

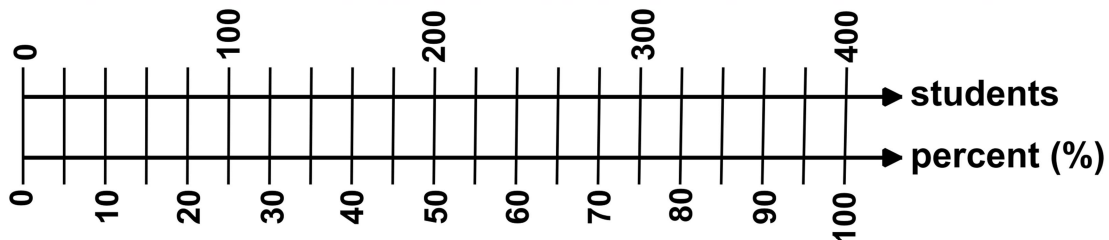
FINDING A PERCENT USING A PRODUCT

N-GEN MATH[®] 6



So far we have found the percent of a quantity by setting up equivalent ratios. In this lesson we will see how we can find the percent of a number using a simple product. First, let's explore why.

Exercise #1: There are 400 total students in a high school. A double number line below shows how this corresponds to percent. Answer the following questions.



- (a) If 5% of the students transferred into the school, how many students transferred in? Show or explain how you found this.
- (b) How many students does 1% of the total number represent? How can you find this easily based on the total?
- (c) Based on (b), if 27% of the students are 9th graders, how many 9th graders are there?
- (d) What single number could we multiply the 400-student total by in order to find the answer in (c)?

FINDING THE PERCENT USING A PRODUCT

Finding a $p\%$ of a quantity means **dividing the total into 100 parts** and then **taking p -number of those parts**. We do this by multiplying by: $\frac{p}{100}$.

Exercise #2: Fill in the missing blanks for each statement.

- (a) Finding 40% of a total can be done by multiplying the total by _____.
- (b) Finding 85% of a total can be done by multiplying the total by _____.



Finding the percent of a whole simply means to find a fraction of it based on 100. These calculations can sometimes be easy, if the division by 100 turns out nice, or it can be messy!

Exercise #3: Find the answers to each of the following percent problems by using a product. Show your work. These will generally work out nicely.

- (a) 32% of 500 people who attended an outdoor concert brought lawn chairs. How many people brought lawn chairs?
- (b) 13% of 1000 participants in an online quiz passed. How many people passed?

Exercise #4: Find the answers to each of the following percent problems by using a product. Show your work. These will be more challenging.

- (a) Of 75 eggs inspected at the store, 8% of them had cracks. How many eggs had cracks?
- (b) 55% of 120 people like ketchup on their hamburgers. How many people like ketchup on their hamburgers?

Exercise #5: Find the answers to each of the following percent problems by using a product. Show your work. These will result in answers that contain decimals.

- (a) Danny must pay a 7% tax on a shirt that cost him \$34. How much tax must he pay?
- (b) 52% of a candy bar that weighs 60 grams is sugar. How many grams of sugar are in the candy bar?



Name: _____

Date: _____

FINDING A PERCENT USING A PRODUCT
N-GEN MATH® 6 HOMEWORK

FLUENCY

1. You can find 50% of any total by multiplying the total by all the following *except* which?

(1) $\frac{50}{100}$

(3) $\frac{1}{2}$

(2) $\frac{1}{50}$

(4) $\frac{5}{10}$

2. If Maria is trying to find 42% of 350 which of the following calculations will give her the correct answer?

(1) 42×350

(3) $\frac{100}{42} \times 350$

(2) $\frac{1}{42} \times 350$

(4) $\frac{42}{100} \times 350$

3. Which of the following represents 1% of 300?

(1) 1

(3) 3

(2) $\frac{3}{100}$

(4) 30

USING YOUR MATH

4. A music concert has 700 people attend it. Of the 700, 8% of the people arrive late and 12% of the people buy a t-shirt.

(a) How many people arrive late? Show your calculation.

(b) How many people buy t-shirts? Show your calculation.



5. A rock found in a gold mine weighs 12 ounces. If it contains 14% gold, how many ounces of gold does the rock contain? Your answer will contain a decimal. Show the work you use.

6. Fruit Bud Farms has just harvested 250 gallons of maple sap, which is what maple syrup is made from.

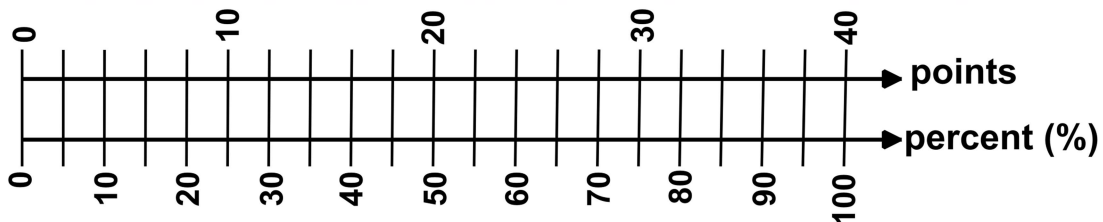
(a) What is the decimal result of the following division (which has been expressed as a fraction):

$$\frac{250}{100} = \underline{\hspace{2cm}}$$

What does this calculation represent in terms of the gallons of maple sap?

(b) The 250 gallons of maple sap will be boiled until only 3% of its original volume is left. How many gallons are left? Warning: decimal answer.

7. Mr. Hoyt gives a 40-point quiz in his class. A double number line is shown below showing how the points on the quiz correspond to the percent a student earns on the quiz.



(a) If Mr. Hoyt sets the passing mark on this quiz at 65%, then how many points out of the 40 must a student earn to pass? Fill in the relevant parts of the double number line to find your answer.

(b) Find the following product and verify it is the same as what you found in (a).

$$\frac{65}{100} \times 40$$

