Division Early Years Foundation Stage

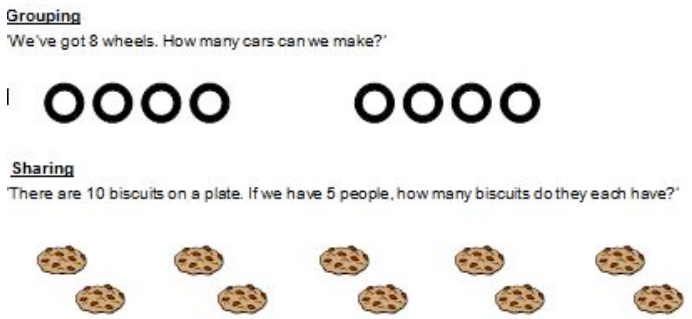
Prior Learning

- Separate a group of objects in different ways recognising that the total stays the same.

Models & Images

Halving using objects to support.

Practical resources in simple problems:



Signs & Symbols

Not appropriate for the year group.

Key Language

more / less
groups of / lots of
share

Extend to:
repeated addition
repeated subtraction

Skills for next steps (Y1 Skills)

- Count in multiples of 1, 2, 5 & 10.
- Solve simple multiplication & division with apparatus & arrays.

Mental Methods

Not appropriate for the year group.

Written Methods

Not appropriate for the year group.

Resources

Practical objects

Numicon

Although these methods will be modelled by staff in school, children should experience calculations in a variety of other forms and presentations to support their understanding of maths in the wider world.

Division Key Stage 1 (Yr 1/2)

Prior Learning (EYFS Skills)

- Count reliably to 20.
- Order numbers 1 – 20.
- Say 1 more/1 less to 20.
- Add & subtract two single digit numbers.

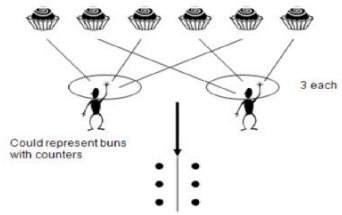
Skills for next steps (Y3 Skills)

- Count from 0 in multiples of 4, 8, 50 & 100.
- Recall & use multiplication & division facts for 3, 4, 8 tables.
- Multiply:
  - 2-digit by 1-digit

Models & Images

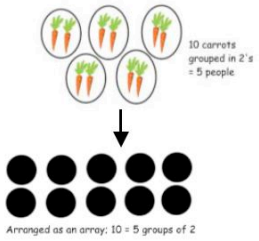
Sharing:

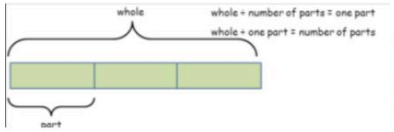
Share these buns equally between 2

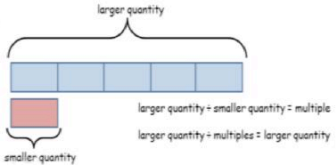


Grouping:

I have 10 carrots. How many people can have 2 carrots each?







Signs & Symbols

$6 \div 2 = \square$ $\qquad \square = 6 \div 2$

$20 \div \square = 2$ $\qquad 2 = 20 \div \square$

$\square \div 10 = 3$ $\qquad 3 = \square \div 10$

Key Language

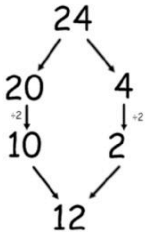
Divide, division, share, share equally, repeated subtraction

Multiply, multiplication, times, repeated addition, groups of, lots of

Mental Methods

Learn division facts for 2, 10 and 5 times tables by heart.

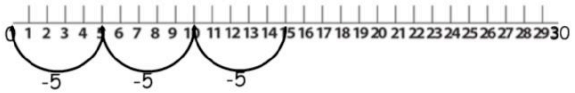
Halving by partitioning:



Written Methods

Written numberline used for repeated subtraction:

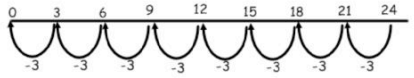
$15 \div 5 = 3$



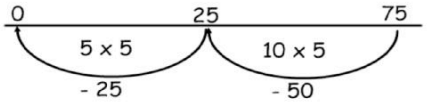
Start at the biggest number (the dividend), subtract groups of divisor.

Blank numberline used for repeated subtraction:

$24 \div 3 = 8$



$75 \div 5 = 15$



Resources

Practical objects

Numicon
Number lines
Hundred Squares
Dienes blocks
Cuisenaire rods

Although these methods will be modelled by staff in school, children should experience calculations in a variety of other forms and presentations to support their understanding of maths in the wider world.

Division Lower Key Stage 2 (Yr 3/4)

Prior Learning (Y2 Skills)

- Count in multiples of 2, 3 & 5 & 10 from any number up to 100.
- Recall & use multiplication & division facts for 2, 5 & 10 tables.
- Calculate & write multiplication & division calculations using multiplication tables.
- Recognise & use inverse.

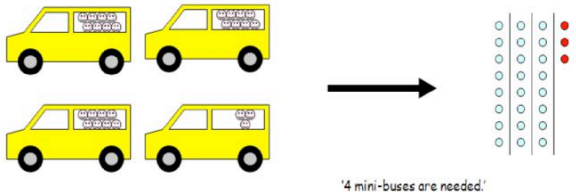
Skills for next steps (Y5 Skills)

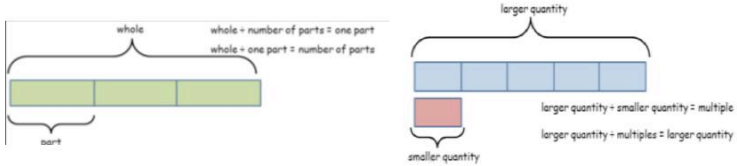
- Identify all multiples & factors, including finding all factor pairs.
- Use known tables to derive other number facts.
- Multiply:
  - 4-digits by 1-digit/ 2-digit
- Divide:
  - 4-digits by 1-digit
- Multiply & divide:
  - Whole numbers & decimals by 10, 100 & 1000

Models & Images

Sharing methods still appropriate.

Grouping:





Signs & Symbols

36 ÷ 4 = □

60 ÷ □ = 6

□ ÷ 3 = 7

320 ÷ 4 = □

240 ÷ □ = 60

□ ÷ 30 = 8

(25 ÷ □) + 2 = 7

(□ ÷ 5) - 2 = 3

Progressing to:

1456 ÷ 4 = □ □

64 ÷ 4 = 8 x □

Key Language

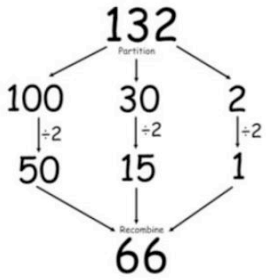
Multiply, multiplication, times, Multiples of, product, repeated addition, groups of, lots of

Divide, division, share, share equally, repeated subtraction, divide in to, chunking

Mental Methods

By end of year 4 to know division facts for all times tables up to 12 x 12.

Halving by partitioning:



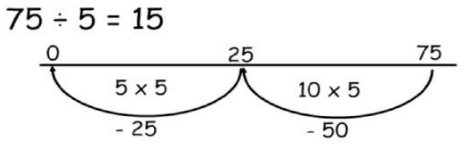
Using associated facts to derive division: e.g. 12 ÷ 3 = 4 so 120 ÷ 3 = 40

Written Methods

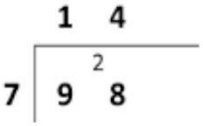
Number Line:
Use 'coin card' method – find multiples of 1,2,5,10.

1 x 5 = 5
2 x 5 = 10
5 x 5 = 25
10 x 5 = 50

Start at the biggest number (the dividend), subtract groups of divisor.



Short Division:



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Division Upper Key Stage 2 (Yr 5/6)

Prior Learning (Y4 Skills)

- Count in multiples of 6, 7, 9, 25 & 1000.
- Recall & use multiplication & division facts all tables to 12x12.
- Multiply:
  - 2-digit by 1-digit
  - 3-digit by 1-digit
- Divide:
  - 3-digit by 1-digit

Skills for next steps

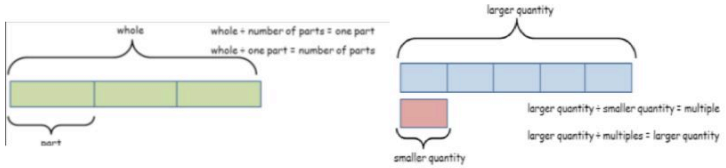
- Understand and use place value for decimals, measures and integers of any size.
- Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions and mixed numbers, all both positive and negative.
- Recognise and use relationships between operations including inverse operations.

Models & Images

Models and images should be used to support children in visualising calculations and to secure understanding.

When solving problems in different contexts, children should be encouraged to represent the problem visually for support. E.g. using the bar method.

The use of models and images, including practical apparatus, may be particularly beneficial when interpreting remainders as fractions or by rounding, as appropriate to the context.



Signs & Symbols

63 ÷ 7 = □ 56 ÷ 8 = □ □ ÷ 9 = 8

□ 172 ÷ 4 = 54 ÷ □ = 18 □ ÷ 21 = 90

Progressing onto:

6.3 ÷ 7 = □ 9.9 ÷ □ = 1.1 □ ÷ 5 = 0.8

17.2 ÷ 4 = □ □ ÷ 25 = 39

Key Language

Multiply, multiplication, times, Multiples of, product, repeated addition, groups of, lots of

Divide, division, share, share equally, repeated subtraction, divide in to, chunking

Mental Methods

By the end of Year 6:

- Find factor pairs of numbers.
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Identify common factors, common multiples and prime numbers.
- Multiply and divide numbers mentally drawing upon known facts.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).

Format of a place value grid when multiplying and dividing by 10, 100 and 1000:

Th	H	T	U	t	h	th
			5	6		
			0	5	6	

Written Methods

In Year 5 and 6 children should calculate division with remainders. Remainders should be expressed as whole number remainders, decimals and fractions as appropriate to the context.

Short division:

$$\begin{array}{r} 8\ 6\ r2 \\ 5\overline{)\,4\ 3^{3}\ 2} \end{array}$$

$$\begin{array}{r} 4\ 5\ r1 \\ 11\overline{)\,4\ 9^{5}\ 6} \end{array}$$

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

Long division:

$$\begin{array}{r} 2\ 8\cdot 8 \\ 15\overline{)\,4\ 3\ 2\cdot 0} \\ 3\ 0\ \downarrow \\ \hline 1\ 3\ 2 \\ 1\ 2\ 0 \\ \hline 1\ 2\ 0 \\ 1\ 2\ 0 \\ \hline 0 \end{array}$$

Answer: 28·8

Resources

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Number lines

Hundred Squares

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Cuisenaire rods

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