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A Fraction as a Percent

Unit 1 Lesson 7

Math 6

Students will be able to:

Write fraction as percent and decimal.

Write percent as fraction and decimal.

Solve problems involving fractions, percent and decimals.

A Fraction as a Percent

Key Vocabulary:

Fraction

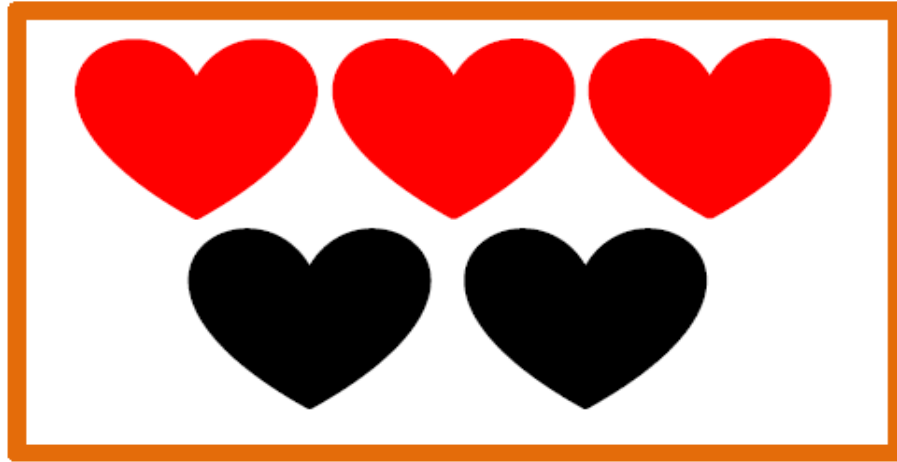
Decimal

Percent

Part-to-Whole Ratio

A Fraction as a Percent

Look at the figure below. There are 5 hearts, three are **RED** and two are **BLACK**.



The figure in the previous slide has two **PART-TO-WHOLE** ratios.

The ratio of **RED** hearts to the total number of hearts is **3:5**.

The ratio of the **BLACK** hearts to the total number of hearts is **2:5**.

A Fraction as a Percent

What percent of the hearts is **RED**? What percent of the hearts is **BLACK**? Note that a **part-to-whole** ratio is more useful in comparing percent. Also note the "whole" means 100!

How are you going to find the percentage, given that the second term of the ratio or the denominator of a fraction is not 100?

$$3:5 = ?\% \text{ and } 2:5 = ?\%$$

Changing Fractions to Percent and Decimal

To change a fraction with a denominator which is not 100, follow these steps:

What percent of the hearts is **RED**?

Step 1: Identify the part-to-whole ratio.

red hearts : total number of hearts \longrightarrow **3:5**

Changing Fractions to Percent and Decimal

Step 2: Write the ratio as a fraction.

$$\frac{3}{5}$$

Step 3: Scale up or scale down the given fraction so that the denominator is 100.

$$\frac{3}{5} = \frac{3 \times 20}{5 \times 20} = \frac{60}{100}$$

Changing Fractions to Percent and Decimal

Step 4: Now that the denominator is 100, you can change it to percent!

$$\frac{60}{100} = 60\%$$

Step 5: Write the answer in decimal.

$$60\% = 0.6$$

What percent of the hearts is **BLACK**?

Step 1: 2:5

Step 2: $\frac{2}{5}$

Step 3: $\frac{2}{5} = \frac{2 \times 20}{5 \times 20} = \frac{40}{100}$

Step 4: $\frac{40}{100} = 40\%$

Step 5: $40\% = 0.4$

Sample Problem 1:

Write $\frac{16}{25}$ as percent and decimal.

Solution:

Step 1: 16:25

Step 2: $\frac{16}{25}$

Step 3: $\frac{16}{25} = \frac{16 \times 4}{25 \times 4} = \frac{54}{100}$

Step 4: $\frac{54}{100} = 54\%$

Step 5: $54\% = 0.54$

Changing Fractions to Percent and Decimal (The Easier Way!)

The following steps show an alternative way to write fraction as percent and decimal. But in a case like this...you need to write it as decimal first and then percent. Let's go back to the **RED** and **BLACK** hearts.

A Fraction as a Percent

What percent of the hearts is **RED**?

Step 1: Identify the part-to-whole ratio.

red hearts : total number of hearts \longrightarrow **3:5**

Step 2: Write the ratio as a fraction.

$$\frac{3}{5}$$

Step 3: Divide the numerator by the denominator

$$3 \div 5 = 0.6 \longrightarrow 60\%$$

A Fraction as a Percent

What percent of the hearts is **BLACK**?

Step 1: $2:5$

Step 2: $\frac{2}{5}$

Step 3: $2 \div 5 = 0.4 \longrightarrow 40\%$

Changing Fractions to Percent and Decimal with Denominators that are NOT Factors of 100

If the denominator of a fraction is not a factor of 100, these steps can help you change it to percent and decimal.

A Fraction as a Percent

Example: Write $\frac{3}{8}$ as percent and decimal.

Step 1: Divide the numerator and denominator.

$$\frac{3}{8} = 0.38$$

Step 2: Change it to percent.

$$0.38 = 38\%$$

A Fraction as a Percent

In cases like these, there is no other way to do it but to change the fraction to decimal first, then to percent. It cannot go the other way around.

Sample Problem 2:

Write $\frac{9}{11}$ as a percent and decimal.

Solution:

Step 1: $\frac{9}{11} = 0.82$

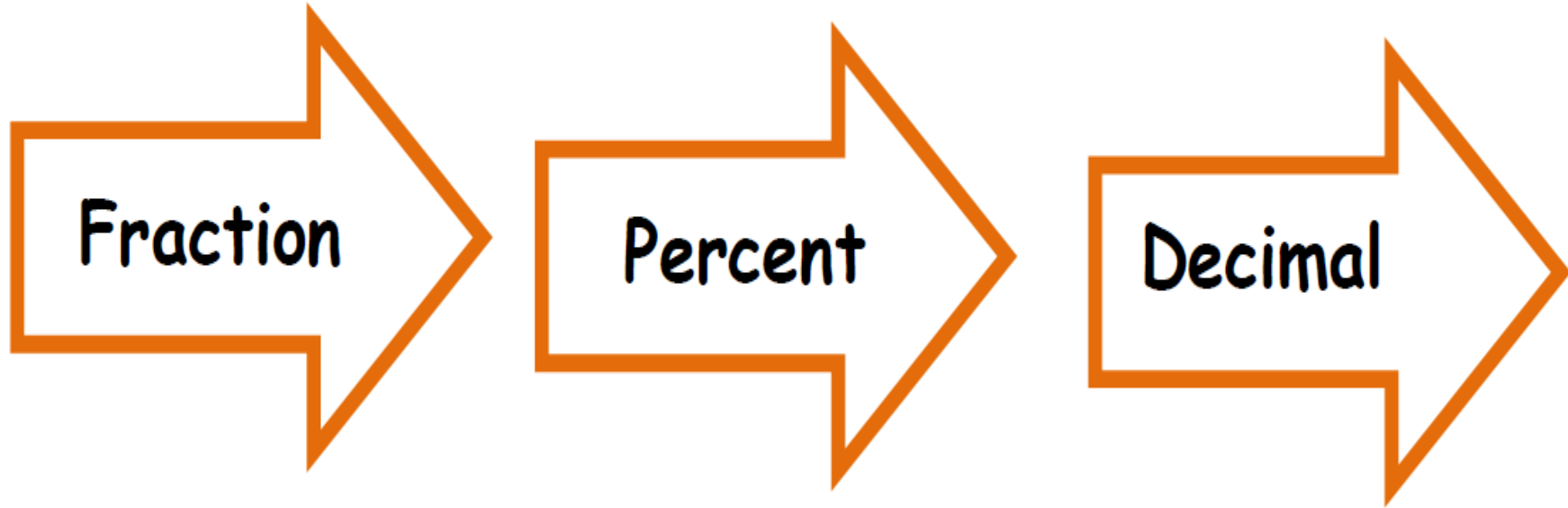
Step 2: $0.82 = 82\%$

A Fraction as a Percent

The order of changing fractions, decimals and percent into whatever forms share a certain relationship. And there is no really particular order of steps to follow, except if the denominator of the fraction is not a factor of 100. You can convert them into different forms without any particular order as long as the process is well supported and valid.

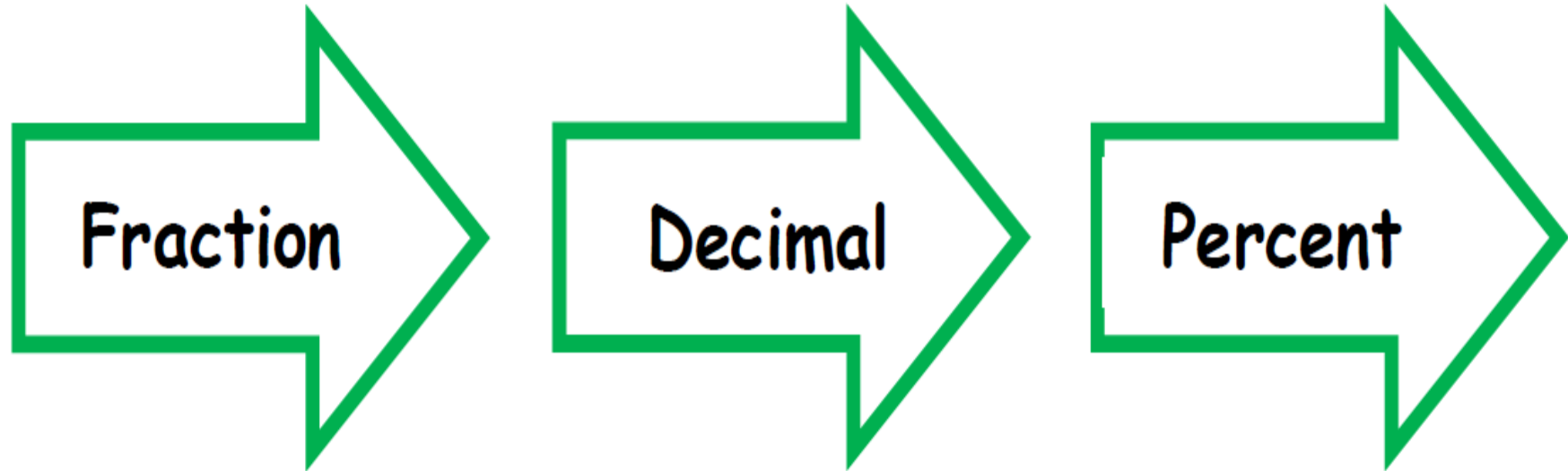
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Option 1:



A Fraction as a Percent

Option 2:



Sample problem 3:

Sam had already spent $\frac{3}{4}$ of his monthly allowance.

- What percent of his allowance did he already spend?
- What percent of his allowance does he have left?
- Express the allowance he has left in fraction.

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Sam had already spent $\frac{3}{4}$ of his monthly allowance.

- What percent of his allowance did he already spend?
- What percent of his allowance does he have left?
- Express the allowance he has left in fraction.

A Fraction as a Percent

Solution:

a. Step 1: $\frac{3}{4} = \mathbf{0.75}$

Step 2: $0.75 = 75\%$

Sam had spent 75% of his allowance.

b. $100\% - 75\% = 25\%$

Sam still has 25% of his allowance left.

c. $25\% = \frac{25}{100} = \frac{\mathbf{1}}{\mathbf{4}}$