

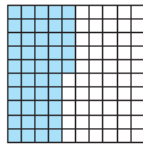
Percents and Fractions

Percents as Fractions

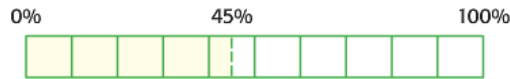
Words A **percent** is a **ratio** that **compares a number to 100**.

Example $45\% \Rightarrow 45$ out of 100 or $\frac{45}{100}$

Models



45%



100

To write a percent as a fraction, first write the percent as a rate per 100. Then simplify.

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 $\frac{1}{2}$.

- a. $\frac{3}{4}$
- b. $\frac{9}{10}$
- c. $\frac{19}{50}$

Show your work.

Examples



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

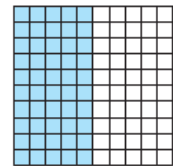
50% means 50 out of 100.

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

$$= \frac{1}{2} \text{ or } \frac{1}{2}$$

Definition of percent

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?

$$55\% = \frac{55}{100} \div 5$$

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

Definition of percent

Simplify.

Ends in 0 or 5,
 $\div 5!$

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

Got It? Do these problems to find out.

Write each percent as a fraction in simplest form.

a. 75%

$$\frac{75}{100} \div 25$$

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

b. 90%

$$\frac{90}{100} \div 10$$

$$= \frac{9}{10}$$

c. 38%

$$\frac{38}{100} \div 2$$

$$= \frac{19}{50}$$



Examples

Percents

A percent less than 1% equals a number less than 0.01 or $\frac{1}{100}$. A percent greater than 100% equals a number greater than 1.

1. Write 0.2% as a decimal and as a fraction in simplest form.

$$0.2\% = 00.2$$

Divide by 100 and remove % symbol.

$$= 0.002$$

Decimal form

$$= \frac{2}{1,000} \text{ or } \frac{1}{500}$$

Fraction form

$$0.2\% = 0.2 \text{ of } 1\%$$

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

2. Write 170% as a mixed number in simplest form.

$$\frac{170}{100} \div 10 = \frac{17}{10} = 1\frac{7}{10}$$

- a. $\frac{1}{400}$
b. 3
c. $5\frac{3}{10}$

Got It? Do these problems to find out.

Write each percent as mixed number or fraction in simplest form.

a. 0.25%

b. 300%

c. 530%

$$\frac{25}{10000} = \frac{25 \div 5}{10000 \div 5} = \frac{5}{2000} = \frac{5 \div 5}{2000 \div 5} = \frac{1}{400}$$

$$\frac{300}{100} = \frac{300 \div 100}{100 \div 100} = \frac{3}{1}$$

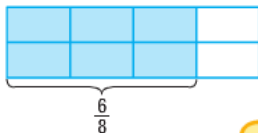
$$\frac{530}{100} = \frac{530 \div 10}{100 \div 10} = \frac{53}{10}$$

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.

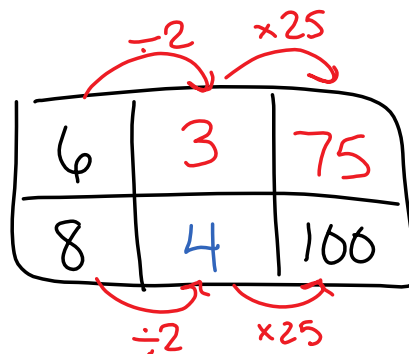
$$\frac{3}{4} = \frac{\square}{100}$$

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

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

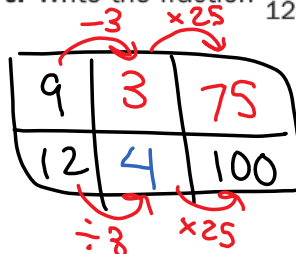
Since $4 \times 25 = 100$, multiply 3 by 25 to find the unknown value.

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.



$$75\%$$

Example



So, $1\frac{1}{4} = 125\%$.

4. Write $1\frac{1}{4}$ as a percent.

$$1\frac{1}{4} = \frac{5}{4}$$

Write $1\frac{1}{4}$ as an improper fraction.

$$1\frac{1}{4} = 1 + \frac{1}{4}$$

$$\frac{5}{4} = \frac{\square}{100}$$

Find an equivalent fraction.

$$\frac{1}{4} = \frac{25}{100}$$

$$\frac{5}{4} = \frac{125}{100}$$

Since $4 \times 25 = 100$, multiply 5 by 25 to find an equivalent fraction.

So, $1\frac{1}{4}$ is $\frac{125}{100}$ or 125%.

$$1 = 100\%$$

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

$$1\frac{1}{4} = 100\% + 25\% = 125\%$$

Got It? Do these problems to find out.

Write each mixed number as a percent.

e. $2\frac{9}{10}$

$$\frac{9}{10} = \frac{90}{100} = 90\%$$

$$3 = 300\%$$

$$3\frac{2}{5} = \frac{2 \times 20}{5 \times 20} = \frac{40}{100} = 40\%$$

$$2 = 200\%$$

Show your work. 290%

e.

$$\frac{29}{10} = \frac{290}{100}$$

f. 340%

Guided Practice



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

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

Show your work.

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

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

1. $325\% = 3\frac{1}{4}$

Show your work.

$$\frac{325}{100} = \frac{13}{4}$$

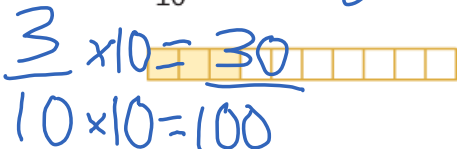
2. $480\% = 4\frac{4}{5}$

3. $0.6\% = \frac{3}{500}$

$$\frac{0.6}{1000} = \frac{6}{1000} = \frac{3}{500}$$

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

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



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

$$\frac{3 \times 5}{20 \times 5} = \frac{15}{100}$$

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

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

4. $1\frac{4}{5} = 180\%$

7. Alana spelled 19 out of 25 words correctly. What percent of words did Alana spell correctly?

$$\frac{19}{25} = \frac{76}{100}$$

$$76\%$$

30. A collectible action figure sold for 193% of its original price. Write this percent as a decimal and as a mixed number or fraction in simplest form.

$$\frac{193}{100} = 1\frac{93}{100}$$

$$1.93$$