

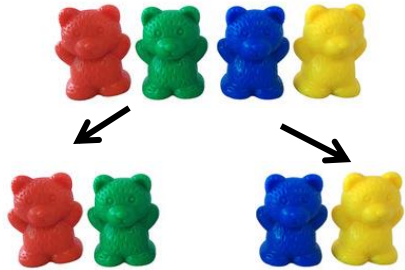
Division

Foundation Stage 1:

- 30 - 50 months - Separate a group of three or four objects in different ways, beginning to recognise the total is still the same.

Concrete

Separate groups of objects in different ways - begin to introduce half/double if pupils are ready.


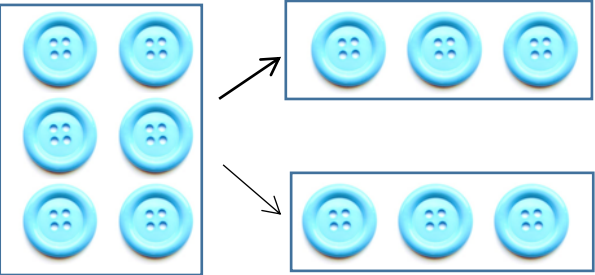
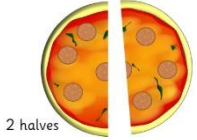
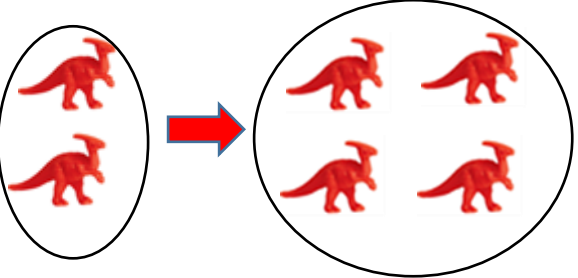
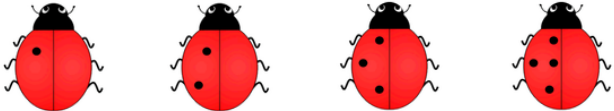


Pictorial

Abstract

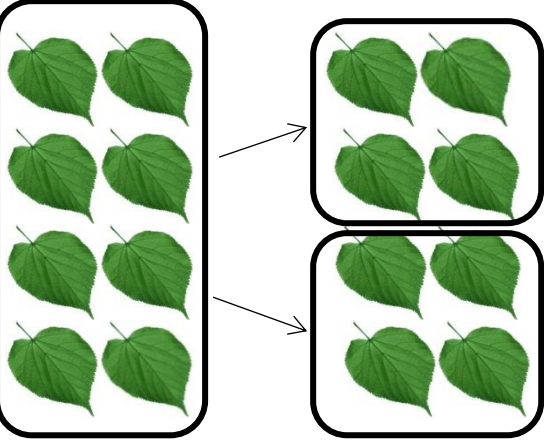
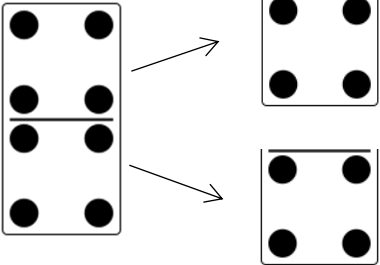
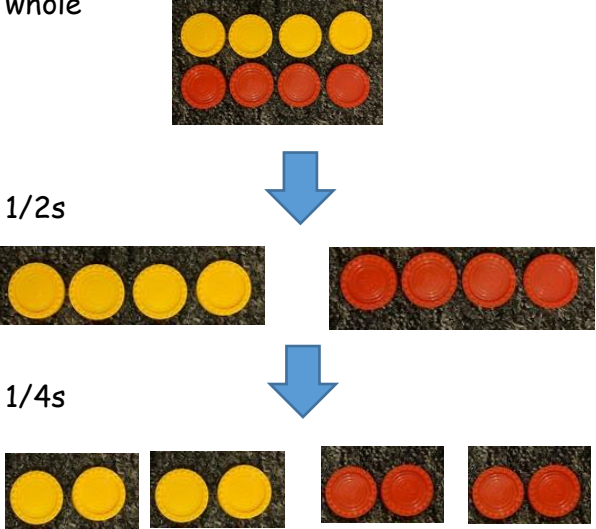
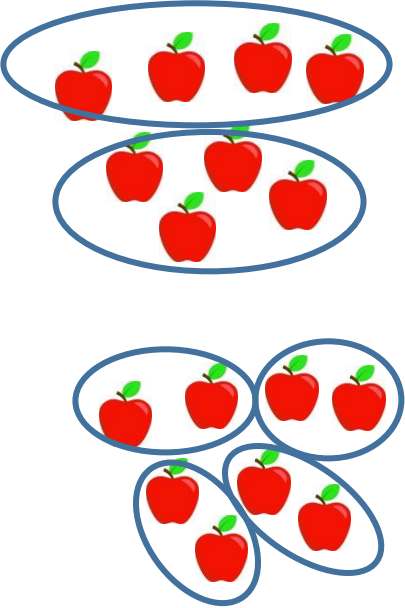
Foundation Stage 2 Objectives:

- 40 - 60 months - They solve problems, including doubling, halving and sharing.

Concrete	Pictorial	Abstract
<p>Practically halving everyday objects - the halves being the same size. Begin with halving play dough and other items that could be cut, then use hoops /halving mats etc. to separate items.</p>  	<p>Halving images</p>  <p>Finding the other half of everyday shapes to match them e.g. cups, beans</p>	<p>Half of ... is ... (adult written)</p>
<p>Doubling everyday items e.g. compare bears, counters etc.</p> 	<p>Doubling e.g. the spots on the ladybird.</p> 	<p>Double 1 is 2...(adult written)</p> $1 + 1 = 2$ $2 + 2 = 4$

Year 1 Objectives:

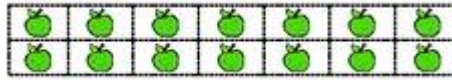
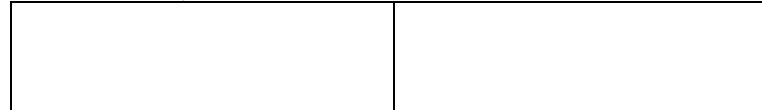
- solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Concrete	Pictorial	Abstract
<p>Find half of even numbers up to 12, using fingers and objects.</p> 		<p>Half of 8 is 4 $8 \div 2 = 4$</p>
<p>Develop finding half of numbers before moving onto finding quarters whole</p>  <p>1/2s</p> <p>1/4s</p>	<p>Circle half of the apples.</p>  <p>Circle a quarter of the apples.</p>	<p>Half of 8 is 4. $8 \div 2 = 4$</p> <p>One quarter of 8 is 2 $8 \div 4 = 2$</p>

Begin to find half of a quantity using sharing e.g. half of 14 cubes by sharing one at a time into two sorting dishes.



Share equally between 2.



Half of 14 is 7

14 shared between 2 is 7.

Grouping:

Use concrete and visual arrays/sets of objects to find answers to e.g. 15 girls play a game in teams of 5. How many groups are there?



5



5

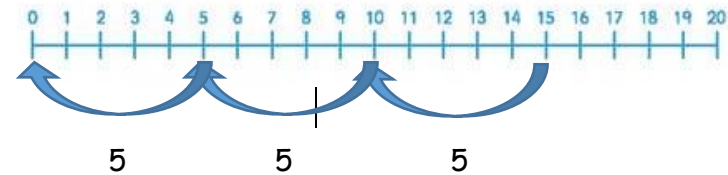


5

Total number of objects ÷ number in each group = number of groups.

There are 3 groups of 5 in 15, so

$$15 \div 5 = 3$$



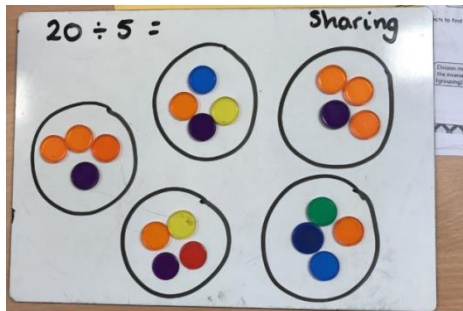
Year 2 Objectives:

Pupils should be taught to:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for division within the multiplication tables and write them using the division (\div) and equals (=) signs
- show that multiplication is commutative but division is not
- solve problems involving division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Concrete

Continue to explore division as sharing

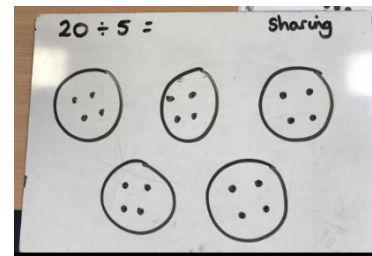


20 shared between 5 groups gives us 4 in each group.



Pictorial

Show sharing in 'chunks'

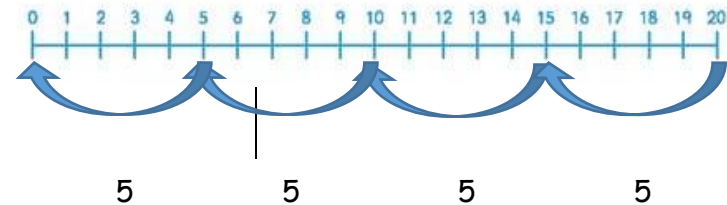


20 divided by 5 equals 4 rows.

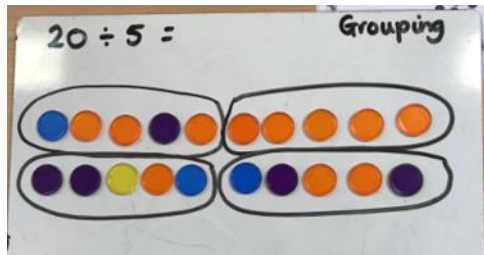


Abstract

$20 \div 5 = 4$

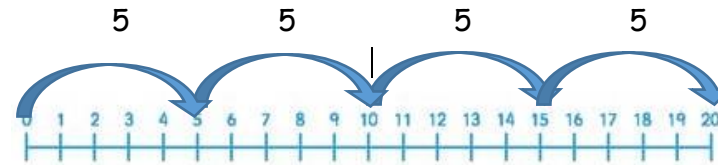
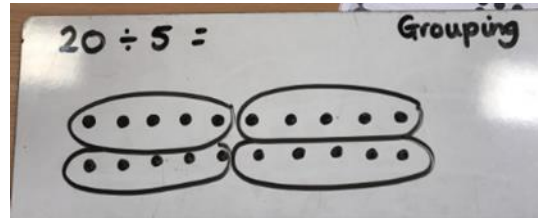


Grouping



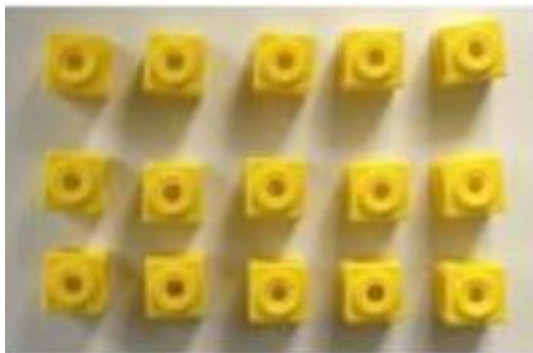
How many groups of 5 make 20?

20 has been divided into 4 equal groups of 5.

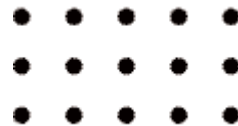


$$20 \div 5 = 4$$

Link division to multiplication by creating an array and finding 4 related number sentences.



$$15 \div 3 =$$



$$15 \div 3 = 5$$

$$15 \div 5 = 3$$

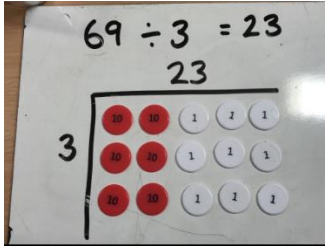
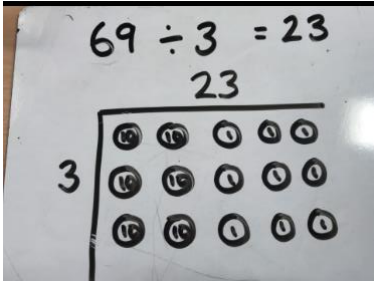
$$3 \times 5 = 15$$

$$5 \times 3 = 15$$

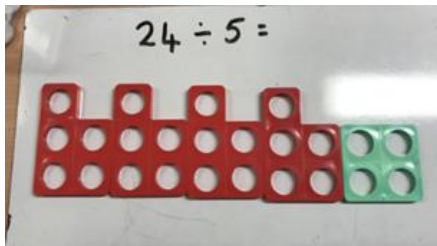
Year 3 Objectives:

Pupils should be taught to:

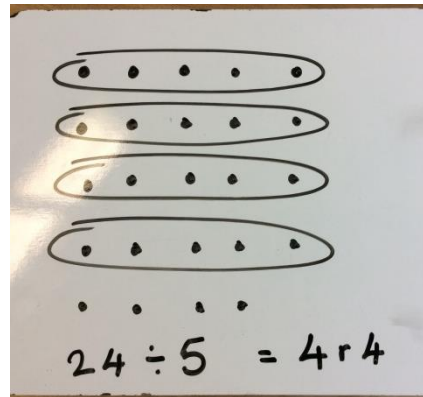
- recall and use division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Concrete	Pictorial	Abstract
<p>Pupils to understand that division is not commutative. Use the relationship of multiplication facts to calculate.</p>	<p>See above for examples of grouping and sharing using concrete and pictorial resources, and exploring the relationship between multiplication and division.</p>	
<p>Pupils begin to explore formal written method, at first with no remainders.</p> 		<p>$69 \div 3 = 23$</p> $\begin{array}{r} 23 \\ 3 \overline{) 69} \end{array}$

Progress onto division with remainders, within the ones column so there is no need to exchange when subtracting using a more formal method.



or
 $50 \div 3 =$



$$24 \div 5 = 4r4$$

$$\begin{array}{r} 1 \quad 6 \text{ r}2 \\ 3 \overline{) 50} \\ - \quad 30 \quad (10 \times) \\ \hline 20 \\ - \quad 18 \quad (6 \times) \\ \hline 2 \end{array}$$

(No exchange required for the subtraction)

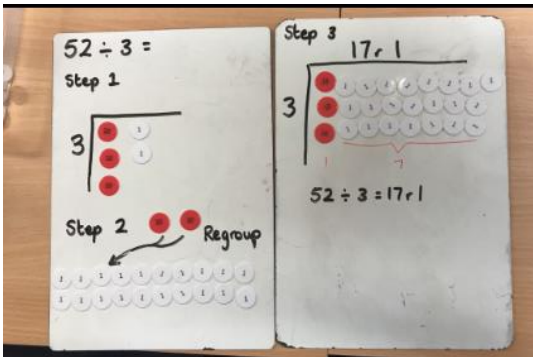
Year 4 Objectives:

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12×12
- use place value, known and derived facts to divide mentally, including dividing by 1
- solve problems involving dividing a two digit, then three-digit number by one-digit number using a formal layout

Concrete	Pictorial	Abstract
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As above and developing written method with the need to exchange for 2 digit numbers divided by 1 digit.



$52 \div 3 = 17 \text{ r}1$

$\underbrace{\hspace{10em}}_{(30)} \quad \underbrace{\hspace{5em}}_{(21)} \quad \text{r}1$

$\underbrace{\hspace{10em}}_{(30)} \quad \underbrace{\hspace{5em}}_{(21)} \quad \text{r}1$

	1 7 r1	
3	5 2	
-	3 0	(10x)
	2 2	
-	2 1	(7x)
	1	

Progress onto division of 3 digit by 1 digit

	1 3 1 r3	
4	5 2 7	
-	4 0 0	(100x)
	1 2 7	
-	1 2 0	(30x)
	7	
-	4	(1x)
	3	

Year 5 Objectives:

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, common factors of two numbers, know and use the vocabulary of prime numbers and establish whether a number up to 100 is prime
- divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- divide whole numbers and those involving decimals by 10, 100 and 1000

Concrete	Pictorial	Abstract
<p>Use concrete and pictorial strategies as shown above if pupils require continued support with their understanding.</p>		
<p>Divide 4 digit numbers by 1 digit using a short division and where appropriate, begin to interpret remainders as fractions.</p> <p>Pupils begin to look at and discuss decimals in relation to money.</p>		<p>Pupils supported with multiplication where appropriate by writing the times table at the side of their work.</p> $ \begin{array}{r} 1 \quad 3 \quad 1 \quad 5 \quad r3 \\ 4 \overline{) 5 \quad 12 \quad 6 \quad 23} \end{array} $ <p>Working towards</p> $ \begin{array}{r} 1 \quad 3 \quad 1 \quad 5 \quad \frac{3}{4} \\ 4 \overline{) 5 \quad 12 \quad 6 \quad 23} \end{array} $ <p>Pupils encouraged to simplify the remaining fraction where possible.</p> $ \begin{array}{r} 1 \quad 3 \quad 1 \quad 5. \quad 7 \quad 5 \\ 4 \overline{) 5 \quad 12 \quad 6 \quad 23. \quad 30 \quad 20} \end{array} $

