

Reception

Solve practical problems in a real or role play context

Children will understand equal groups and share items out in play and problem solving e.g. cooking or sharing equipment.

- ✓ *In a range of practical and play contexts the child explores and solves problems involving halving and sharing, utilising his or her own methods e.g. Can you cut the cake/apple in half? How many pieces are there?*



- ✓ How many sweets in the box? Take half out.
- ✓ Children understand division as sharing or as giving 'everybody' the same amount.
- ✓ Children use outdoor learning for opportunities of 'splitting' and 'sharing.'



Using fingers children will halve numbers.

Halve 10 = 5



Children to use a range of resources.

Children to begin to know halves of numbers to 10 off by heart.

Year 1

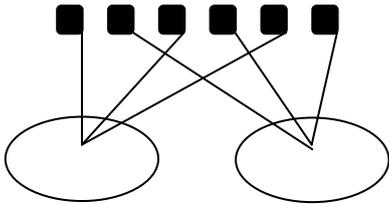
Solve practical problems in a real or role play context

Children to understand the difference between grouping and sharing in a range of practical situations and contexts.

Sharing equally

Share 15 into 3 equal groups. E.g. 15 sweets are shared equally between 3 people. How many sweets would each person get?

Using practical activities e.g. hoops and cubes to share or divide amounts equally.



Grouping

✓ How many groups of 3 can we make with 15?

E.g. there are 15 sweets in a box. How many bags of 3 sweets can be filled?

✓ We've got 12 lego wheels how many cars can we make?



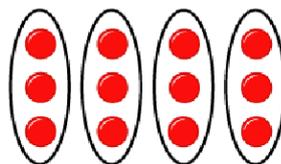
Children understand halving as sharing into two equal groups and to also understand quarters and 4 equal groups. Find halves and quarters of quantities and objects.

They begin to know that halving is the inverse of doubling.

They make connections between arrays, number patterns, and counting in twos, fives and tens.

Using arrays to divide:

I have 4 teddy bears and I have 12 cakes for the teddy bears picnic. How many cakes can they have each?



Year 2

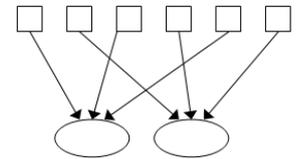
Understand Division as Sharing and Grouping

Sharing equally

Share 15 into 3 equal groups. E.g. 15 sweets are shared equally between 3 people. How many sweets would each person get?

By sharing equally children begin to solve division problems:

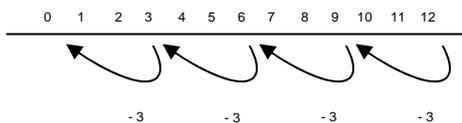
6 sweets shared between 2 people, how many do they each get?



Repeated Subtraction

Children understand that division is repeated subtraction by using a number line or bead bar.

$$12 \div 3 = 4$$



Grouping

There are 6 sweets, how many people can have 2 sweets each?



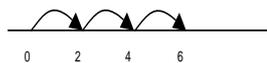
Using cubes:



Counting up in groups using a number line

There are 6 sweets. How many people can have 2 each? (How many 2s make 6?) = 3

$$6 \div 2 = 3$$



More able children can then be introduced to remainders using practical tasks.

Use arrays to show division.



Use Numicon on a numberline.

÷ = signs and missing numbers

Introduce the ÷ symbol

Use mental or written methods using appropriate numbers e.g.

$$6 \div 2 = \square$$

$$\square = 6 \div 2$$

$$6 \div \square = 3$$

$$3 = 6 \div \square$$

$$\square \div 2 = 3$$

$$3 = \square \div 2$$

$$\square \div \nabla = 3$$

$$3 = \square \div \nabla$$

Show that division of two numbers cannot be done in any order (not commutative).

$$12 \div 3 = 4 \text{ but you cannot do } 3 \div 12 = 4$$

Pupils work with a range of materials and contexts in which division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated subtraction.

Year 3

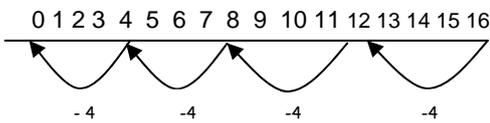
Numberlines

Use practical situations and resources to enable children to visualise and understand division.

Sharing: Repeated subtraction using a number line

Counting under the line if counting back.

$$16 \div 4 = 4$$

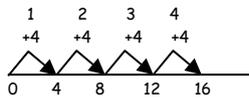


Children move on to repeated subtraction with remainders.

Grouping: Counting up in groups using a number line

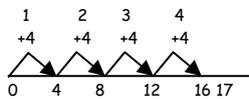
Children will use an empty number line to support their calculation.

$$16 \div 4 = 4$$



Children should also move onto calculations involving remainders.

$$17 \div 4 = 4 \text{ r } 1$$



÷ = signs and missing numbers

Using symbols to stand for unknown numbers to complete equations using inverse operations

$$60 \div 3 = \square$$

$$24 \div \triangle = 8$$

$$\square \div 40 = 3$$

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.

$$\begin{array}{r} 6 \\ 4 \overline{)24} \end{array}$$

Year 4

Use practical situations and resources to enable children to visualise and understand division.

Missing numbers

$$600 \div 3 = \square \quad 240 \div \triangle = 16 \quad \square \div 40 = 30$$

Formal Written methods

Pupils develop reliable written methods for division, starting with calculations of two and three-digit numbers by one-digit numbers and progressing to the formal written methods of short division, including remainders.

$$\begin{array}{r} \underline{31} \\ 6) 186 \end{array}$$

$$\begin{array}{r} \underline{32 \text{ r } 5} \\ 6) 197 \\ 1 \end{array}$$

$$197 \div 6 = 32 \text{ r } 5$$

Year 5

Formal written methods (short 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.

$$\begin{array}{r} \underline{307} \\ 7 \overline{) 2149} \end{array}$$

4 digit by 1 digit

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, $98 \div 4 = \frac{98}{4} = 24 \text{ r } 2 = 24\frac{1}{2} = 24.5 \approx 25$).

Introduce dividing when the answer involves decimals.

£15 shared between 4 friends.

Year 6

Formal written methods continued

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.

432 ÷ 15 becomes

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

Answer: 28 remainder 12

432 ÷ 15 becomes

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

$$\frac{12}{15} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

Short 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

496 ÷ 11 becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{) 496} \\ \underline{44} \quad 5 \\ 56 \\ \underline{55} \\ 1 \end{array}$$

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

Decimal places

Use written division methods in cases where the answer has up to two decimal places.

432 ÷ 15 becomes

$$\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{30} \quad \downarrow \\ 132 \quad \downarrow \\ \underline{120} \quad \downarrow \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28.8