

Reasoning and Problem Solving

Step 1: Fractions to Percentages

National Curriculum Objectives:

Mathematics Year 6: (6F11) [Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Prove whether a statement is true or false when changing fractions to percentages where the denominator is 10 and 100.

Expected Prove whether a statement is true or false when changing fractions to percentages where the denominator is a factor of 100.

Greater Depth Prove whether a statement is true or false when changing fractions to percentages where the denominator is not always a factor of 100.

Questions 2, 5 and 8 (Problem Solving)

Developing Find the percentage of the white area of the shape where the denominator is 10 or 100.

Expected Find the percentage of the white area of the shape where the denominator is a factor of 100.

Greater Depth Find the percentage of one of the white areas of the shape where the denominator is not a factor of 100.

Questions 3, 6 and 9 (Problem Solving)

Developing Follow the clues to find the matching fraction and percentage combinations, where the denominator is 10 or 100.

Expected Follow the clues to find the matching fraction and percentage combinations, where the denominator is a factor of 100.

Greater Depth Follow the clues to find the matching fraction and percentage combinations, where the denominator is not always a factor of 100.

More [Year 6 Percentages](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Fractions to Percentages

1a. Archie says,



$\frac{1}{10}$ as a percentage is 1%.

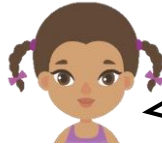
Is he correct? Convince me.



R

Fractions to Percentages

1b. Annabelle says,



$\frac{20}{100}$ as a percentage is 20%.

Is she correct? Convince me.



R

2a. In this diagram, each shaded part is $\frac{1}{10}$ of the area of the rectangle.

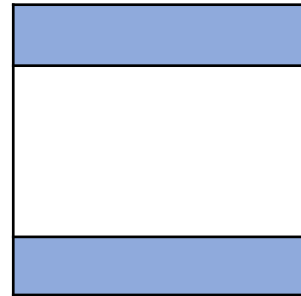


What percentage is equal to half of the white area?



PS

2b. In this diagram, each shaded part is $\frac{20}{100}$ of the area of the square.



What percentage is equal to half of the white area?



PS

3a. Jan has converted a fraction into a percentage. She says,



My denominator is 10 and my numerator is odd. My percentage is more than 40%.

What are her fraction and percentage combinations?



PS

3b. Seb has converted a fraction into a percentage. He says,



My numerator is between 15 and 20 and my denominator is 100. My percentage is less than 20%.

What are his fraction and percentage combinations?



PS

Fractions to Percentages

Fractions to Percentages

4a. Millen says,



$\frac{1}{25}$ as a percentage is 25%.

Is she correct? Convince me.



R

4b. Joey says,



$\frac{1}{20}$ as a percentage is 5%.

Is he correct? Convince me.



R

5a. In this diagram, each shaded part is $\frac{6}{20}$ of the area of the rectangle.

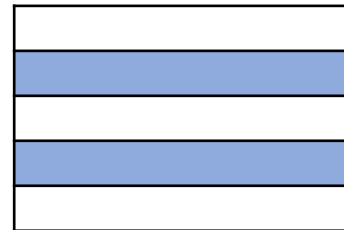


What percentage is the total white area?



PS

5b. In this diagram, each shaded part is $\frac{5}{25}$ of the area of the rectangle.



What percentage is the total white area?



PS

6a. Seb has converted a fraction into a percentage. He says,



My denominator is 20 or 50. My numerator is divisible by 3. My percentage is $>50\%$.

What could his fraction and percentage combinations be? Find two examples for each denominator.



PS

6b. Malikah has converted a fraction into a percentage. She says,



My numerator is even. My denominator is 20 or 25. My percentage is $<60\%$.

What could her fraction and percentage combinations be? Find two examples for each denominator.



PS

Fractions to Percentages

Fractions to Percentages

7a. Marie says,



I scored $\frac{29}{40}$ on the first test and $\frac{19}{35}$ on the second test. I scored 65% altogether.

Is she correct? Convince me.



R

7b. Ray says,



I scored $\frac{19}{20}$ on the first test and $\frac{9}{15}$ on the second. I scored 85% altogether.

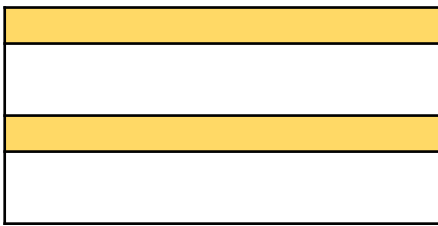
Is he correct? Convince me.



R

8a. In this diagram, each shaded part is $\frac{3}{15}$ of the area of the rectangle.

The two white parts are equal.



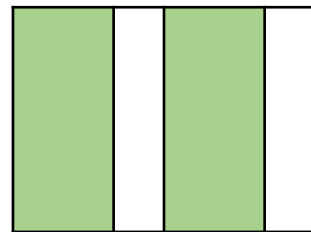
What percentage is one of the white areas?



PS

8b. In this diagram, each shaded part is $\frac{9}{30}$ of the area of the square.

The two white parts are equal.



What percentage is one of the white areas?



PS

9a. Issa has converted a fraction into a percentage. He says,



My numerator contains a 2 and my denominator contains a 3. My percentage is equal to or $>60\%$.

What could his fraction and percentage combinations be? Find four examples each with a different denominator.



PS

9b. Aimee has converted a fraction into a percentage. She says,



My denominator contains a 4 and my numerator contains a 1. My percentage is $<45\%$.

What could her fraction and percentage combinations be? Find four examples each with a different denominator.



PS

Reasoning and Problem Solving Fractions to Percentages

Developing

1a. Archie is incorrect. 1% is not $\frac{1}{10}$. 1% is $\frac{1}{100}$ and $\frac{1}{10}$ is 10%.

2a. 40%

3a. $\frac{5}{10}$ and 50%; $\frac{7}{10}$ and 70%;

$\frac{9}{10}$ and 90%

Expected

4a. Millen is incorrect. 25% is not $\frac{1}{25}$. 25% is $\frac{1}{4}$ and $\frac{1}{25}$ is 4%.

5a. 40%

6a. Various answers, for example:

$\frac{15}{20}$ and 75%, $\frac{18}{20}$ and 90%;

$\frac{30}{50}$ and 60%, $\frac{48}{50}$ and 96%

Greater Depth

7a. Marie is incorrect. She scored 48/75 in total which equals 64%.

8a. 30%

9a. Various answers, for example:

$\frac{21}{35}$ and 60%, $\frac{21}{30}$ and 70%;

$\frac{24}{32}$ and 75%, $\frac{27}{36}$ and 75%

Reasoning and Problem Solving Fractions to Percentages

Developing

1b. Annabelle is correct because $\frac{20}{100}$ is equal to 20%, as percent is out of 100.

2b. 30%

3b. Seb's possible combinations are:

$\frac{16}{100}$ and 16%, $\frac{17}{100}$ and 17%, $\frac{18}{100}$ and

18%, $\frac{19}{100}$ and 19%

Expected

4b. Joey is correct because $\frac{1}{20}$ is equal to $\frac{5}{100}$, which is 5%, as percent is out of 100.

5b. 60%

6b. Various answers, for example:

$\frac{6}{20}$ and 30%, $\frac{10}{20}$ and 50%;

$\frac{8}{25}$ and 32%, $\frac{14}{25}$ and 56%

Greater Depth

7b. Ray is incorrect. He scored 28/35 in total which equals 80%.

8b. 20%

9b. Various answers, for example:

$\frac{11}{44}$ and 25%, $\frac{12}{48}$ and 25%;

$\frac{12}{40}$ and 30%, $\frac{16}{40}$ and 40%