Review Key Vocabulary

percent of change, *p. 242*   percent error, *p. 243*   interest, *p. 254*
percent of increase, *p. 242*   discount, *p. 248*   principal, *p. 254*
percent of decrease, *p. 242*   markup, *p. 248*   simple interest, *p. 254*

Review Examples and Exercises

6.1 Percents and Decimals *(pp. 214–219)*

a. Write 64% as a decimal.

$64\% = 64.\% = 0.64$

b. Write 0.023 as a percent.

$0.023 = 0.023 = 2.3\%$

Exercises

Write the percent as a decimal. Use a model to check your answer.

1. 76%   **2.** 6%   **3.** 334%

Write the decimal as a percent. Use a model to check your answer.

4. 0.15   **5.** 1.24   **6.** 0.097

6.2 Comparing and Ordering Fractions, Decimals, and Percents *(pp. 220–225)*

Which is greater, $\dfrac{9}{10}$ or 88%?

Write $\dfrac{9}{10}$ as a percent: $\dfrac{9}{10} = \dfrac{90}{100} = 90\%$

∴ 88% is less than 90%. So, $\dfrac{9}{10}$ is the greater number.

Exercises

Tell which number is greater.

7. $\dfrac{1}{2}$, 52%   **8.** $\dfrac{12}{5}$, 245%

9. 0.46, 43%   **10.** 0.023, 22%

Use a number line to order the numbers from least to greatest.

11. $\dfrac{41}{50}$, 0.83, 80%   **12.** $\dfrac{9}{4}$, 220%, 2.15

13. 0.67, 66%, $\dfrac{2}{3}$ **14.** 0.88, $\dfrac{7}{8}$, 90%

6.3 **The Percent Proportion** *(pp. 226–231)*

a. What percent of 24 is 9?

$$\frac{a}{w} = \frac{p}{100}$$ Write the percent proportion.

$$\frac{9}{24} = \frac{p}{100}$$ Substitute 9 for *a* and 24 for *w*.

$$100 \cdot \frac{9}{24} = 100 \cdot \frac{p}{100}$$ Multiplication Property of Equality

$$37.5 = p$$ Simplify.

So, 37.5% of 24 is 9.

b. What number is 15% of 80?

$$\frac{a}{w} = \frac{p}{100}$$ Write the percent proportion.

$$\frac{a}{80} = \frac{15}{100}$$ Substitute 80 for *w* and 15 for *p*.

$$80 \cdot \frac{a}{80} = 80 \cdot \frac{15}{100}$$ Multiplication Property of Equality

$$a = 12$$ Simplify.

So, 12 is 15% of 80.

c. 120% of what number is 54?

$$\frac{a}{w} = \frac{p}{100}$$ Write the percent proportion.

$$\frac{54}{w} = \frac{120}{100}$$ Substitute 54 for *a* and 120 for *p*.

$$54 \cdot 100 = w \cdot 120$$ Cross Products Property

$$5400 = 120w$$ Multiply.

$$45 = w$$ Divide each side by 120.

So, 120% of 45 is 54.

Exercises

Write and solve a proportion to answer the question.

15. What percent of 60 is 18?

16. 40 is what percent of 32?

17. What number is 70% of 70?

18. $\frac{3}{4}$ is 75% of what number?

The Percent Equation *(pp. 232–237)*

a. What number is 72% of 25?

$a = p \cdot w$ Write percent equation.

$= 0.72 \cdot 25$ Substitute 0.72 for p and 25 for w.

$= 18$ Multiply.

⋮• So, 72% of 25 is 18.

b. 28 is what percent of 70?

$a = p \cdot w$ Write percent equation.

$28 = p \cdot 70$ Substitute 28 for a and 70 for w.

$\dfrac{28}{70} = \dfrac{p \cdot 70}{70}$ Division Property of Equality

$0.4 = p$ Simplify.

⋮• Because 0.4 equals 40%, 28 is 40% of 70.

c. 22.1 is 26% of what number?

$a = p \cdot w$ Write percent equation.

$22.1 = 0.26 \cdot w$ Substitute 22.1 for a and 0.26 for p.

$85 = w$ Divide each side by 0.26.

⋮• So, 22.1 is 26% of 85.

Exercises

Write and solve an equation to answer the question.

19. What number is 24% of 25?

20. 9 is what percent of 20?

21. 60.8 is what percent of 32?

22. 91 is 130% of what number?

23. 85% of what number is 10.2?

24. 83% of 20 is what number?

25. PARKING 15% of the school parking spaces are handicap spaces. The school has 18 handicap spaces. How many parking spaces are there?

26. FIELD TRIP Of the 25 students on a field trip, 16 students bring cameras. What percent of the students bring cameras?

6.5 Percents of Increase and Decrease *(pp. 240–245)*

The table shows the numbers of skim boarders at a beach on Saturday and Sunday. What was the percent of change in boarders from Saturday to Sunday?

The number of skim boarders on Sunday is less than the number of skim boarders on Saturday. So, the percent of change is a percent of decrease.

$$\text{percent of decrease} = \frac{\text{original amount} - \text{new amount}}{\text{original amount}}$$

$$= \frac{12 - 9}{12} \qquad \text{Substitute.}$$

$$= \frac{3}{12} \qquad \text{Subtract.}$$

$$= 0.25 = 25\% \qquad \text{Write as a percent.}$$

Day	Number of Skim Boarders
Saturday	12
Sunday	9

∴ So, the number of skim boarders decreased by 25% from Saturday to Sunday.

Exercises

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent if necessary.

27. 6 yards to 36 yards

28. 120 meals to 52 meals

29. MARBLES You estimate that a jar contains 68 marbles. The actual number of marbles is 60. Find the percent error.

6.6 Discounts and Markups *(pp. 246–251)*

What is the original price of the tennis racquet?

The sale price is 100% − 30% = 70% of the original price.

Answer the question: 21 is 70% of what number?

$$a = p \bullet w \qquad \text{Write percent equation.}$$

$$21 = 0.7 \bullet w \qquad \text{Substitute 21 for } a \text{ and 0.7 for } p.$$

$$30 = w \qquad \text{Divide each side by 0.7.}$$

∴ So, the original price of the tennis racquet is $30.

SALE 30% off Now $21

Exercises

Find the sale price or original price.

30. Original price: $50
Discount: 15%
Sale price: ?

31. Original price: ?
Discount: 20%
Sale price: $75