Examples
Percents

Based on power point presentations by Pearson Education, Inc.
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Learning Objectives

1. Memorize the definition of percent.
2. Add and remove the percent symbol.
3. Solve simple percent problems.

Example 1: Add a Percent Symbol

Express $\frac{3}{8}$ as a percent in decimal form.

Multiply the number by 100 and add the percent symbol.

$$\frac{3}{8}(100)\% = \frac{300}{8}\%$$

We must now write the result in decimal form.

Dividing 300 by 8 using the calculator, we get *37.5* %

Example 2: Add a Percent Symbol

Express $\frac{1}{6}$ as a percent in decimal form.

Multiply the number by 100 and add the percent symbol.

$$\frac{1}{6}(100) = \frac{100}{6}\%$$

We must now write the result in decimal form.

Dividing 100 by 6 using the calculator, we get *16.6666666…* %. Since 6 is repeating, we can write this as $16.\overline{6}$ %.

Example 3: Add a Percent Symbol

a. Express 0.7 as a percent.

Multiply the number by 100 and add the percent symbol.
0.7(100)% = 70%
Nothing else needs to be done.

b. Express 3.4 as a percent.

Multiply the number by 100 and add the percent symbol.
3.4(100)% = 340%
Nothing else needs to be done.

Example 4: Remove a Percent Symbol

Express 23.4% without a percent and write this number in fraction and in decimal form.

Divide the numeric portion by 100 and drop the percent symbol.

$$\frac{23.4}{100}$$

To achieve fraction form, we eliminate the decimal point in the numerator and reduce the fraction.

$$\frac{23.4}{100} \cdot \frac{10}{10} = \frac{234}{1000} = \frac{117}{500}$$

To achieve decimal form, we divide 117 by 500 to get 0.234.

Example 5: Remove a Percent Symbol

Express 115% without a percent and write this number in fraction and in decimal form.

Divide the numeric portion by 100 and drop the percent symbol.

$$\frac{115}{100}$$

This is already in fraction form, but we must reduce to lowest terms.

We get $\frac{23}{20}$.

To achieve decimal form, we divide 23 by 20 to get 1.15.

Example 6: Remove a Percent Symbol

Express 300% without a percent.

Divide the numeric portion by 100 and drop the percent symbol.

$$\frac{300}{100} = 3$$

Nothing else needs to be done.

Example 7: Application using Percent

What number is 10% of 388?

Let's insert the given information into the formula ***A = PB***.

Given are the base ***B = 388*** and the percent ***P = 10% = 0.***1. Remember, the percent must be expressed as a decimal. The number we are asked to find is ***A***, the amount resulting when the percent is applied to the base.

> Please note that the word "of" in the question is replaced by the multiplication in the formula.

Then ***A = 0.1(388) = 38.8***. Remember, the multiplication symbol can be replaced by a set of parentheses.

We find that ***38.8*** is the amount resulting when 10% is applied to 388.

Example 8: Application using Percent (1 of 2)

What percent is 30 of 150?

Let's insert the given information into the formula ***A = PB***.

Given are the amount resulting when the percent is applied ***A = 30*** and the base ***B = 150***. The number we are asked to find is ***P***, the percent.

> Please note that the word "of" in the question is replaced by the multiplication in the formula.

Then ***30 = P(150)***.

We must now solve a little linear equation for ***P***. Dividing both sides by 150, we get

$$P = \frac{30}{150}$$

Example 8: Application using Percent (2 of 2)

This fraction needs to be reduced to lowest terms. We find

$$P = \frac{1}{5}$$

Since we are asked to find a percent, we need to change the fraction to percent form by multiplying by 100 and adding a % symbol. If necessary, use a calculator.

$$P = \frac{1}{5} \cdot 100\% = 20\%$$

We find that 30 is ***20%*** of 150.

Example 9: Application using Percent (1 of 2)

60 is 30% of what number?

Let's insert the given information into the formula ***A = PB***.

Given are the amount resulting hen the percent is applied ***A = 60*** and the percent ***P = 30% = 0.3***. Remember, the percent must be expressed as a decimal. The number we are asked to find is ***B***, the base.

Please note that the word "of" in the question is replaced by the multiplication in the formula.

Then ***60 = 0.3B***.

Example 9: Application using Percent (2 of 2)

We must now solve a little linear equation for ***B***. Dividing both sides by 0.3, we get

$$B = \frac{60}{0.3}$$

We notice that a straight-forward division results in 200. That is,

B = 200

We find that 30% of ***200*** is 60.

Example 10: Application using Percent

A certain automobile cooling system has a capacity of 6 gallons of fluid. To give protection to -10^{o} Fahrenheit, 40% of the cooling system capacity must be antifreeze. How many gallons of antifreeze should be used? Express the answer as a decimal, if necessary.

Let's insert the given information into the formula ***A = PB***.

Give are the percent ***P = 40% = 0.4*** and the base ***B = 6***. The number we are asked to find is ***A***, the amount resulting when the percent is applied to the base.

A = 0.4(6) = 2.4. Remember, the multiplication symbol can be replaced by a set of parentheses.

We find that ***2.4*** gallons of antifreeze must be used for the automobile to be protected to -10^{o} F.

Example 11: Application using Percent

A patient's medication was increased by 32.5 mg or 10% per day. How many mg did the patient get on the day before the increase? Express the answer as a decimal, if necessary.

Let's insert the given information into the formula ***A = PB***.

Given are the percent ***P = 10%*** and the amount resulting when the percent is applied to the base ***A = 32.5***. The number we are asked to find is the base ***B***.

32.5 = 0.1B

We must now solve a little linear equation for ***B***. Dividing both sides by 0.1, we get

$$B = \frac{32.5}{0.1} = 325$$ (using the calculator)

We find that the patient received ***325*** mg the day before the increase of the medication.