

## 15.5 Record and Practice Journal

Find the new amount.

1. 120 books increased by 55%

**186 books**

2. 80 members decreased by 65%

**28 members**

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

3. 25 points to 50 points

**increase; 100%**

4. 125 invitations to 75 invitations

**decrease; 40%**

5. 32 pages to 28 pages

**decrease; 12.5%**

6. 7 players to 10 players

**increase; 42.9%**

7. One week, 72 people got a speeding ticket. The next week, only 36 people got a speeding ticket. What is the percent of change in speeding tickets?

**50% decrease**



## Essential Question

How can you find discounts and selling prices?

**1 ACTIVITY: Comparing Discounts**

Work with a partner. The same pair of sneakers is on sale at three stores. Which one is the best buy? Explain.

a. Regular Price: \$45



pay \$27

(60%)

b. Regular Price: \$49



\$24.50

c. Regular Price: \$39



\$11.70

## 2 ACTIVITY: Finding the Original Price

Work with a partner.

- a. You buy a shirt that is on sale for 30% off. You pay \$22.40. Your friend wants to know the original price of the shirt. Show how you can use the model below to find the original price.



units  
ns.  
ups  
i

$$\frac{22.40}{70\%}$$

$$\text{part} = \% \times \text{whole}$$

$$22.40 = 70\% \times \text{whole}$$

$$\frac{P}{\%} = \text{whole}$$



## Key Ideas

### Discounts

A **discount** is a decrease in the original price of an item.

### Markups

To make a profit, stores charge more than what they pay. The increase from what the store pays to the selling price is called a **markup**.

**The original price of the shorts is \$35. What is the sale price?**

**Method 1:** First, find the discount. The discount is 25% of \$35.



$\frac{\text{is}}{\text{of}} = \frac{x}{100}$

$$\begin{aligned}
 a &= p \cdot w && \text{Write percent equation.} \\
 &= 0.25 \cdot 35 && \text{Substitute 0.25 for } p \text{ and 35 for } w. \\
 &= 8.75 && \text{Multiply.}
 \end{aligned}$$

Next, find the sale price.

$$\begin{aligned}
 \text{sale price} &= \text{original price} - \text{discount} \\
 &= 35 - 8.75 \\
 &= 26.25
 \end{aligned}$$

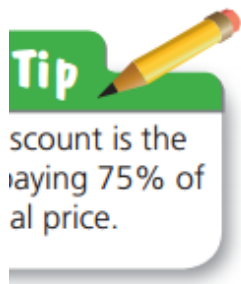
∴ So, the sale price is \$26.25.

**Method 2:** First, find the percent of the original price.

$$100\% - 25\% = 75\%$$

Next, find the sale price.

$$\begin{aligned}
 \text{sale price} &= 75\% \text{ of } \$35 \\
 &= 0.75 \cdot 35 \\
 &= 26.25
 \end{aligned}$$



**EXAMPLE 2** Finding an Original Price

What is the original price of the shoes?

The sale price is  
 $100\% - 40\% = 60\%$   
 of the original price.



Answer the question: 33 is 60% of what number?

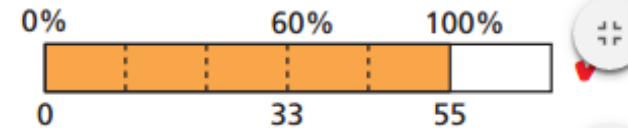
$$a = p \cdot w \quad \text{Write percent equation.}$$

$$33 = 0.6 \cdot w \quad \text{Substitute 33 for } a \text{ and } 0.6 \text{ for } p.$$

$$55 = w \quad \text{Divide each side by } 0.6.$$

❖ So, the original price of the shoes is \$55.

**Check**



**EXAMPLE 3** Finding a Selling Price

A store pays \$70 for a bicycle. The percent of markup is 20%. What is the selling price?



**Method 1:** First, find the markup. The markup is 20% of \$70.

$$\begin{aligned} a &= p \cdot w \\ &= 0.20 \cdot 70 \\ &= 14 \end{aligned}$$

Next, find the selling price.

$$\begin{aligned} \text{selling price} &= \text{cost to store} + \text{markup} \\ &= 70 + 14 \\ &= 84 \end{aligned}$$

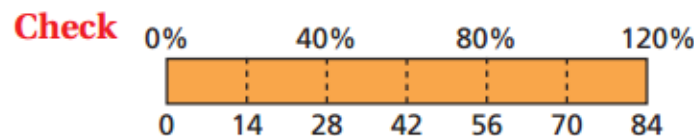
So, the selling price is \$84.

**Method 2:** Use a ratio table. The selling price is 120% of the cost to the store.

Percent	Dollars
100%	\$70
20%	\$14
120%	\$84

Annotations:  $\div 5$  (from 100% to 20%),  $\times 6$  (from 20% to 120%),  $\div 5$  (from \$70 to \$14),  $\times 6$  (from \$14 to \$84).

So, the selling price is \$84.



**On Your Own**

Calculator interface showing buttons for  $\div$ ,  $\times$ , and  $-$ .



Complete page 686  
#4-16 (Even), 18,22

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