



Lesson 28: Solving Percent Problems

Student Outcomes

- Given a part and the percent, students find the percent of a quantity and solve problems involving finding the whole.

Classwork

Example (5 minutes)

Read the questions from the example one by one.

Example

If an item is discounted 20%, the sale price is what percent of the original price?

$$100 - 20 = 80$$

80%

If the original price of the item is \$400, what is the dollar amount of the discount?

$$20\% = \frac{20}{100} = \frac{2}{10}$$

$$400 \times \frac{2}{10} = \frac{800}{10} = \$80$$

\$80 discount

How much is the sale price?

$$80\% = \frac{80}{100} = \frac{8}{10}$$

$$400 \times \frac{8}{10} = \frac{3200}{10} = \$320, \text{ or } 400 - 80 = \$320$$

\$320 sale price

- What are some different ways that we can solve this question?
 - Answers will vary. Some students may draw diagrams that they can share with the class. Others may have found the value by finding equivalent fractions or by multiplying a quantity by the percent written as a fraction.

Be sure to discuss different models that could be used.

Exercise (20 minutes)

Have students work in pairs or small groups to solve the problems. Students are given the sale price and the percent that was saved. They need to come up with the original price.

Students should be creating models in order to prove that their answers are correct.

Exercise

The following items were bought on sale. Complete the missing information in the table.

Item	Original Price	Sale Price	Amount of Discount	Percent Saved	Percent Paid
Television	\$1000	\$800	\$200	20%	80%
Sneakers	\$80	\$60	\$20	25%	75%
Video Games	\$60	\$54	\$6	10%	90%
MP3 Player	\$86	\$51.60	\$34.40	40%	60%
Book	\$14.00	\$11.20	\$2.80	20%	80%
Snack Bar	\$2.00	\$1.70	\$0.30	15%	85%

Closing (10 minutes)

- Have students showcase some of the models used to solve the problems. One possible way to showcase the work, if time allows, would be to hang up the work on the walls and have students do a gallery walk to view the diagrams. Ask students how they could check their work.
 - *The answers may vary according to which values are given and which values are missing. Students may mention that the discount and the sale price should add to be the original amount. The percents should add to 100%. They could solve the problem using the answer to see if they can work back to a given amount.*

Lesson Summary

Percent problems include the part, whole, and percent. When one of these values is missing, we can use tables, diagrams, and models to solve for the missing number.

Exit Ticket (10 minutes)

Name _____

Date _____

Lesson 28: Solving Percent Problems

Exit Ticket

1. Write one problem using a dollar amount of \$420 and a percent of 40%. Provide the solution to your problem.
2. The sale price of an item is \$160 after a 20% discount. What was the original price of the item?

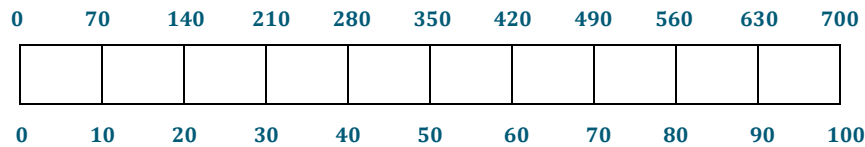
Exit Ticket Sample Solutions

1. Write one problem using a dollar amount of \$420 and a percent of 40%. Provide the solution to your problem.

Answers will vary.

Problems that include \$420 as the sale price should include \$700 as the original. Because 40% is saved, 60% is paid of the original. Therefore, the original price is \$700.

Problems that include \$420 as the original price and a 40% of discount should include \$252 as a sale price. Below is an example of a tape diagram that could be included in the solution.



2. The sale price of an item is \$160 after a 20% off discount. What was the original price of the item?

Because the discount was 20%, the purchase price was 80% of the original.

$$80\% = \frac{80}{100} = \frac{160}{200}$$

The original price was \$200.

Problem Set Sample Solutions

1. The Sparkling House Cleaning Company has cleaned 28 houses this week. If this number represents 40% of the total number of houses the company is contracted to clean, how many total houses will the company clean by the end of the week?

70 houses

2. Joshua delivered 30 hives to the local fruit farm. If the farmer has paid to use 5% of the total number of Joshua's hives, how many hives does Joshua have in all?

600 hives