

Lesson 3-7

Example 1 Find Percent of Change

State whether each percent of change is a percent of increase or a percent of decrease. Then find each percent of change.

a. **original: 18**

new: 18.99

Find the amount of change. Since the new amount is greater than the original, the percent of change is a percent of increase.

$$18.99 - 18 = 0.99$$

Find the percent using the original number, 18, as the base.

change

$$\frac{0.99}{18} = \frac{r}{100}$$

original amount

$$0.99(100) = 18r$$

$$99 = 18r$$

$$\frac{99}{18} = \frac{18r}{18}$$

$$\frac{99}{18} = \frac{18r}{18}$$

$$5.5 = r$$

The percent of increase is 5.5%.

b. **original: 125**

new: 106.25

The percent of change is a percent of decrease because the new amount is less than the original. Find the change.

$$125 - 106.25 = 18.75$$

Find the percent using the original number, 125, as the base.

change

$$\frac{18.75}{125} = \frac{r}{100}$$

original amount

$$18.75(100) = 125(r)$$

$$1875 = 125r$$

$$\frac{1875}{125} = \frac{125r}{125}$$

$$\frac{1875}{125} = \frac{125r}{125}$$

$$15 = r$$

The percent of decrease is 15%.

Example 2 Find the Missing Value

Due to hard times at his company, Jared was told that his salary would be cut by 10%. If Jared was making \$62,000, what will his new salary be?

Let s = salary after 10% decrease. Since 10% is a percent of decrease, the new salary is less than the old salary. Therefore, $62,000 - s$ represents the amount of change.

change \rightarrow

$$\frac{62,000 - s}{62,000} = \frac{10}{100}$$

Percent proportion

original amount \rightarrow

$$(62,000 - s)(100) = 62,000(10)$$

$$6,200,000 - 100s = 620,000$$

Find the cross products.

Distributive Property

$$6,200,000 - 100s - 6,200,000 = 620,000 - 6,200,000$$

$$-100s = -5,580,000$$

$$\frac{-100s}{-100} = \frac{-5,580,000}{-100}$$

$$\frac{-100s}{-100} = \frac{-5,580,000}{-100}$$

Subtract 6,200,000 from each side.

Simplify

Divide each side by -100 .

$$s = 55,800$$

Simplify.

Jared's new salary will be \$55,800.

Example 3 Find Amount After Sales Tax

SALES TAX A mountain bike costs \$675. If the sales tax is 5.25%, what is the total price of the bike?

The tax is 5.25% of the price of the bike.

$$\begin{array}{l} 5.25\% \text{ of } \$675 = .0525 \times 675 \\ = 35.4375 \end{array} \qquad \begin{array}{l} 5.25\% = 0.0525 \\ \text{Use a calculator.} \end{array}$$

Round \$35.4375 to \$35.44 since tax is always rounded up to the nearest cent.
Add this amount to the original price.

$$\$675 + \$35.44 = \$710.44$$

The total price of the mountain bike is \$710.44.

Example 4 Find Amount After Discount

DISCOUNT A magazine subscription is \$52 a year if you buy it every week off the newsstand. If you buy a subscription, you can buy it at a 15% discount, what is the discounted price.

The discount is 15% of the original price.

$$\begin{array}{l} 15\% \text{ of } \$52 = 0.15 \times 52 \\ = 7.8 \end{array} \qquad \begin{array}{l} 15\% = 0.15 \\ \text{Use a calculator.} \end{array}$$

Subtract \$7.80 from the original price.

$$\$52.00 - \$7.80 = \$44.20$$

The discounted price of the magazine subscription is \$44.20.