Section 7.2 Basic Percent Problems

1. Vocabulary: The following translations of certain English words to mathematical symbols will be helpful to you in solving basic percent problems.

English word	Math symbol
is	=
of	$\bullet$
a number	n
what number	n
what percent	n

2. Solving Percent Problems Using Equations: To solve percent problems using equations, translate the sentences into equations and then solve the equations. Percent problems translate into three types of word problems.

Type One: What number is 10% of 80?

Example 1: Translate the given percent problem into an equation, and then solve the equation.

What number is 10% of 80?

Type Two: What percent of 80 is 20?

Example 2: Translate the given percent problem into an equation, and then solve the equation.

Fourteen is what percent of 70?

Type Three: Fifty is 20% of what number?

    Example 3: Translate the given percent problem into an equation, and then solve the equation.

        Fifty is 20% of what number?

3. Vocabulary: Percent problems involve three quantities: a percent, a base (usually a beginning quantity or a quantity used as a base for comparison), and a final amount (usually the final quantity or the ending quantity). In general, the percent times the base equals the amount. In symbols: $A = P \bullet B$.

    Example 4: In each problem, identify the percent, the base, and the final amount.

    a. 50% of 40 is 20   The percent is 50%, the base is 40 and the amount is 20.

    b. 10% of 80 is 8

    c. 15 is 50% of 30

4. Solving Percent Problems Using Proportions: Write the percent as one of the fractions in the proportion and $\dfrac{amount}{base}$ as the other fraction. Equate the two fractions, and solve using the Fundamental Property of Proportions.

Note: Portions of this document are excerpted from the textbook *Prealgebra,* 7th ed. by Charles McKeague

Example: Solve each of the following percent problems using proportions.

a. What number is 15% of 63?

b. What percent of 42 is 21?

c. 25 is 40% of what number?

Practice Problems. Solve each of the following percent problems using either of the techniques given above.

a. Fifty percent of 120 is what number?

b. Three percent of what number is 6?

c. 34 is what percent of 85?

Answers to Practice Problems:
a. 60; b. 200; c. 40%