Applications of Percent

Objective 1

Solve an Applied Percent Problem

Applied percent problems can generally be solved using the following structured format.

(A percent) of (a total) is (a portion).

(%) · (Total) = (Portion)

Let's now use this structured format to solve the following problem.

A basketball player makes 72 out of 90 free throws. What percent of free throws does the basketball player make?

In this problem, the basket player attempts 90 total free throws. Therefore, 90 is our total. The player makes 72 of the 90 free throws. Therefore, 72 is our portion.

We can now set up an equation using our structured format where we let the variable x represent the unknown percent.

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$

$$x \cdot 90 = 72$$

Here we have the equation $x \cdot 90 = 72$ or $90x = 72$. Solving for x we get, $x = \frac{72}{90}$ or $x = 0.8$ as a decimal.

Because x represents a percent, we convert the decimal number to a percent by moving the decimal point two places to the right. This gives us $x = 80\%$.

To properly answer the question, we can write the following: **The basketball player makes 80% of attempted free throws.**

Example 1: If 40 students enrolled in a music class but only 34 completed the course, what percent of students completed the course?

Example 2: Watermelon is 91% water. How many pounds of a 12 pound watermelon is water?

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$

$$0.91 \cdot 12 = x$$

Example 3: If Thao deposits 30% of her paycheck into a savings account and the amount she deposits is $255, what was the total amount of her paycheck?

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$

$$0.30 \cdot x = 255$$

In the Health Care Career field, many calculations involve "mixtures or solutions" that are made of water and some other ingredient.

For example, a liquid solution that is marked 75% sodium means that the solution is 75% water and 25% sodium.

Similarly, a 1% iodine solution means that the solution is 99% water and 1% iodine.

Example 4: How much sodium is in a 60 milliliter bottle labeled 75% sodium?

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$

$$0.75 \cdot 60 = x$$

Example 5: If 46% of a solution is water and there is 184 milliliters of water in the solution, how many milliliters is the total solution?

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$

Example 6: How much hydrochloric acid (HCl) is in a 70 milliliter bottle that is labeled 34% HCl?

$$(\ \%\ ) \cdot (\text{Total}) = (\text{Portion})$$