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Percentages

Unit 2 Lesson 9

PERCENTAGES

Students will be able to:

Understand the concept of percentages and find the percentages, part and base

Key Vocabulary:

- Percentage
- Part and Base
- Percent proportion
- Percent equation

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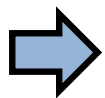
What is Percentage?

The percentage represents the number of parts of anything divided into 100 equal parts. It can also be termed as the ratio of **part** to **whole**.

Percent

1 percent means 1 part out of 100 parts (or base)

It is represented as:



$$1\% = \frac{1}{100}$$



$$x\% = \frac{x}{100}$$

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Percent Equation

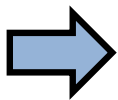
Let a be a **part** of a **base** b . Then the statement “ a is p percent of b ” can be represented as:

$$a = p\% \cdot b$$

Finding a Part:

The percent equation can be used to find the part, given the percentage and the base.

$$a = p\% \cdot b$$

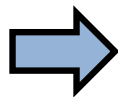


$$a = \frac{p}{100} \cdot b$$

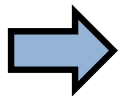
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Problem 1: What is 30% of 150?

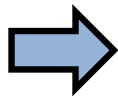
$$a = p\% \cdot b$$



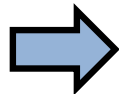
$$a = \frac{p}{100} \cdot b$$



$$30\% \text{ of } 150 = \frac{30}{100} \cdot 150$$



$$30\% \text{ of } 150 = (3) \cdot (15)$$



$$30\% \text{ of } 150 = 45$$

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Proportion Equation

Let a be a **part** of a **base** b . Then the statement “ a is p percent of b ” can be represented as a proportion:

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

Finding a Percent:

The proportion equation can be used to find a percent, given the part and the base.

$$\frac{a}{b} = \frac{p}{100} \quad \Rightarrow \quad p = \frac{a}{b} \cdot 100\%$$

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Problem 2: What percent of 36 is 12?

$$\frac{a}{b} = \frac{p}{100} \quad \Rightarrow \quad p = \frac{a}{b} \cdot 100\%$$

$$\Rightarrow p = \frac{12}{36} \cdot 100\%$$

$$\Rightarrow p = \frac{100}{3} \%$$

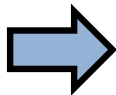
$$\Rightarrow p = 33.33\%$$

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Finding a Base:

The proportion equation can also be used to find a base, given the part and percentage.

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



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

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Problem 3: 15% percent of what number is 6.75?

$$\frac{a}{b} = \frac{p}{100} \quad \Rightarrow \quad b = \frac{a}{p} \cdot 100$$

$$\Rightarrow \quad b = \frac{6.75}{15} \cdot 100\%$$

$$\Rightarrow \quad b = \frac{675}{15}$$

$$\Rightarrow \quad b = 45$$