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9-5 Percent

Objective: To write fractions and decimals as percents and to write percents as fractions and decimals.

Terms to Know

Percent A ratio that compares a number to 100. The word "percent" means "per hundred" or "hundredths." For example, $1\% = \frac{1}{100} = 0.01$.

Example 1 Write each fraction or mixed number as a percent.

a. $\frac{13}{25}$ **b.** $2\frac{9}{100}$ **c.** $\frac{5}{6}$

Solution

a. Because the denominator 25 is a factor of 100, rewrite $\frac{13}{25}$ as a fraction whose denominator is 100.

$$\frac{13}{25} = \frac{13 \cdot 4}{25 \cdot 4} = \frac{52}{100} = 52\%$$

b. $2\frac{9}{100} = 2 + \frac{9}{100}$

$$= \frac{200}{100} + \frac{9}{100} = \frac{209}{100} = 209\%$$

c. Because the denominator 6 is not a factor of 100, use division to rewrite the fraction as a decimal to the hundredths' place.

$$\frac{5}{6} \rightarrow 6\overline{)5.00} \rightarrow \frac{83\frac{1}{3}}{100} = 83\frac{1}{3}\%$$

Write each fraction or mixed number as a percent.

1. $\frac{19}{20}$
2. $\frac{1}{8}$
3. $\frac{9}{50}$
4. $\frac{2}{9}$
5. $4\frac{27}{100}$
6. $\frac{2}{5}$
7. $\frac{3}{25}$
8. $6\frac{1}{3}$

Example 2 Write each decimal as a percent.

a. 3.21 **b.** 0.7

Solution

a. $3.21 = 3\frac{21}{100} = \frac{321}{100} = 321\%$

b. $0.7 = \frac{7}{10} = \frac{7 \cdot 10}{10 \cdot 10} = \frac{70}{100} = 70\%$

In Example 2(a) and (b), you can move the decimal point two places to the *right* in the original decimal numbers and attach a percent symbol:

$3.21 = 321\%$ $0.70 = 70\%$

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9-5 Percent *(continued)*

Write each decimal as a percent.

9. 0.28	**10.** 7	**11.** 0.2	**12.** 0.04
13. 0.09	**14.** 0.65	**15.** 0.8	**16.** 0.0225
17. 3	**18.** 1.37	**19.** 0.875	**20.** $0.62\frac{1}{2}$

Example 3 Write each percent as a decimal.

a. 246% **b.** 0.2% **c.** $0.4\frac{1}{5}\%$

Solution You can reverse the procedure shown after Example 2. Move the decimal point two places to the left and drop the % symbol.

a. $246\% = 246. = 2.46$ **b.** $0.2\% = 00.2 = 0.002$ **c.** $4\frac{1}{5}\% = 4.2\% = 04.2\% = 0.042$

Write each percent as a decimal.

21. 64%	**22.** 5%	**23.** $3\frac{1}{4}\%$	**24.** 194%
25. 30%	**26.** 8%	**27.** 4.9%	**28.** $62\frac{1}{2}\%$

Example 4 Write each percent as a fraction or a mixed number in lowest terms.

a. 220% **b.** 4.8% **c.** $\frac{3}{20}\%$

Solution Rewrite the percents as fractions with denominators of 100.

a. $220\% = \frac{220}{100} = \frac{11}{5} = 2\frac{1}{5}$ **b.** $4.8\% = \frac{4.8}{100} = \frac{4.8(10)}{100(10)} = \frac{48}{1000} = \frac{6}{125}$

c. $\frac{\frac{3}{20}}{100} = \frac{3}{20} \div 100 = \frac{3}{20} \cdot \frac{1}{100} = \frac{3}{2000}$

Write each percent as a fraction or a mixed number in lowest terms.

29. 25%	**30.** 85%	**31.** 60%	**32.** $37\frac{1}{2}\%$
33. 125%	**34.** $\frac{4}{5}\%$	**35.** 3.5%	**36.** 0.4%

Spiral Review

37. Write 4% as a fraction and as a decimal. *(Lesson 9-5)*

38. Find the GCF: 126 and 90 *(Lesson 7-2)*

39. Find the difference: $\frac{16}{23} - \frac{12}{23}$ *(Lesson 8-4)*

40. Use a protractor to draw an angle with measure 135°. *(Lesson 6-2)*