Divide by 10

Notes and guidance

In this small step, children divide whole numbers by 10, with questions that only have whole number answers. They need to be able to visualise making a number one-tenth the size and understand that "one-tenth the size" is the same as "dividing by 10".

Children use concrete resources and a place value chart to see the link between dividing by 10 and the position of the digits of a number before and after the calculation. They recognise that when dividing by 10, the digits move one place value column to the right. They begin to understand that multiplying by 10 and dividing by 10 are the inverse of each other.

Children may notice that in all the examples they see, they need to "remove the zero" to find the answer. Ensure that they do not generalise this too far and use it as their method, as this will cause issues in later learning when looking at decimals.

Things to look out for

- Children may incorrectly conclude that to divide by 10, they always just remove a zero from the number.
- Children may confuse multiplying and dividing by 10, and move the digits in the wrong direction in a place value chart.

Key questions

- What do you notice when dividing by 10?
- Why does this happen?
- What happens to the digits when you divide by 10?
- How can you use a place value chart to show dividing _____ by 10?
- What is _____ divided by 10?
- What number is one-tenth the size of _____?

Possible sentence stems

- _____ ÷ 10 = _____
- _____ = _____ ÷ 10
- _____ is one-tenth the size of _____

National Curriculum links

- Recall multiplication and division facts for multiplication tables up to 12 × 12
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 (Y5)

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Key learning

- Complete the calculation shown by the array.
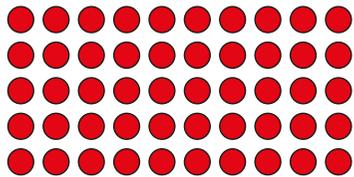
  50 = _____ groups of 10

  $50 \div 10 =$ _____

- Draw arrays to help you complete the divisions.

  ▸ $30 \div 10 =$ _____   ▸ _____ $= 10 \div 10$

  ▸ $40 \div 10 =$ _____   ▸ _____ $= 20 \div 10$

- Sam uses base 10 to divide 140 by 10
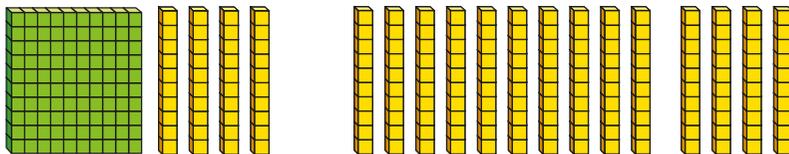
  > 140 = 1 hundred and 4 tens
  > 1 hundred = 10 tens
  > There are 14 groups of 10
  > $140 \div 10 = 14$

  Use Sam's method to complete the divisions.

  ▸ $120 \div 10 =$ _____   ▸ _____ $= 230 \div 10$

  ▸ $170 \div 10 =$ _____   ▸ _____ $= 260 \div 10$

- Jack uses a place value chart to work out $340 \div 10$

H	T	O

  ÷ 10

H	T	O
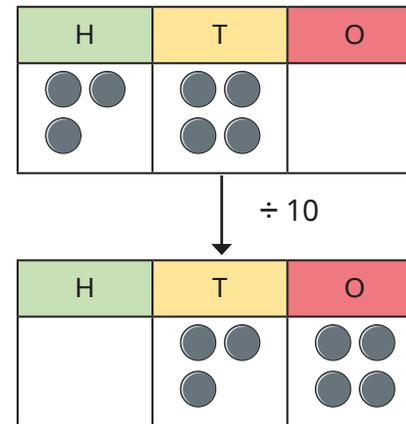
  > I can see that when I divide by 10, all the counters move one place to the right on a place value chart.

  $340 \div 10 = 34$

  Use Jack's method to work out the divisions.

  $480 \div 10$ $620 \div 10$ $930 \div 10$

- Ten friends share some money equally from a money box.

  ▸ How much would they each have if the box contained:

    - twenty £1 coins   - £120?

  ▸ After emptying the box and sharing the contents equally, each friend has 90p.

    How much money was in the box?

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Reasoning and problem solving

Scott, Tom, Esther and Dani are in a race.

Here are the numbers on their vests.

350	35
3,500	**53**

Use the clues to match each vest number to a child.

- Scott's number is one-tenth the size of Tom's.
- Nobody has a number that is 10 times the size of Esther's.
- Dani's number is one-tenth the size of Scott's.

Scott: 350

Tom: 3,500

Esther: 53

Dani: 35

Mr Rose is buying furniture.

To make sure it will fit in the room, he decides to draw a plan.

The actual size of everything is 10 times the size that it is on the plan.

He makes a table to show the measurements.

Item	Actual size	Plan size
Bed length	200 cm	2,000 cm
Desk length	120 cm	12 cm
Wardrobe height	1,850 mm	185 mm

Are Mr Rose's plan measurements correct?

Explain your answers.

The length of the room is 240 cm.

How long will it be on the drawing?

bed: incorrect

desk: correct

wardrobe: correct

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24 cm