Divide decimals by integers

Notes and guidance

In this small step, children divide decimals by integers other than 10, 100 or 1,000 for the first time.

Children look at related division facts, such as $8 \div 2 = 4$ therefore $0.8 \div 2 = 0.4$ and $0.08 \div 2 = 0.04$. Explore the pattern that as the number being divided becomes 10 or 100 times smaller, the answer becomes 10 or 100 times smaller, modelling this using place value counters in a place value chart.

Children explore a range of division facts using times-table knowledge, for example $144 \div 12 = 12$, so $1.44 \div 12 = 0.12$. Using place value counters, children put counters into groups, starting with the greatest place value column. They start with division where no exchanges are needed before moving on to calculations needing exchanges. They use the formal written method for division alongside the place value charts.

Things to look out for

- When using related facts, children may make the number being divided one-hundredth the size, but only make the answer one-tenth the size, for example $8 \div 2 = 4$, so $0.08 \div 2 = 0.4$

- When using the formal written method for division, children may forget to add the decimal point.

Key questions

- If you know that _____ ÷ _____ = _____, what else do you know?

- If you make the number being divided one-tenth the size, what must you do to the answer?

- How can you show this division using place value counters?

- How many groups of _____ can you make with _____?

- What happens to tenths or hundredths that you cannot group?

Possible sentence stems

- I know that _____ ÷ _____ is _____, so I also know that _____ ÷ _____ is _____

- If _____ ones divided by _____ is equal to _____, then _____ tenths/hundredths divided by _____ is equal to _____

National Curriculum links

- Use written division methods in cases where the answer has up to 2 decimal places

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Key learning

- Dani, Mo and Kim use place value counters to work out divisions.

Dani	Mo	Kim
24 ÷ 2 = 12	2.4 ÷ 2 = 1.2	0.24 ÷ 2 = 0.12

What is the same about their divisions?

What is different about their divisions?

What do you notice?

- Use place value counters to work out the divisions.

  ▶ 4 ÷ 2   ▶ 9 ÷ 3   ▶ 36 ÷ 6   ▶ 15 ÷ 3

  0.4 ÷ 2   0.09 ÷ 3   3.6 ÷ 6   0.15 ÷ 3

- Use counters and a place value chart to work out the divisions.

8.46 ÷ 2		0.84 ÷ 2		9.36 ÷ 3		9.03 ÷ 3

- Scott uses place value counters in a place value chart to work out 5.32 ÷ 4

  He writes his calculation using the formal written method.

  Use place value counters alongside the formal written method to work out the divisions.

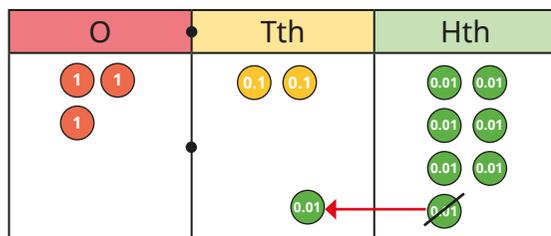 | 3.12 ÷ 2 | | 7.32 ÷ 3 | | 6.05 ÷ 5 |
  |---|---|---|---|---|

- Max has £7.48

  He shares this money equally between him and 5 friends.

  He puts the money left over in a pot.

  How much money does he put in the pot?

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Reasoning and problem solving

Tiny uses place value counters to work out 3.27 ÷ 3

O	Tth	Hth

I only had two counters in the tenths column, so I moved one of the hundredths so each column could be grouped into 3s.
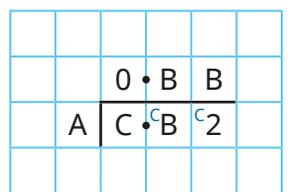
1.09

Explain why Tiny is incorrect.

What is the correct answer?

C is $\frac{1}{4}$ of A

$B = C + 2$

Use this information to complete the division.

$$A \overline{)\, C \cdot {}^{C}B\, {}^{C}2} = 0 \cdot B\, B$$

A = 4

B = 3

C = 1

Compare methods with a partner.

How did you work it out?

Create your own question like this for someone else to solve.

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