



## Unit 4: Lesson 03 Percent problems

To convert a % into a decimal fraction, move the decimal point two places to the left.

To convert a decimal fraction to a percent, move the decimal point two places to the right.

**Example 1:** Convert 38.2% to a decimal fraction.

$$38.2\% = .382$$

**Example 2:** Convert .453 to a percent.

$$.453 = 45.3\%$$

Percent word problems can many times be expressed as:

$p$  percent of (quantity #1) is (quantity # 2)

In this context, “of” means to multiply, so the statement can be written mathematically as follows:

$$p(q1) = q2 \quad \text{where } p \text{ is a decimal fraction representation of the percent.}$$

**Example 3:** An example of  $p$  being the unknown variable in  $p(q1) = q2$  is, “25 is what percent of 78?”

*Reword this in reverse as, “ $p$  percent of 78 is 25.”*

$$\begin{aligned}
 p \cdot 78 &= 25 \\
 \frac{78p}{78} &= \frac{25}{78} \\
 p &= .3205 \rightarrow \boxed{32.05\%}
 \end{aligned}$$

**Example 4:** An example of **q1** being the unknown variable in  $p(q1) = q2$  is, "38% of **what** is 175?"

$$38\% = .38$$

$$p \cdot q1 = q2$$

$$.38(q1) = 175$$

$$\frac{.38q1}{.38} = \frac{175}{.38}$$

$$q1 = \boxed{460.526}$$

**Example 5:** An example of **q2** being the unknown variable in  $p(q1) = q2$  is, "4.11% of 160 is **what**?"

$$4.11\% = .0411$$

$$p \cdot q1 = q2$$

$$.0411(160) = q2$$

$$\boxed{6.576} = q2$$

**Assignment:**

1. Convert 14% to a decimal fraction.

2. Convert .189 to a percent.

3. Convert 5.22 to a percent.

4. Convert .03% to a decimal fraction.

5. Convert 1500% to a decimal fraction.

6. Convert 1500 to a percent.

7. 18 is what percent of 36?

8. What percent of 6 is 18?

9. 19 percent of what is 23.1?

10. What is 58.2 percent of 75?

11. .029 % of 600 is what?

12. .052 percent of what is .001?

13. Big Bob wants to buy a car that sells for \$21,000. If the sales tax is 8.25%, what will be the total cost of the car including tax?

14. Mooky bought a new laptop computer and is paying \$95 per month for it. If his monthly income is \$852, what percent of his monthly income is he paying each month for the computer?

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15. Mr. Cleaver gets a 6% commission as a real estate agent for the selling price of a house. If his commission on a sale is \$8280, what was the selling price of the house?

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\*16. Lisa bought a new dress on sale at "Teen Hottie" and paid only \$75. If it had previously been listed at \$125, what percent discount did Lisa receive on the dress?

17. Jimmy was surprised when the waitress presented a bill of \$7.02 for his lunch because his plate was listed for \$6.50 on the menu. If the additional cost was due to the tax, what was the sales tax rate?

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18. The Eagles only completed 25% of their passes this past season. If they completed 20 passes, how many passes were attempted?

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19. What is 13.2% of 187.02?

20. 18.09 is what percent of 11?