MATH 1010 ~ Intermediate Algebra   Chapter 2: Linear Equations and Inequalities

Section 2.2: Linear Equations and Problem Solving

Objectives:

✦ Use mathematical modeling to write algebraic equations
   representing real-life situations.
✦ Solve percent problems.
✦ Use ratios to compare unit prices for products.
✦ Solve proportions.

Which is the better deal?
A 12-pack of soda for $3.50 or a 2-liter bottle for $1.29?

Percent Problems

1. What is 58% of 800?

2. 18 is 2.4 % of what?

3. 900 is what percent of 500?

EXAMPLE
Write an equation for each problem and solve.

a) You spent $748 of your monthly income of $3400 for rent. What percent of your monthly income is your monthly rent?

b) The price of soft drinks has gone up 2.5% in the last year. How much would you expect to pay for the 2-liter bottle which was formerly priced at $1.59?

Ratios and Unit prices

Ratio   a:b $\dfrac{a}{b}$

Examples of ratios: 36 inches to 5 ft.

Examples of unit prices: 64 ounces of juice for $1.29

① EXAMPLE:

Which is a better buy? 10.5 oz package of cookies for $1.79
or
16 oz package of cookies for $2.39?

Proportions

A proportion is a statement that equates two ratios.

$$\frac{a}{b} = \frac{c}{d}$$

② EXAMPLES: Solve for x.

a) $\dfrac{x}{36} = \dfrac{6}{7}$

b) $\dfrac{x-3}{3} = \dfrac{x+8}{12}$

c) Given these similar triangles, find the value of z.

3, 2, 5, z