



## Lesson 29: Solving Percent Problems

### Classwork

#### Exploratory Challenge 1

Claim: To find 10% of a number, all you need to do is move the decimal to the left once.

Use at least one model to solve each problem (e.g., tape diagram, table, double number line diagram,  $10 \times 10$  grid).

- a. Make a prediction. Do you think the claim is true or false? \_\_\_\_\_ Explain why. Answers will vary

True: 10% is  $\frac{10}{100} = 10 = \frac{1}{10}$ .

False: It depends on what whole amount represents the number from which the % is taken.

- b. Determine 10% of 300. 30

$$10\% \Rightarrow \frac{10}{100} = 10 = \frac{1}{10}$$

$$\frac{1}{10} \times 300 = \frac{300}{10}$$

OR

$$\frac{300}{1} \cdot \frac{1}{10} = \frac{300}{10} = 30$$

- d. Determine 10% of 64. 6.4

$$10\% = \frac{10}{100} = \frac{1}{10} \quad \frac{64}{1} \times \frac{1}{10} = \frac{64}{10} = 6.4$$

OR

$$\frac{1}{10} \times 64 = \frac{64}{10}$$

- f. 10% of 480 is 48.



$$48 \times 10 = 480$$

- c. Find 10% of 80. 8

$$10\% = \frac{10}{100} = \frac{1}{10}$$

$$\frac{1}{10} \times 80 = \frac{80}{10}$$

OR

$$\frac{80}{1} \cdot \frac{1}{10} = \frac{80}{10} = 8$$

- e. Find 10% of 5.  $\frac{1}{2}$

$$10\% = \frac{10}{100} = \frac{1}{10}$$

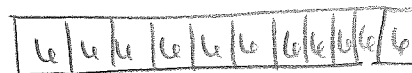
$$\frac{1}{10} \div 2 = \frac{1}{20}$$

OR

$$\frac{1}{10} \cdot \frac{5}{1} = \frac{5}{10} = \frac{1}{2}$$

- g. 10% of 60 is 6.

$$6 \times 10 = 60$$



- h. Gary read 34 pages of a 340-page book. What percent did he read?

$$\frac{34}{340} \div 34 = \frac{1}{10}$$

$$\% = 100$$

$$\frac{1}{10} \times 10 = \frac{10}{100}$$

10% is what he read.

- i. Micah read 16 pages of his book. If this is 10% of the book, how many pages are in the book?

$$10\% = \frac{10}{100} \div 10 = \frac{1}{10}$$

$$\frac{1}{10} \times 16 = \frac{16}{100}$$

There are 160 pages in the book.

- j. Using the solutions to the problems above, what conclusions can you make about the claim?

The claim is true. When I find 10% of a number, I am really finding  $\frac{1}{10}$  of the amount or dividing by 10, which is the same as what occurred when I move the decimal point in the # one place to the left.

### Exploratory Challenge 2

*Claim: If an item is already on sale, and then there is another discount taken off the new price, this is the same as taking the sum of the two discounts off the original price.*

Use at least one model to solve each problem (e.g., tape diagram, table, double number line diagram,  $10 \times 10$  grid).

- a. Make a prediction. Do you think the claim is true or false? False Explain.

They will be different b/c when two discounts are taken off, the second discount is taken off the new amount.

100%



- b. Sam purchased 3 games for \$140 after a discount of 30%. What was the original price?

$$30\% \rightarrow \frac{30}{100} \div 10 = \frac{3}{10}$$

Sale Price is \$140

$$70\% \rightarrow \frac{70}{100} \div 10 = \frac{7}{10}$$

$$\frac{7}{10} \times 20 = \frac{140}{\$200}$$

The original price is \$200.00

- c. If Sam had used a 20% off coupon and opened a frequent shopper discount membership to save 10%, would the games still have a total of \$140?

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

$$\frac{200}{1} \times \frac{2}{10} = \frac{\$400}{10} = \$40 \text{ saved. The price after Coupon would be } \$160.00.$$

$$10\% = \frac{10}{100} \div 10 = \frac{1}{10}$$

$$160 \times \frac{1}{10} = \frac{160}{10} = \$16 \text{ saved. The price with discount membership is } \$144.00$$

No, The games would now total \$144.

- d. Do you agree with the claim? NO Explain why or why not. Create a new example to help support your claim.

When two discounts are taken off, the shopper pays more than if both were added & taken off.

\$100 original price  
20%

$$100 \times \frac{2}{10} = \frac{200}{10} = \$20 \text{ saved}$$

$$\$100 - \$20 = \$80 \text{ sale price.}$$

Two 10% Discounts.

$$100 \times \frac{1}{10} = \frac{100}{10} = 10$$

$$90 \times \frac{1}{10} = \frac{90}{10} = 9$$

$$\$100 - \$10 - \$9 = \$81 \text{ sale.}$$