Equivalent fractions, decimals and percentages

Notes and guidance

In this small step, children continue to explore the fraction, decimal and percentage equivalents that they began in Year 5

Children use hundred squares, bar models and number lines to recap equivalents to $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ as well as related non-unit fractions such as $\frac{3}{4}$, $\frac{2}{5}$ and $\frac{7}{10}$. They then look at more abstract methods of converting between fractions, decimals and percentages. Learning from the previous step is reinforced, in which equivalent fractions are found with a denominator of 100, allowing for a straightforward conversion to decimals and percentages. Children also convert decimals or percentages into a fraction with a denominator of 100 and then simplify where possible, for example 15% = $\frac{15}{100}$ = $\frac{3}{20}$. This enables them to find equivalents to more complex numbers, such as 92% or 0.76

Key questions

- How many parts has the whole been split up into? What fraction is each part worth?

- If the whole is 100%, what is $\frac{1}{2}$/$\frac{1}{4}$/$\frac{1}{5}$?

- If $\frac{1}{10}$ is equal to 10%, what is $\frac{3}{10}$ equal to?

- How do you find equivalent fractions?

- How many 5s are there in 100?

- Can the fraction be simplified? How do you know?

Possible sentence stems

- If the whole is equal to 100%, then each part is worth _____%.

- If $\frac{1}{\square}$ is equal to _____%, then $\frac{\square}{\square}$ is equal to _____%.

- To find an equivalent fraction with a denominator of 100, I need to _____ by _____

Things to look out for

- Children may not be confident with methods for finding equivalent fractions – both fractions with a denominator of 100 and those that need simplifying.
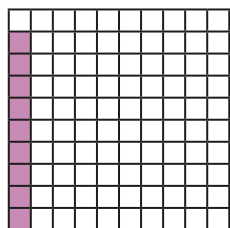
National Curriculum links

- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Equivalent fractions, decimals and percentages

Key learning

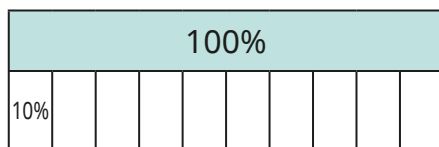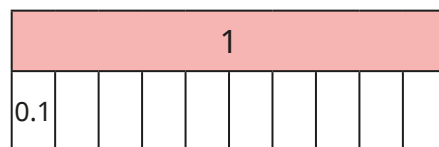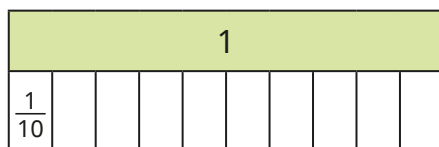- Complete the sentences to describe the hundred square.

  The fraction shaded is $\frac{\square}{100}$

  The decimal shaded is _____

  The percentage shaded is _____

- What are the fraction and decimal equivalents of 97%?

  What are the percentage and fraction equivalents of 0.23?

- What is the same about each bar model? What is different?

1

  $\frac{1}{10}$

1

  0.1

100%

  10%

  ▶ Shade three parts of each bar model.

    What fraction, decimal and percentage is shaded?

  ▶ What other equivalent fractions, decimals and percentages can you find?

- Complete the number line to show the equivalent fractions, decimals and percentages.

  $\frac{1}{5}$ $\frac{2}{5}$

  0   0.2   0.6   1

  0%   40%   80%
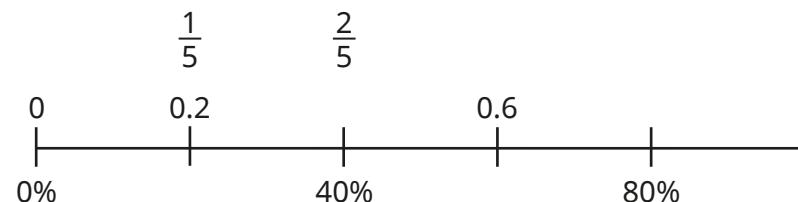
- Dexter converts $\frac{13}{20}$ to a decimal and a percentage.

  $\times 5$

  $\frac{13}{20} = \frac{65}{100} = 0.65 = 65\%$

  $\times 5$
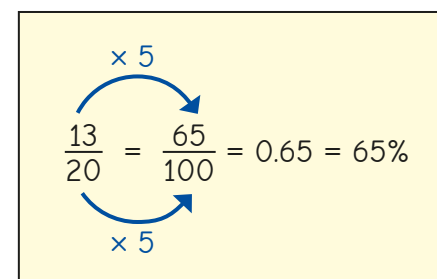
  Explain Dexter's method.

  Use Dexter's method to write each fraction as a decimal and as a percentage.
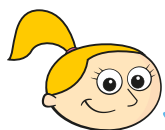
  $\frac{9}{20}$ $\frac{23}{25}$ $\frac{23}{50}$ $\frac{146}{200}$

Equivalent fractions, decimals and percentages

Reasoning and problem solving

Eva

I know that 45% is equivalent to $\frac{45}{100}$

Amir

I know that 45% is equivalent to $\frac{9}{20}$

Who do you agree with?

Explain your reasoning.

Which of these pairs are equivalent?

| $\frac{11}{25}$ and 44% | $\frac{23}{50}$ and 23% |

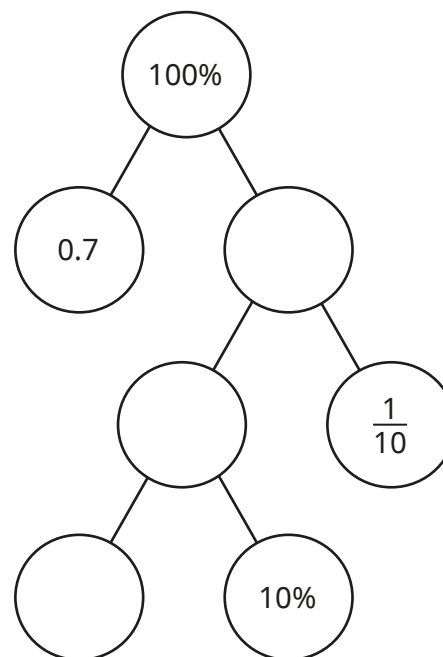| $\frac{17}{20}$ and 0.17 | $\frac{49}{50}$ and 0.98 |

They are both correct, but Amir has written the fraction in its simplest form.

$\frac{11}{25}$ and 44%

$\frac{49}{50}$ and 0.98

Complete the part-whole model.

100%

0.7

$\frac{1}{10}$

10%

Is there more than one way to complete it? How do you know?

Create your own question like this for a partner.

0.3, 30%, $\frac{30}{100}$, $\frac{3}{10}$

0.2, 20%, $\frac{20}{100}$, $\frac{2}{10}$, $\frac{1}{5}$

0.1, 10%, $\frac{10}{100}$, $\frac{1}{10}$