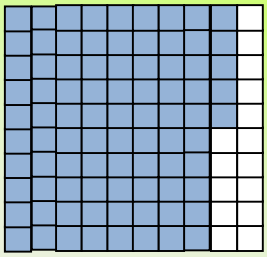
Percents

Part A: Percents and Fractions

The word percent means "per hundred". A **percent** is a ratio whose denominator is 100. The symbol for percent is %.

Writing Percents

Words: In the area model shown, 85 of the 100 squares are shaded. You can say that 85 percent of the squares are shaded.



Numbers: $\frac{85}{100} = 85\%$ Algebra: $\frac{p}{100} = p\%$

Example 1: **Write 29% and 45% as fractions in simplest form.**

a. $29\% = \frac{29}{100}$

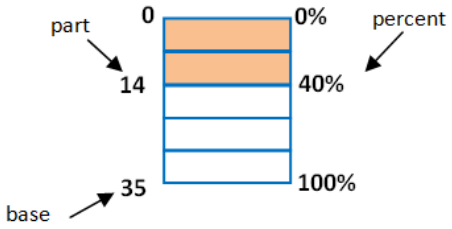
b. $45\% = \frac{45}{100} = \frac{9}{20}$

Here are some common percent-fraction equivalents that may be useful to memorize.

Common Percents					
$10\% = \frac{1}{10}$	$20\% = \frac{1}{5}$	$25\% = \frac{1}{4}$	$30\% = \frac{3}{10}$	$40\% = \frac{2}{5}$	$50\% = \frac{1}{2}$
$60\% = \frac{3}{5}$	$70\% = \frac{7}{10}$	$75\% = \frac{3}{4}$	$80\% = \frac{4}{5}$	$90\% = \frac{9}{10}$	$100\% = 1$

Part B: Percents and Proportions

A percent bar model compares a part to a base. In the model shown, 35 is the base, and 14 is a part of the base.



The percent bar model shows that 14 is 40% of 35 or, equivalently, that $\frac{14}{35} = \frac{40}{100}$.

Solving Percent Problems

You can represent "a is p percent of b" using the proportion

$$\frac{a}{b} = \frac{p}{100}$$

Where a is a part of the base b and p%, or $\frac{p}{100}$, is the percent.

Part C: Percents and Decimals

Because 0.25 = $\frac{25}{100}$ and $\frac{25}{100}$ = 25%, you can say that 0.25 = 25%.

This relationship suggests the following rules for writing decimals as percents and percents as decimals.

Percents and Decimals

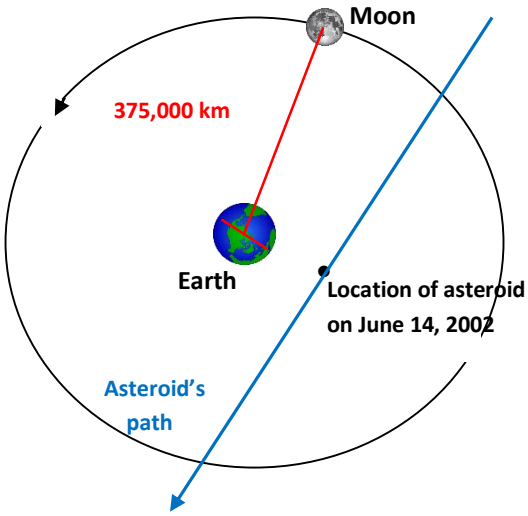
- To write a decimal as a percent, move the decimal point two places to the right and write a percent sign.
- To write a percent as a decimal, move the decimal point two places to the left and remove the percent sign.

Fractions, Decimals, and Percents: A fraction, a decimal, and a percent can all represent the same number. You can write a fraction as a percent by first writing the fraction as a decimal.

Part D: The Percent Equation

On June 14, 2002, the distance between Earth and the moon was about 375,000 kilometers. On that day, a traveling asteroid missed Earth by about 32% of that distance. How far away from Earth was the asteroid at that time?

You have used the proportion $\frac{a}{b} = \frac{p}{100}$ to solve percent problems. When you solve this proportion for a and write $\frac{p}{100}$ as $p\%$, you get the equation $a = p\% \bullet b$.



The Percent Equation

You can represent "a is p percent of b" using the equation
$a = p\% \bullet b$

where a is a part of the base b and $p\%$ is the percent.