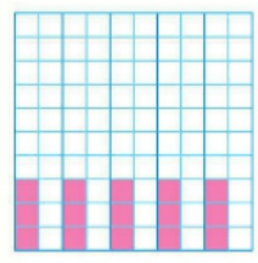
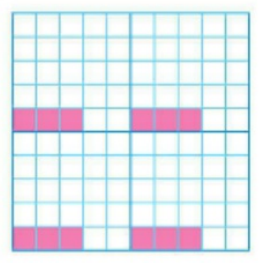


1. For each sport, shade a 10 × 10 grid that represents the number of students out of 100 that chose the sport. **Sample answers are given.**

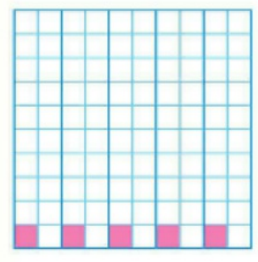
Basketball: 3 out of 20



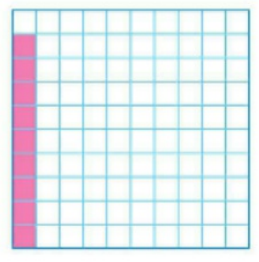
Football: 3 out of 25



Gymnastics: 1 out of 20



Swimming: 9 out of 100



2. What fraction with a denominator of 100 represents the number of students who chose each sport?

Basketball: $\frac{15}{100}$

Football: $\frac{12}{100}$

Gymnastics: $\frac{5}{100}$

Swimming: $\frac{9}{100}$

percent:

Vocabulary

percent

Common Core State Standards

Content Standards
Preparation for 6.RP.3c

MP Mathematical Practices
1, 3, 4, 5



Check for Reasonableness

In Example 2, you can conclude that $\frac{11}{20}$ is a reasonable answer because 55% is a little more than 50%, and $\frac{11}{20}$ is a little more than $\frac{10}{20}$ or $\frac{1}{2}$.

Examples



1. Write 50% as a fraction in simplest form.

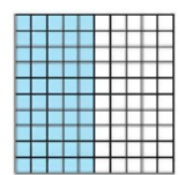
50% means 50 out of 100.

$$50\% = \frac{50}{100}$$

Definition of percent

$$= \frac{50 \div 50}{100 \div 50} \text{ or } \frac{1}{2}$$

Simplify. Divide the numerator and the denominator by the GCF, 50.



$$50\% = \frac{1}{2}$$

2. In a recent survey, 55% of cell phone owners said they text message. What fraction of cell phone owners is this?

$$55\% = \frac{55}{100}$$

Definition of percent

$$= \frac{11}{20}$$

Simplify.

So, $\frac{11}{20}$ of cell phone owners text message.

a) $\frac{75}{100} = \frac{3}{4}$
 $\frac{75 \div 25}{100 \div 25} = \frac{3}{4}$
 b) $\frac{90}{100} = \frac{9}{10}$
 $\frac{90 \div 10}{100 \div 10} = \frac{9}{10}$
 c) $\frac{38}{100} = \frac{19}{50}$
 $\frac{38 \div 2}{100 \div 2} = \frac{19}{50}$

Got it? Do these problems to find out.

Write each percent as a fraction in simplest form.

a. 75%

b. 90%

c. 38%

$\frac{3}{4}$

$\frac{9}{10}$

$\frac{19}{50}$

Show your work



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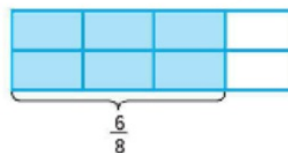
Fractions as Percents

To write a fraction as a percent, find an equivalent ratio with 100 as a denominator.

Example



4. Write the fraction $\frac{6}{8}$ as a percent.



$$\frac{6}{8} = \frac{3}{4}$$

Simplify by dividing by the GCF, 2.

$$\frac{3}{4} = \frac{\square}{100}$$

Write equivalent ratios. One ratio is the fraction. The other ratio is the unknown value compared to 100.

$$\frac{3}{4} = \frac{75}{100}$$

Since $4 \times 25 = 100$, multiply 3 by 25 to find the unknown value.

So, $\frac{75}{100}$ or 75% of the rectangle is shaded.

Got it? Do this problem to find out.

e. Write the fraction $\frac{9}{12}$ as a percent.



e. **75%**

$$\frac{9}{12} = \frac{3}{4} = \frac{75}{100}$$

$\div 3 \quad \times 25$





Guided Practice Check

Write each percent as a fraction in simplest form. (Examples 1–3)

1. $15\% = \frac{3}{20}$

Show your work:
 $\frac{15}{100} \div 5 = \frac{3}{20}$

2. $80\% = \frac{4}{5}$

$\frac{80}{100} \div 10 = \frac{8}{10} \div 2 = \frac{4}{5}$

3. $33\% = \frac{33}{100}$

$\frac{33}{100} \times 10 = \frac{330}{100} = \frac{33}{10}$

Write each fraction as a percent. Use a model if needed. (Example 4)

4. $\frac{3}{10} = 30\%$

5. $\frac{3}{20} = 15\%$

6. $\frac{2}{5} = 40\%$

$\frac{2 \times 20}{5 \times 20} = \frac{40}{100} = 40\%$

7. Elsa ran 7 out of 10 days. What percent of the days did she run? (Example 5)

70%

8. **Building on the Essential Question** Why is it helpful to write a fraction as a percent?

Sample answer: When fractions are written as percents, it is easier to compare the values.

Rate Yourself!

How confident are you about percents and fractions? Check the box that applies.

For more help, go online to access a **Personal Tutor**.

FOLDABLES Time to update your Foldable!

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Name _____ My Homework _____

Independent Practice

[Go online for Step-by-Step Solutions](#)


Write each percent as a fraction in simplest form. (Examples 1–3)

1. $2\% = \frac{1}{50}$

Show your work

2. $20\% = \frac{1}{5}$

3. $85\% = \frac{17}{20}$

4. $4\% = \frac{1}{25}$

Write each fraction as a percent. Use a model if needed. (Example 4)

5. $\frac{2}{10} = 20\%$



6. $\frac{3}{4} = 75\%$



7. $\frac{7}{20} = 35\%$

8. $\frac{11}{25} = 44\%$

9. During his workout, Elan spent 28% of the time on the treadmill. What fraction of his workout was on the treadmill? (Examples 1–3)

$\frac{7}{25}$

10. A cat spends about 7 out of 10 hours sleeping. About what percent of a cat's day is spent sleeping? (Example 5)

70%



18




9. During his workout, Elan spent 28% of the time on the treadmill. What fraction of his workout was on the treadmill? (Examples 1–3)

$$\frac{7}{25}$$

10. A cat spends about 7 out of 10 hours sleeping. About what percent of a cat's day is spent sleeping? (Example 5)

$$70\%$$

-  A survey showed that 82% of youth most often use the Internet at home. What fraction of youth surveyed most often use the Internet somewhere else?

$$\frac{9}{50}$$


$$\frac{18}{100}$$

$$\frac{42}{50} = 84\%$$

12. Cedro collects state quarters. He has 42 out of 50 available quarters. What is 42 out of 50 as a percent?

$$84\%$$



-  Use the table to determine what percent of students prefer school uniforms and what percent do not prefer school uniforms. What is the relationship between these two percents?

Do not prefer: 80%, prefer: 20%; the sum of the percents is 100%.

Prefer School Uniforms

No	Yes
	

14. **MP Multiple Representations** The table shows the percent of Earth's atmosphere that is each element.

Element	Percent
Nitrogen	78
Oxygen	21
Other	1

- a. **Bar Diagram** Model 21% using a bar diagram.



- b. **Number** Write the percent of Earth's atmosphere that is nitrogen as a fraction in simplest form. $\frac{39}{50}$



H.O.T. Problems Higher Order Thinking

15. **MP Reason Inductively** Write three fractions that can be written as percents between 50% and 75%. Justify your solution.

Sample answer: $\frac{11}{20} = \frac{55}{100}$ or 55%, $\frac{3}{5} = \frac{60}{100}$ or 60%, $\frac{7}{10} = \frac{70}{100}$ or 70%

16. **MP Persevere with Problems** For each model below, write the portion of the grid that is shaded as a percent and as a fraction.

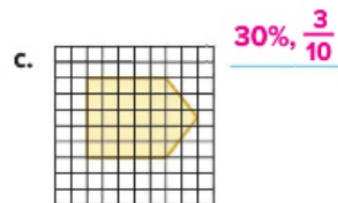
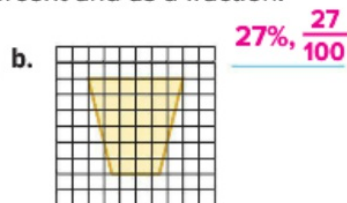
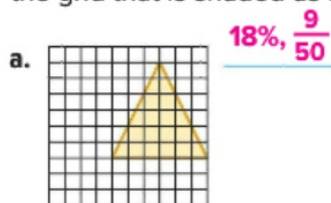


17. **MP Which One Doesn't Belong?**





16. **MP Persevere with Problems** For each model below, write the portion of the grid that is shaded as a percent and as a fraction.



17. **MP Which One Doesn't Belong?** Identify the number that does not belong with the other three. Explain your reasoning.

$$\frac{9}{20}$$

$$\frac{45}{100}$$

$$45\%$$

$$\frac{8}{45}$$

$\frac{8}{45}$; The other numbers are equivalent to $\frac{9}{20}$.

18. **MP Persevere with Problems** Complete each blank to find an expression that is equal to 16%.

a. **16** for every 100

b. **8** for every 50

c. 1 for every **6.25**

d. 0.5 for every **3.125**

19. **MP Reason Inductively** Explain the difference between $33\frac{1}{3}\%$ and 33%.
Sample answer: When written as a fraction, $33\frac{1}{3}\%$ is $\frac{1}{3}$ and 33% is $\frac{33}{100}$,

which does not simplify.

