# Stages in Division

## Division – Early stages (EYFS)

*Children will engage in a wide variety of songs and rhymes, games and activities. In practical activities and through discussion they will begin to solve problems involving halving and sharing.*

**Share** *the apples between two people.*

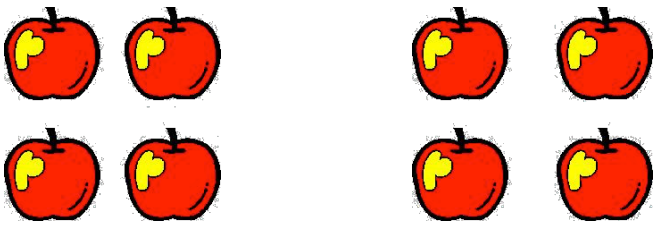
*'Half of the apples for you and half of the apples for me.'*

## Division – Stage One

- *Solve one-step problems involving division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher*
- *Count in multiples of* ***twos, fives and tens*** *(to the 10th multiple)*

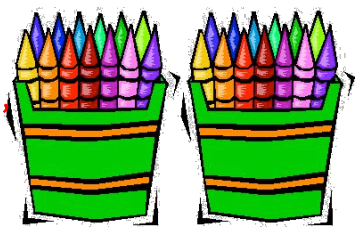
*Children will start with* ***practical sharing*** *using a variety of resources. They will share objects into equal groups in a variety of situations. They will begin to use the vocabulary associated with division in* ***practical contexts****.*

*'Share these eight apples equally between two children. How many apples will each child have?'*

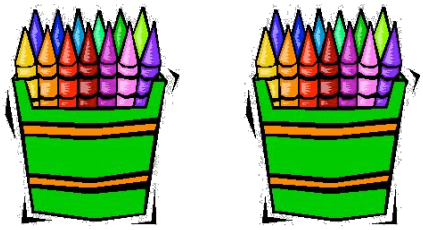


*'Share 20 crayons between 2 pots.'*

*'How many crayons are in each pot?'*

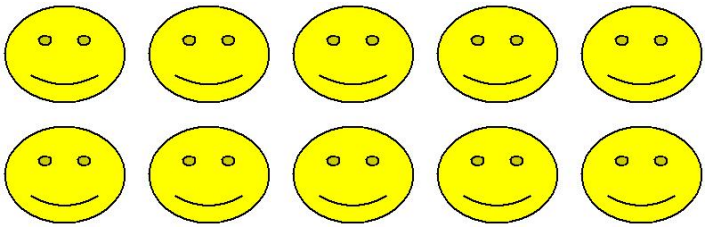


*Children will move from* ***sharing to grouping*** *in a practical way*

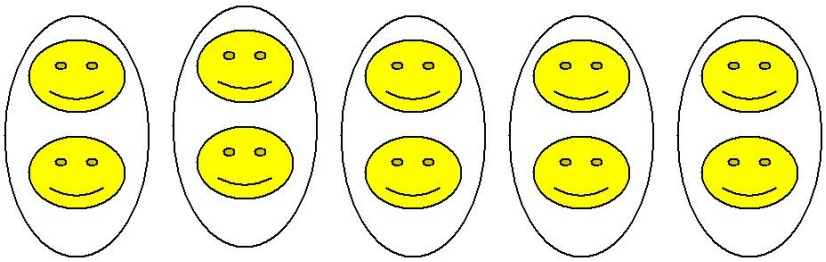


*'Put 20 crayons into groups of 10. How many pots do we need?'*

*Use arrays to support early division*

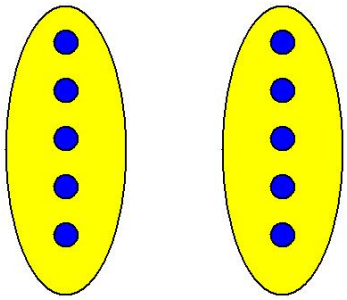


*'How many faces altogether? How many groups of two?'*



*'Five groups of two'*

*'How many groups of 5?'*
*'10 shared equally between 2 people'*
*'Half of ten is five'*



*Continue to solve problems in practical contexts throughout Stage one, and develop the language of early division, with appropriate resources.*

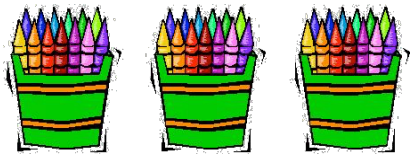
## Division - Year Two

- Recall and use multiplication and division facts for the 2, **5 and 10 multiplication tables**
- Calculate mathematical statements for division within the multiplication tables they know and write them using the division (÷) and equals (=) signs
- **Solve problems** involving division, using materials, arrays, repeated subtraction, mental methods, and multiplication and division facts, including **problems in contexts**

Ensure that children are confident with the methods outlined in the previous stage's guidance before moving on.

Children will use a range of vocabulary to describe division and use practical resources, pictures, diagrams and the ÷s ign to record, using multiples that they know.

**Sharing and grouping:**

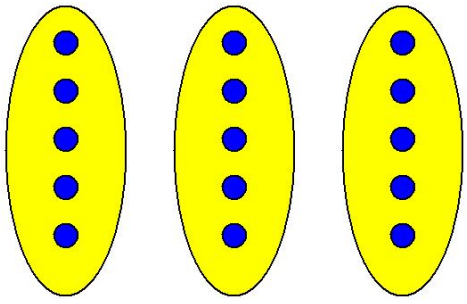


'30 crayons shared equally between three pots.' (Sharing) 'We have 30 crayons and put ten crayons in each pot. How many pots do we need?' (Grouping)

'30 divided by 10 = 3' '30 divided by 3= 10'

30 ÷ 10 = 3
30 ÷ 3 = 10

'How many groups of 5?'
'15 shared equally between 3 people is...?'
'15 divided by 3 equals 5'
'15 divided by 5 equals 3'



15 ÷ 5 = 3
15 ÷ 3 = 5

*Using **arrays** to support division*

15 ÷ 5 =
3
15 ÷ 3 = 5

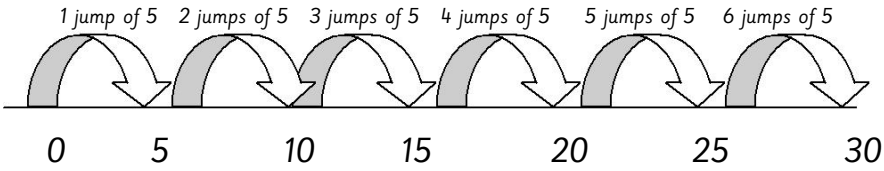
'How many groups of 3?'
'How many groups of 5?'
'15 shared between 3 people is...?'
'15 shared between 5 people is...?'

'15 divided by 5 = 3'
'15 divided by 3 = 5'

*When children are ready, use an empty number line to count forwards:*

**30 ÷ 5 = 6**

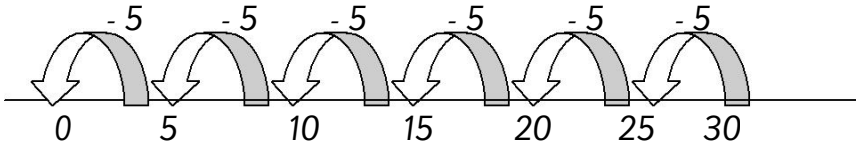
***'How many jumps of five make thirty?'***




*Also jump back to make the link with* ***repeated subtraction****:*

**30 ÷ 5 = 6**

***'How many groups of five?'***




*If, at any time, children are making significant errors, return to the previous stage in calculation.*

## Stage Three – Division

- *Recall and use multiplication and division facts for the* **3, 4 and 8** *multiplication tables (continue to practise the 2, 5 and 10 multiplication tables)*
- *Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to a formal written*

*method*

*Ensure that children are confident with the methods outlined in the previous stage's guidance before moving on.*

*Continue to use* ***practical resources****, pictures, diagrams, number lines, arrays and the ÷ sign to record, using multiples that they know, as appropriate (see Stage Two guidance).*

## Stage Four – Division

- *Recall multiplication and division facts for multiplication tables* ***up to 12 × 12***
- *Use* ***place value, known and derived facts to divide mentally***
- *Divide two-digit and three-digit numbers by a one-digit number using formal written layout (not explicitly stated in the programmes of study but implied in the non-statutory guidance)*

*Ensure that children are confident with the methods outlined in the previous stage's guidance before moving on.*

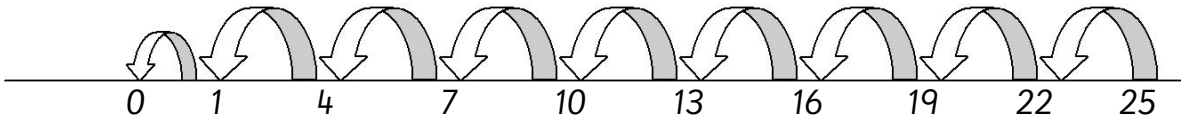
*Calculate mathematical statements for division using the multiplication tables that the children know.*

*Remainders are not specifically referred to until Stage five in the National Curriculum. However, this may be an appropriate point to introduce them using familiar multiplication facts.*

*This could be modelled using an empty number line, if necessary*

*'Eight jumps of three and one left over.'*

**25 ÷ 3 = 8 r1**




*Alternatively you could jump forwards in multiples of three from zero to twenty four ('and one more makes 25')*

**Division using partitioning** *(two digits divided by one digit):*

**65 ÷ 5 = 13**

*65 = 50 + 15 Partition 65 into 50 and 15*

*50 ÷ 5 = 10*
*15 ÷ 5 = 3*
*10 + 3 = 13*

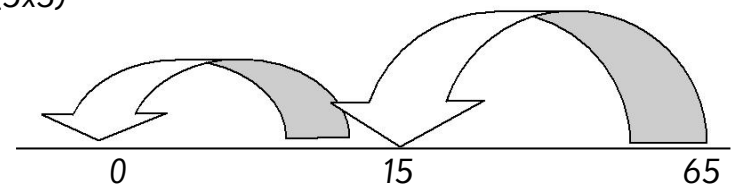
*Children will need to* **practise partitioning in a variety of ways**.

*Continue to use empty number lines, as appropriate, using multiples of the divisor:*

**65 ÷ 5 = 13**

*-50 (5x10)*

*-15 (5x3)*



**98 ÷ 7 = 14**

98 = 70 + 28
**Partition 98 into 70 and 28**

70 ÷ 7 = 10
28 ÷ 7 = 4
10 + 4 = 14

*This could be modelled on an empty number line to further develop understanding.*

*Children will need to practise partitioning in a variety of ways.*

**98 ÷ 7 = 14**

10 + 4 = 14

7 ) 70 + 28

*'We have partitioned 98 into 70 and 28 (90 = 70 + 28).*

*Seven 'goes into' 70 ten times and seven 'goes into' 28 four times. Ten add four equals 14'*

*This will lead into the formal written method of short division:*

**98 ÷ 7 = 14**

```
   1 4
  ----
7 | 9 8
      2
```

**Use the vocabulary of place value to ensure understanding and make the link to partitioning.**

*Continue to practise the formal method of short division throughout stage four.*

*If children are confident develop further, by dividing three-digit numbers by a one-digit number using the formal method of short division with whole number answers (no remainders).*

*If, at any time, children are making significant errors, return to the previous stage in calculation.*

## Stage Five – Division

- *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*

*Ensure that children are confident with the methods outlined in the previous stage's guidance before moving on.*

*Continue to practise* ***the formal written method of short division with whole number answers…***

**184 ÷ 8 = 23**

$$8\overline{)\,1\,8^{2}4}\qquad 2\ 3$$

*Use the language of place value to ensure understanding.*

*Make the link to the partitioning method (see stage four guidance).*

*…and with remainders:*

**432 ÷ 5 = 86 r2**

$$5\overline{)\,4\,3\,2}\qquad 8\,6\ \ r\,2$$

*The remainder can also be expressed as a fraction* $\frac{2}{5}$ *(the remainder divided by the divisor):*

$432 \div 5 = 86\frac{2}{5}$

*Continue to practise, develop and extend the formal method of short division, with and without remainders. Interpret and express remainders according to the context.*

*If, at any time, children are making significant errors, return to the previous stage in calculation.*

## Stage Six – Division

- Divide numbers up to 4 digits by a two-digit number using the formal written method of **short division** where appropriate, interpreting remainders according to the context
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of **long division**, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Ensure that children are confident with the methods outlined in the previous stage's guidance before moving on

Continue to practise the **formal method of short division**, with and without remainders, using the language of place value to ensure understanding (see Y5 guidance).

**496 ÷ 11 = 45 r1**

$$11 \overline{)\,4\ 9^{5}6} \quad 4\ 5\ r\,1$$

The remainder can also be expressed as a fraction $\frac{1}{11}$ (the remainder divided by the divisor)

Dividing by a two-digit number using a **formal method** of long division:

**496 ÷ 11 = 45 r 1**

```
      4 5  r 1
   ___________
11 ) 4 9 6
   - 4 4 0      (40x11)
   ---------
       5 6
     - 5 5      (5x11)
     -------
         1
```

*Multiples of the divisor (11) have been subtracted from the dividend (496)*

*' 40 (11 x 40) + 5 (11 x 5 ) = 45*

*'1 is the remainder'*

*Answer:* $45\frac{1}{11}$

*Standard short division does not help with the following calculation. However, it can be solved using long division (by repeated subtraction using multiples of the divisor):*

**144 ÷ 16 = 9**

```
        9
   ___________
16 ) 1 4 4
   - 6 4        (16 x 4)
   ---------
     8 0
   - 6 4        (16 x 4)
   ---------
     1 6
   - 1 6        (16 x 1)
   ---------
       0
```

*Multiples of the divisor (16) have been subtracted from the dividend (144)*

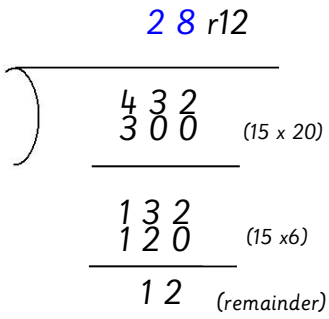
*'4 (16 x 4) + 4 (16 x 4) + 1 (16 x 1) = 9*

*There is no remainder'*

*Children will need to select the most effective method for each calculation/problem they meet, including whether to use the standard,* ***formal written method of***

long division:

**432 ÷ 15 = 28 r12**




*Multiples of the divisor (15) have been subtracted from the dividend (432)*

*'20 (15 x 20) + 8 (15 x 8) = 28*

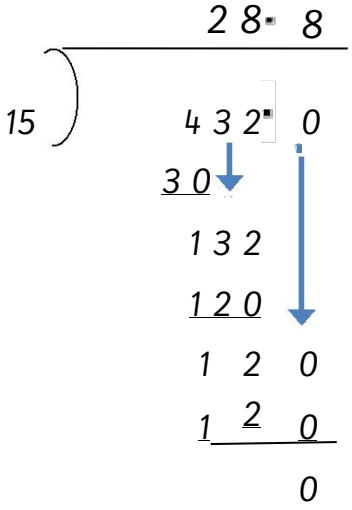
***12 is the remainder'***

*The remainder can also be expressed as a fraction, $\frac{12}{15}$ (the remainder divided by the divisor) or as a decimal,* ***0.8*** *(see next example)*

*The answer is: 28 $\frac{12}{15}$ or 28·8*

*This is an alternative way of recording formal long division:*

**432 ÷ 15 = 28·8**




*Only teach this method when children are completely secure with the previous method.*

*The remainder is expressed as a decimal.*

*If, at any time, children are making significant errors, return to the previous stage in calculation.*

*Our aim is that by the end of stage six children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.*