Related facts – multiplication and division

Notes and guidance

In this small step, children bring together the skills learnt so far in this block as they explore calculations related to known facts.

Children explore scaling facts by 10 and 100, for example using the fact that 4 × 7 = 28 to derive 4 × 70 = 280 and 4 × 700 = 2,800. They then look at this relationship with division, for example using 12 ÷ 3 = 4 to derive 120 ÷ 3 = 40 and 1,200 ÷ 3 = 400. Care should be taken to ensure that children do not also think that 12 ÷ 30 = 40. This is a good opportunity to remind children that multiplication is commutative, but division is not.

A range of representations are used to make the link between multiples of 1, 10 and 100 that will be familiar to children from previous steps in this block and in Year 3

Things to look out for

- Children may derive incorrect division facts by using the rules that they have learnt about related multiplication facts.

- Children may try to find results by calculation rather than recognising the relationship between one fact and another.

Key questions

- What is the same and what is different about the two calculations?

- How can you represent the calculation using place value counters?

- How does knowing that _____ is 10 times the size of _____ help you to complete the calculation?

- What calculation do you know that would help with this one?

Possible sentence stems

- _____ × _____ ones is equal to _____ ones,

  so _____ × _____ tens is equal to _____ tens.

- _____ ÷ _____ is equal to _____,

 so _____ tens ÷ _____ is equal to _____ tens.

National Curriculum links

- Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Related facts – multiplication and division

Key learning

- Write two multiplication facts and two division facts represented by each array.
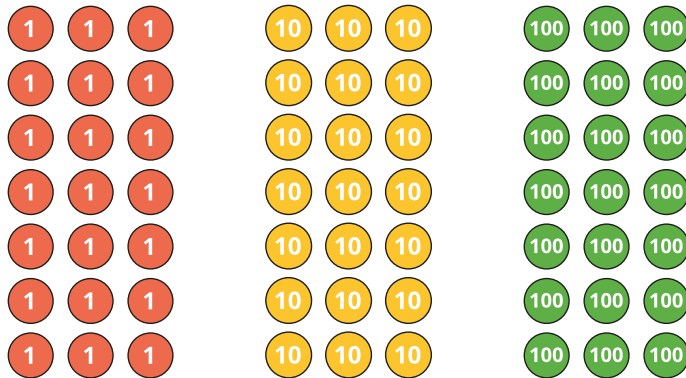
  What is the same and what is different about the arrays?

-

  I know that
  3 x 5 ones = 15 ones,
  so 3 x 5 tens = 15 tens.

  3 x 50 = 150

  Use Max's method to complete the calculations.

  ▸ 3 × 9 = _____   ▸ 4 × 8 = _____   ▸ _____ = 5 × 7

    3 × 900 = _____   4 × _____ = 320   3,500 = 5 × _____

- Mo is working out 1,200 ÷ 3

  I know that
  12 ones ÷ 3 is equal to 4 ones.
  So 12 hundreds ÷ 3 is
  equal to 4 hundreds.
  1,200 ÷ 3 = 400

  Use Mo's method to work out the divisions.

560 ÷ 7	480 ÷ 6	720 ÷ 12
5,600 ÷ 7	4,800 ÷ 6	7,200 ÷ 12

- It costs £30 for one ticket to the zoo.

  How much do 7 tickets cost?

  How many tickets can you buy for £300?

- There are 120 children in Year 4

  The children are put into groups of 4

  How many groups are there altogether?

Related facts – multiplication and division

Reasoning and problem solving

9 friends are going to a theme park and having lunch.

Tickets to the theme park cost £30 each.

Lunch costs £10 each.

Six of the friends share the cost between them.

How much do they each pay?

£60

Write <, > or = to compare the calculations.

$72 \div 8 \bigcirc 720 \div 8$

$800 \div 2 \bigcirc 800 \div 4$

$4 \times 900 \bigcirc 9 \times 400$

Did you need to work them out?

<
>
=

Is the statement true or false?

$6 \times 800 = 8 \times 600$

Explain your answer.

True
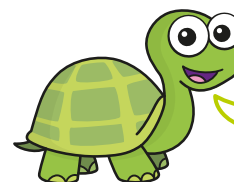
I know that $5 \times 9 = 45$, so I also know all these other facts.

$5 \times 90 = 450$	$450 \div 9 = 50$
$500 \times 9 = 4{,}500$	$4{,}500 \div 9 = 500$

Do you agree with Tiny?

Explain your answer.

Yes