

Chapter 7 Percents

7.1 Percent's, Decimals, and Fractions

7.1 Objective A: Understanding Percent

Percent
Percent means **per** 1 **hundred**. The % symbol is used to denote percent.

Ex. 80% vs. 109%

Ex 1. In a survey 31 out of 100 college instructors are in their forties. What percent of these instructors are in their forties?

$$\frac{31}{100} = 31\%$$

7.1 Objective B: Write Percent's as Decimals or Fractions.

Writing a percent as a decimal or fraction:

- Convert from a **percent to a decimal** by dividing by 100 or multiplying by $\frac{1}{100}$. (move decimal point to left 2 times)
- Convert from a **percent to a fraction**, we will drop the % symbol and multiply by $\frac{1}{100}$.

Ex. 2. Write each percent as a decimal.

a. 41% = 0.41

b. 100% = 1.0

c. 2.8% = 0.028

d. 300% = 3

e. 0.6% = 0.006

Ex. 3. Write each percent as a fraction or mixed number in simplest form.

$$\text{a. } 8\% = \frac{8}{100} \stackrel{\div 4}{=} \frac{2}{25}$$

$$\text{b. } 4.5\% = \frac{4.5}{100} = \frac{45}{1000} = \frac{9}{200}$$

$$\text{c. } 6.25\% = \frac{6.25}{100} = \frac{625}{10000} = \frac{1}{16}$$

$$\text{d. } 22\frac{3}{8}\% = \frac{22\frac{3}{8}}{100} = \frac{22.375}{100} = \frac{22375}{100000} = \frac{179}{800}$$

$$\text{e. } 175\% = \frac{175}{100} = 1\frac{75}{100} = 1\frac{3}{4} = \frac{7}{4}$$

7.1 Objective C: Write Decimals or Fractions as a Percent.

Writing a Decimal as a Percent

Multiply by 1 in the form of 100%. (move decimal to right twice)

$$0.37 = 0.37(100\%) = 37\%$$

Ex. 4. Write each decimal as a percent.

a. $5.30 = 530\%$

b. $0.2228 = 22.28\%$

c. $0.7 = 70\%$

Writing a fraction as a Percent

Multiply by $\frac{100}{100}$ in the form of 100%. $\frac{100}{8}$

$$\frac{1}{8} = \frac{1}{8} \cdot 100\% = \frac{1}{8} \cdot \frac{100}{1}\% = 12\frac{1}{2}\% \text{ or } 12.5\%$$

Ex. 5. Write each fraction or mixed number as a percent.

a. $\frac{34}{50} \cdot \frac{100}{1} = \frac{3400}{50} = 68\%$

b. $\frac{1}{3} \cdot \frac{100}{1} = \frac{100}{3} = 33.\bar{3}\%$

c. $1\frac{9}{10} = \frac{19}{10} \cdot \frac{100}{1} = \frac{1900}{10} = 190\%$

7.1 Objective D: Solve Applications with Percents, Decimals, and Fractions.

Ex. 6. Complete the table.

Percent	Decimal	Fraction
60% u	0.6	$\frac{60}{100} = \frac{3}{5}$
23.5% u	0.235 u	$\frac{235}{1000} = \frac{47}{200}$
80% u	0.8 u	$\frac{4}{5}$
$33.\overline{333}\%$ u $33\frac{1}{3}\%$	$0.\overline{3}$ u	$\frac{1}{3}$
87.5% u	0.875 u	$\frac{7}{8}$
7.5% u	0.075	$\frac{75}{1000} = \frac{3}{40}$

Ex. 7.

- a. In the United States recently, 35.8% of households had no landlines, just cell phones. Write the percent as a decimal and a fraction.

$$35.8\% = 0.358$$
$$\frac{358}{1000} = \frac{179}{500}$$

- b. The mirrors on the Hubble Space Telescope are able to lock onto a target without deviating more than $\frac{7}{1000}$ of an arc-second. Write this fraction as a percent.

$$\frac{7}{1000} = 0.007 = 0.7\%$$