



# Student Worksheet: Using Percentages to Solve Problems

## Introduction

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Math problems involving percentages are often presented as “word” problems. Percentages are often used to understand data more easily. For example, hearing that every 5 out of 8 students passed the math test yesterday may not be as clear to you as hearing that only 62.8% of the students passed the test. Working the data into a percentage allows you to better understand the data. In your M.A.R.S. mission, working data into percentages also allows you to make critical decisions about your mission.

Learning to calculate percentages is not difficult. Knowing a few key terms allows you to easily translate a percentage word problem into a mathematical expression you can solve.

## Materials

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- Percentage lesson worksheet
- Pencils
- Calculator (optional)

## Procedure

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1. Read and review the information on percentages.
2. Do the practice problems and show your work in the spaces provided.

## How to Translate Percentage Word Problems

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“Percent” comes from Latin and means “for every hundred”. So, when you hear that “50% of the students passed the math test, that means that for every one hundred students, only 50 passed the test.

- “Of” means “multiplied by”. For example:  
What is half of 20?  
What is 50% X 20? Answer = 10.
- “Is” always means “equals.”
- “Per” means “divided by”. For example:  
If you drive 300 miles and you were driving 60 miles per hour, how many hours does your trip take?  
 $300 \text{ divided by } 60 = 5 \text{ hours}$
- “%” means every (per) one hundred. To get a decimal that you can use in a multiplication or division problem, divide by 100. For example:  
50% means 50 divided by 100 or .50.
- “What” can be replaced by what number you are trying to find. You can usually replace this with “X” to solve the equation you now have in mathematical terms.

The key terms listed above have been summarized in this table. As you review the following examples and work the practice problems, refer to this table to translate the following problems into mathematical expressions you can solve.

Term	Mathematical Expression
percent	“for every one hundred”
of	“Multiplied by” or “times”
is	“equals”
per	“divided by”
%	“percent”
what	(the number you are trying to find can be replaced with “x”)

### Examples

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- 1) What is 50% of 30?

Translation:  $X = 0.50 \times 30$

$$X = 15$$

- 2) 11 is what percent of 44?

Translation:  $11 = (X/100) \times 44$

$$X = 25 \%$$

### Problems

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- 1) **What** is 35 percent of 80?

- 2) 16% **of what** number is 2?

- 3) 43 percent **of what** number is 34?

- 4) Amanda loves blue clothes. She has more blue outfits than any other color of clothes! Her best friend notices that Amanda wears blue for 68% of school days. In a school year of 180 days, how many days does Amanda wear blue?
- 5) When one of your teachers was 15, she weighed 92% of her weight today. Back then, she weighed 115 lbs. How much does she weigh today?
- 6) Michael had a sore throat and his doctor estimated that he had 156,000 strep bacteria in his throat. By the time he got his medicine, he had 250% more bacteria! How many bacteria did he have then?