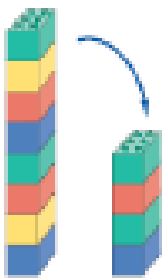
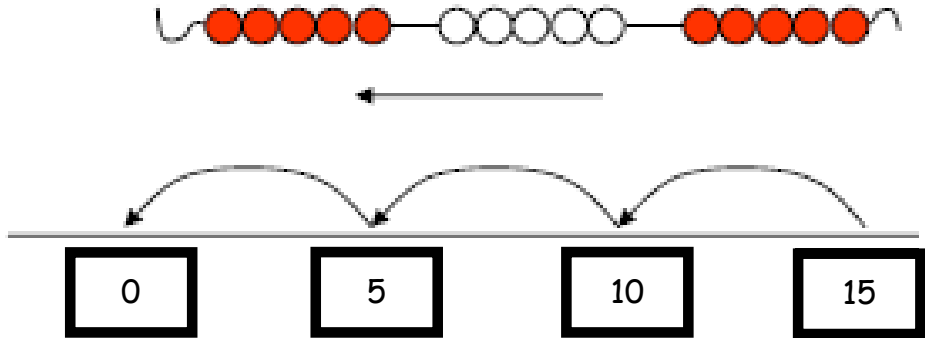
Count back in tens



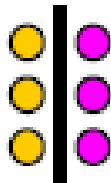
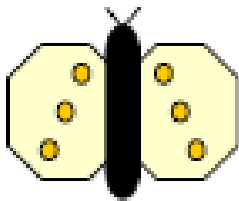
Count back in twos



Count back in fives



half of 8 is 4
 $8 \div 2 = 4$



Half of six is three
 $\frac{1}{2}$ of 6 = 3

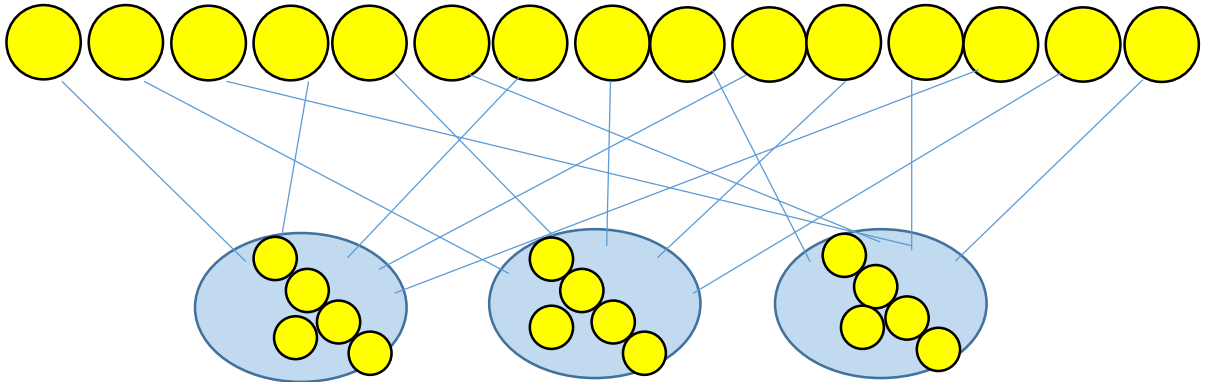
Know halves

Use known multiplication facts to work out corresponding division facts

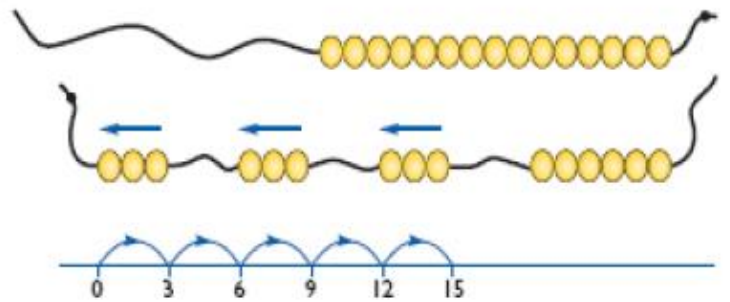
If $2 \times 10 = 20$, then
 $20 \div 10 = 2$
 $20 \div 2 = 10$

$15 \div 3 = 5$
15 shared between 3 is 5

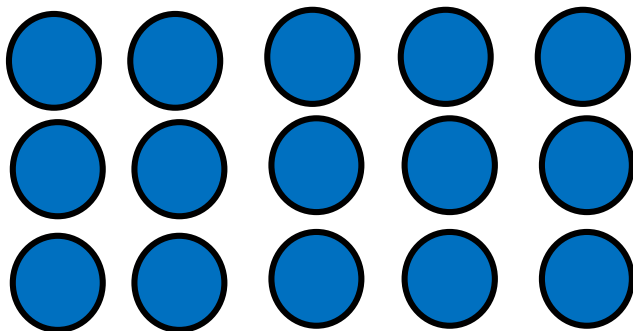
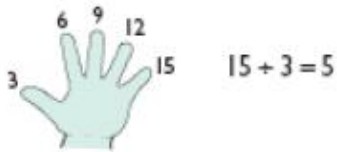
Understand division as sharing



Understand division as grouping



How many 3s in 15?



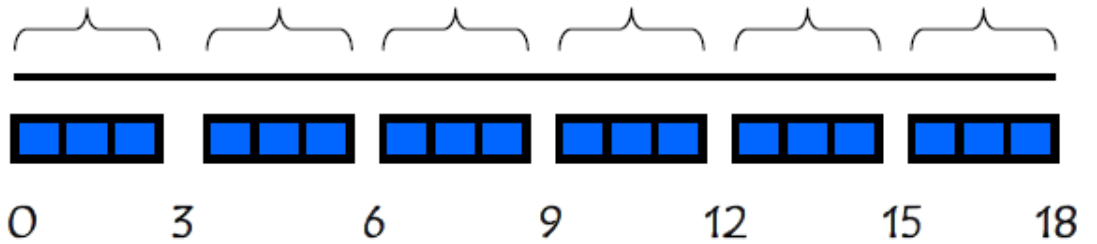
Reinforce division as grouping through the use of arrays

15 divided into groups of 3 gives 5 groups.
 $15 \div 3 = 5$

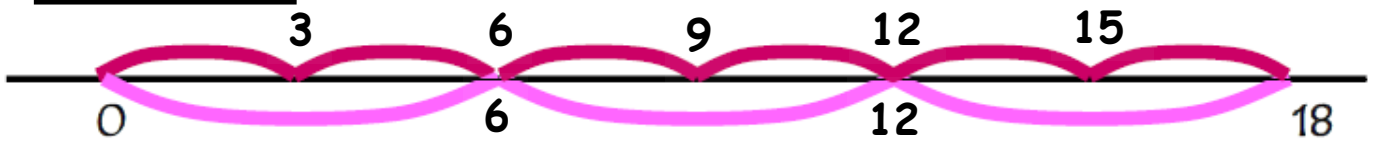
15 divided into groups of 5 gives 3 groups.
 $15 \div 5 = 3$

Represent 'groups' for division on a number line using apparatus alongside the line

18 divided into groups of 3
 $18 \div 3 = 6$



$$18 \div 3 = 6$$



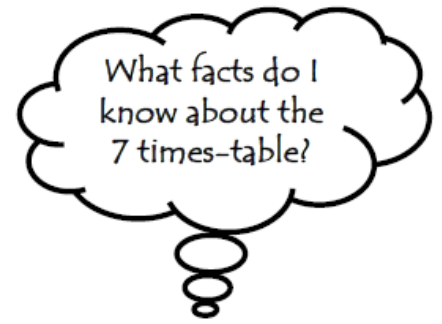
$$18 \div 6 = 3$$

Understand division as making groups, repeated addition and counting forwards.

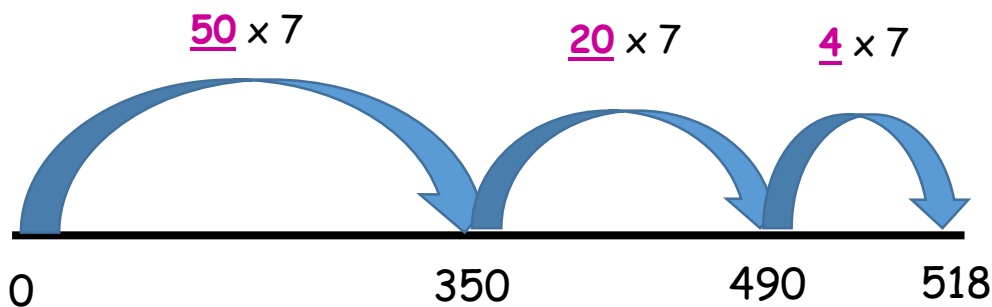
Include remainder calculations.

Key Stage Two

Children need to see that as the numbers get larger, large chunk subtraction is the more efficient method. Multiples of the divisor (large chunks) are taken away. Multiplication facts are needed to see the size of the 'chunk'.



$$518 \div 7 = 74$$



Understand division as chunking on a number line.

Fact Box

$$1 \times 7 = 7$$

$$2 \times 7 = 14$$

$$5 \times 7 = 35$$

$$10 \times 7 = 70$$

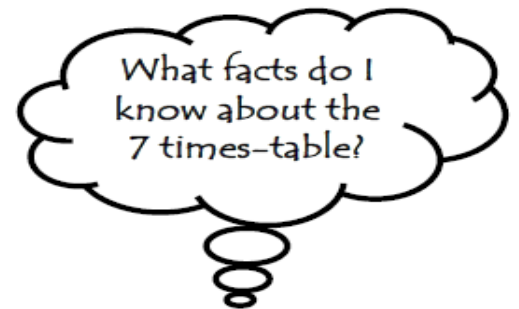
$$20 \times 7 = 140$$

$$50 \times 7 = 350$$

$$100 \times 7 = 700$$

Consider

'What's the same? What's different?'
between number line recording and standard written method.



$$518 \div 7 = 74$$

$$\begin{array}{r} 518 \\ - 350 \quad (50 \times 7) \\ \hline 168 \\ - 140 \quad (20 \times 7) \\ \hline 28 \\ - 28 \quad (4 \times 7) \\ \hline 0 \end{array}$$

$$100 \div 7 = 14r2$$

$$\begin{array}{r} 100 \\ - 70 \quad (10 \times 7) \\ \hline 30 \\ - 28 \quad (4 \times 7) \\ \hline 2 \end{array}$$

Fact Box

$$1 \times 7 = 7$$

$$2 \times 7 = 14$$

$$5 \times 7 = 35$$

$$10 \times 7 = 70$$

$$20 \times 7 = 140$$

$$50 \times 7 = 350$$

$$100 \times 7 = 700$$

Dividing HTU by TU, again noting the link to number line recording.

$$\begin{array}{r} 560 \div 24 \\ 24 \overline{) 560} \\ \underline{- 480} \quad (20 \times 24) \\ 80 \\ \underline{- 72} \quad (3 \times 24) \\ 8 \end{array}$$

Fact Box

$$\begin{array}{l} 1 \times 24 = 24 \\ 2 \times 24 = 48 \\ 5 \times 24 = 120 \\ 10 \times 24 = 240 \\ 20 \times 24 = 480 \\ 50 \times 24 = 1200 \\ 100 \times 24 = 2400 \end{array}$$

Children will need to be able to write the remainder as a **fraction** and a **decimal**.

$$\begin{array}{l} 560 \div 24 = 23 \frac{8}{24} \\ 560 \div 24 = 23.33333333 \end{array}$$

Important note: as with all formal written methods, these should only be used when children can confidently explain their understanding using informal jottings, diagrams and number line methods.