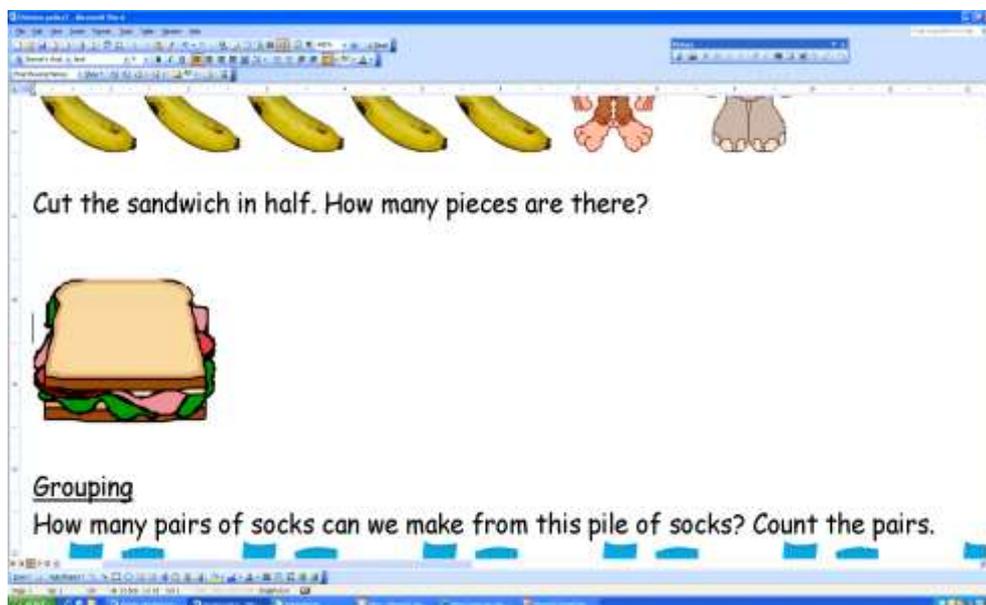




## EYFS

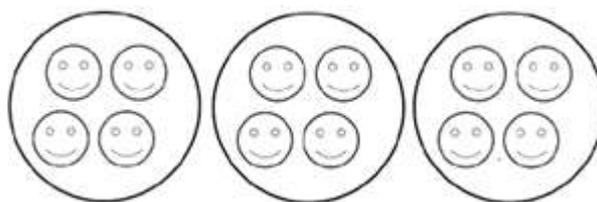
*What will division look like?*



Pupils use concrete objects and practical situations to explore sharing to answer questions such as:

- Share the biscuits out so that everyone has the same number.
- Cut the sandwich in half. How many pieces are there?

Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.



## Year 1

*What will division look like?*

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



## PROGRESSION IN DIVISION



### Sharing

e.g. 6 cakes are shared equally between 2 people. How many cakes does each person get?

**Written Methods**

**Sharing equally**  
E.g. 6 cakes are shared equally between 2 people. How many cakes does each person get?

Sharing equally - dealing with 'left overs', (remainders)  
Share the bananas equally between the monkey and the elephant. How many bananas does each?

### Grouping

How many pairs of socks can we make from this pile of socks? Count the pairs.

**Grouping**  
How many pairs of socks can we make from this pile of socks? Count the pairs.



### Guidance

- *Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.*
- *They make connections between arrays, number patterns, and counting in twos, fives and tens.*

### Year 2

#### *What will division look like?*

Pupils calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs

$$4 \times 3 = 12$$

$$3 \times 4 = 12$$

$$12 \div 4 = 3$$

$$12 \div 3 = 4$$

Pupils solve problems involving multiplication and division, using practical materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts, e.g.

15 pencils are put into boxes of 5. How many boxes of pencils will there be?

Also use arrays to model division.

$$15 \div 5 = 3 \quad \text{and} \quad 15 \div 3 = 5$$

There will be 3 boxes of 5 pencils



The screenshot shows a software interface with a number line at the top. The number line has three jumps, each labeled '+5'. Below the number line, there is a text box that reads:  $5 \times 3 =$  "5 multiplied by three" or "5 times 3" or "5, three times". Below the text box, there is a section titled "Arrays" which shows a 3x5 grid of green squares. To the right of the grid is a box containing  $5 \times 3$ , and below the grid is a box containing  $3 \times 5$ .

## Guidance

- Pupils use a variety of language to describe multiplication and division.
- Pupils are introduced to the multiplication tables. They practise to become fluent in the 2, 5 and 10 multiplication tables and connect the 5 multiplication table to the divisions on the clock face. They begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.
- Pupils work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated addition. They begin to relate these to fractions and measures (for example,  $40 \div 2 = 20$ , 20 is a half of 40). They use commutativity and inverse relations to develop multiplicative reasoning (for example,  $4 \times 5 = 20$  and  $20 \div 5 = 4$ ).

## Year 3

### *What will division look like?*

Pupils write and calculate mathematical statements for division using the multiplication tables that they know, using mental and progressing to formal written methods.



## PROGRESSION IN DIVISION



Use knowledge of multiplication facts and repeated addition to answer division questions, e.g.

How many 3s are there in 39?

Children to move onto grid method when appropriate. (See Year 4)

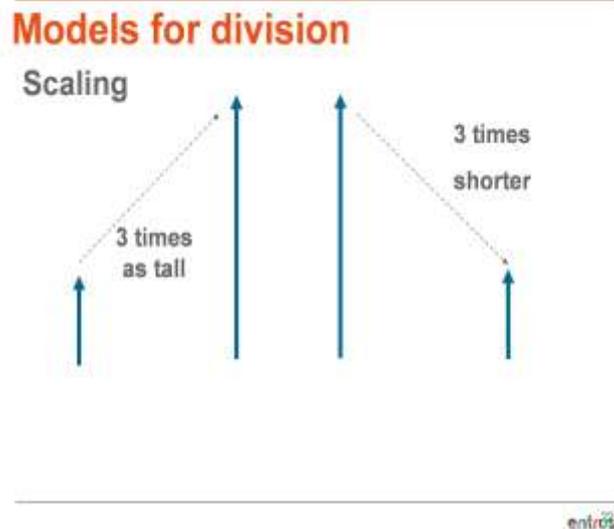
Wri correct.

Level 3

Multiplication

Extending to use all tables that pupils know and to explore the idea of the remainder.

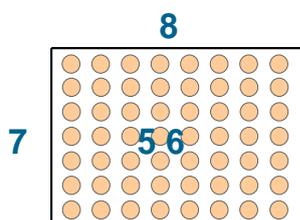
Pupils explore the use of scaling as a model for division, e.g.  
My ribbon is 24 cm long. Can you cut a ribbon 3 times shorter?



Pupils are introduced to the formal written method of short division with whole number answers, using the image of the array and place value apparatus initially.



## An image for $56 \div 7$



entrust

Pupils progress to use the formal written method of short division.

Short division

$98 \div 7$  becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \\ \underline{7} \phantom{0} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

Answer: 14

$432 \div 5$  becomes

$$\begin{array}{r} 86 \\ 5 \overline{) 432} \\ \underline{40} \phantom{0} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

## Guidance

- Pupils develop efficient mental methods, for multiplication and division facts (for example, using  $3 \times 2 = 6$ ,  $6 \div 3 = 2$  and  $2 = 6 \div 3$ ) to derive related facts (for example,  $30 \times 2 = 60$ ,  $60 \div 3 = 20$  and  $20 = 60 \div 3$ ).
- Pupils develop reliable written methods for division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short division.
- Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling



## PROGRESSION IN DIVISION



contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which  $m$  objects are connected to  $n$  objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).

### Year 4

*What will division look like?*

Pupils continue to use the number line to support mental division.

Extend to 3-digit divided by a 1-digit number  
 $257 \div 7$   
Estimate first, use a number line to count on, if appropriate.

$30 \times 7$        $6 \times 7$       rem 4

0      210      252      256

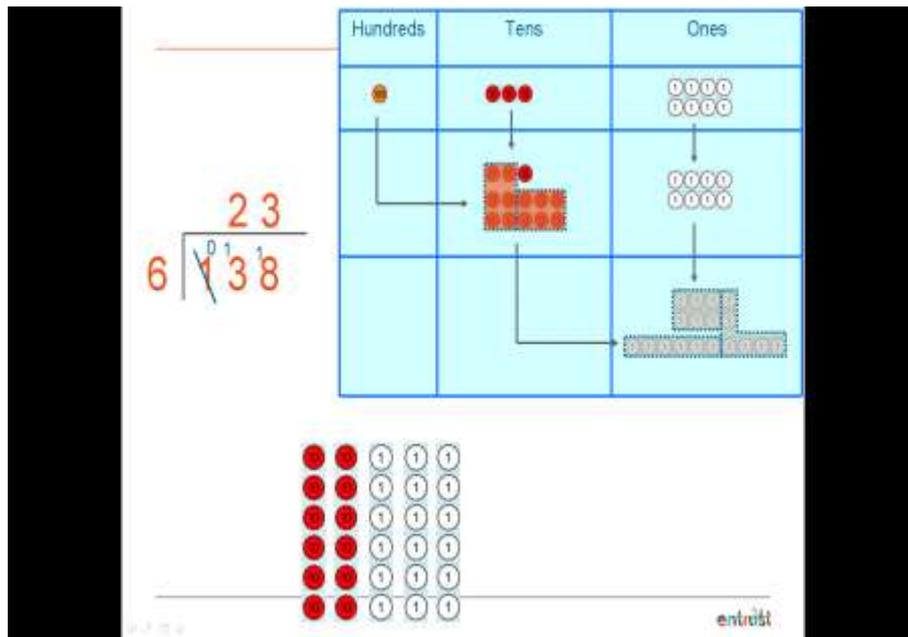
Leads to vertical method  
 $256 \div 7 = 36 \text{ r } 4$

$$\begin{array}{r} 256 \\ - 210 \quad (30 \times 7) \\ \hline 46 \\ - 42 \quad (6 \times 7) \\ \hline 4 \end{array}$$

Pupils continue to become fluent with the formal written method of short division with exact answers, e.g.



## PROGRESSION IN DIVISION



### Guidance

- Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency.
- Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example  $600 \div 3 = 200$  can be derived from  $2 \times 3 = 6$ ).
- Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers.

### Year 5

#### *What will division look like?*

Pupils 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, e.g.

*432 school children go on a camping trip. Each tent sleeps five. How many tents will they need to take?*



## PROGRESSION IN DIVISION



Short division

$84 \div 7$  becomes

$$\begin{array}{r} 12 \\ 7 \overline{) 84} \\ \underline{7} \phantom{0} \\ 14 \\ \underline{14} \\ 0 \end{array}$$

Answer: 12

$432 \div 5$  becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{40} \phantom{0} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

*Answer: They will need to take 87 tents*

### Guidance

- Pupils practise and extend their use of the formal written methods of short division. They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.
- Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example,  $98 \div 4 = 24 \text{ r } 2 = 24 = 24.5 \approx 25$ ).
- Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.

### Year 6



## PROGRESSION IN DIVISION



*What will division look like?*

Pupils 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, e.g.

*Chocolates are packed in trays of 15. If I have 432 chocolates, how many full trays will I have and how many chocolates will be left over?*

The screenshot shows a web browser window with the title "Long division". It displays two examples of long division for  $432 \div 15$ .

Left example:

$$\begin{array}{r} 28 \text{ r}12 \\ 15 \overline{) 432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}$$

Right example:

$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ 132 \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$$

*Answer: there will be 28 trays of chocolates and 12 chocolates left.*

Pupils progress to expressing their remainders as a fraction, e.g. 432 litres of water are stored in 15 litre drums. How many full drums of water will there be and what fraction of the final drum will be filled?



# PROGRESSION IN DIVISION



<p>becomes</p> $\begin{array}{r} 28 \text{ r}12 \\ 3 \overline{) 32} \\ \underline{00} \\ 32 \\ \underline{20} \\ 12 \end{array}$ <p>3 remainder 12</p>	<p><math>432 \div 15</math> becomes</p> $\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ 132 \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$ <p><math>\frac{12}{15} = \frac{4}{5}</math></p> <p>Answer: <math>28 \frac{4}{5}</math></p>	<p><math>432 \div 15</math> becomes</p> $\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{300} \quad \downarrow \\ 132 \\ \underline{120} \quad \downarrow \\ 120 \\ \underline{120} \\ 0 \end{array}$ <p>Answer: 28.8</p>
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Answer: there will be 28 full drums and the 29th drum will be 4/5 full.

Progressing to expressing the remainder as a decimal, e.g.

£432 was raised at the school fair and is to be shared equally between 15 classes. How much will each class receive?

<p>becomes</p> $\begin{array}{r} 28 \text{ r}12 \\ 3 \overline{) 32} \\ \underline{00} \\ 32 \\ \underline{20} \\ 12 \end{array}$ <p>3 remainder 12</p>	<p><math>432 \div 15</math> becomes</p> $\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ 132 \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$ <p><math>\frac{12}{15} = \frac{4}{5}</math></p> <p>Answer: <math>28 \frac{4}{5}</math></p>	<p><math>432 \div 15</math> becomes</p> $\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{300} \quad \downarrow \\ 132 \\ \underline{120} \quad \downarrow \\ 120 \\ \underline{120} \\ 0 \end{array}$ <p>Answer: 28.8</p>
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Answer: Each class will receive £28.80



## PROGRESSION IN DIVISION



Pupils 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, e.g. *496 pupils attend a football tournament. When they are put into teams of 11, how many full teams will there be? Will everyone be in a team?*

496 ÷ 11 becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{) 496} \\ \underline{44} \phantom{6} \\ 56 \\ \underline{55} \\ 1 \end{array}$$

*Answer: there will be 45 full teams of 11 players and one pupil will not have a team.*

### Guidance

- Pupils practise division for larger numbers, using the formal written methods of short and long division.

### Additional Notes

Children should not be made to go onto the next stage if:

- 1) they are not ready.
- 2) they are not confident.

Children should be encouraged to approximate their answers before calculating.

Children should be encouraged to check their answers after calculation using an appropriate strategy.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.