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# Using an Equation to Find a Number When a Percent Is Known

## 1 Here's How

An algebraic equation can help you find a number when a percent is known. Use a decimal for the percent.

The variable stands for the unknown whole.

**Look at these examples.**

20% of $n$ is 8

$\downarrow \quad \downarrow \quad \downarrow$

**0.20** $\cdot$ **=**

*Example 1*

To find the number that 8 is 20% of, write an equation.

$0.2 \cdot \boldsymbol{n} = 8$

Write the percent as an equivalent decimal: 20% = 0.20 = 0.2.
Translate the statement into an equation: $0.2 \cdot n = 8$.
You can also write this as $0.2n = 8$.

$\frac{0.2n}{\mathbf{0.2}} = \frac{8}{\mathbf{0.2}}$

$\boldsymbol{n} = 40$

Then solve the equation for $n$.
Isolate the variable by dividing both sides by 0.2:
$0.2n \div 0.2 = 8 \div 0.2 \rightarrow n = 40$.

So, 20% of 40 is 8.

$n = \frac{\mathbf{8}}{\mathbf{0.2}}$

$n = 8 \div 0.2 = 40$

*Example 2*

A shortcut for this equation is to set the variable equal to the ratio of the part to the percent as a decimal. Then divide.

## 2 Try It

**Complete each step.**

15 is 60% of $n$

$n =$ _____

Write an equation to find the number that 15 is 60% of.

What is the decimal equivalent of 60%? _____

Translate the statement into an equation: _____ = _____ $\cdot$ $n$.

How can you isolate the variable? _____

Isolate the variable and solve for $n$:

_____

Complete this statement: 15 is 60% of _____.

## 3 On Your Own

**Write an equation to solve each problem.**

**1.** 60% of $n$ is 45

$0.6 \cdot n = 45$

$n = 45 \div 0.6$

$n = 75$

**2.** 4% of $n = 12$

**3.** 24 is 75% of $n$

**4.** 7% of $n$ is 49

**5.** 9 is 30% of $n$

**6.** 110% of $n$ is 74.8

**7.** 42% of $n$ is 50.4

**8.** 0.5% of $n$ is 2.5

**9.** 45.92 is 56% of $n$

**10.** 200% of $n$ is 16

**11.** \$1.25 is 2.5% of $n$

**12.** 95% of $n$ is 10.26

## 4 Think About It

**Answer the question. Write your answer below.**

**13.** Howard finds 0.25% of a number to be 6. Is the number greater than or less than 6? Explain.