

## Chapter 6 Ratios, Proportions, and Square Roots - Calculator Allowed

### 6.1 Ratios and Rates

#### 6.1 Objective A: Write Ratios as Fractions.

##### Writing a Ratio as a Fraction

The order of the quantities is important when writing ratios. To write a ratio as a fraction, write the **first number** of the ratio as the numerator (top) of the fraction and the **second number** as the denominator (bottom).

**Ex. 1.** Write each ratio as a ratio of a whole numbers using fractional notation. Write fraction in simplest form.

a. \$32 to \$100  $\frac{32}{100} \div 2 = \frac{16}{50} \div 2 = \frac{8}{25}$

b. 6.1 ounces to 16.5 ounces

$$\frac{6.1}{6.5} = \frac{61}{65}$$

c. 24 days to 14 days

$$\frac{24}{14} = \frac{12}{7}$$

d.  $7\frac{3}{5}$  hours to  $1\frac{9}{10}$  hours

$$\frac{7\frac{3}{5}}{1\frac{9}{10}} = \frac{7.6}{1.9} = 4$$

e. At the Hidalgo County School Board meeting one night, there were 125 women and 100 men present. Find the ratio of women to men.

$$\frac{125}{100} = \frac{5}{4}$$

**Ex. 2.** Hard drives come in many diameters. Find the ratio of a  $2\frac{1}{2}$  inches diameter to a  $5\frac{1}{4}$  inches diameter hard drive.

$$\frac{2\frac{1}{2}}{5\frac{1}{4}} = \frac{10}{21}$$

### 6.1 Objective B: Write Rates as Fractions.

A special type of ratio is a **rate**. **Rates** are used to compare

different kinds of quantities.

**Ex. 3.** Write each rate as a fraction in simplest form.

a. 5 shrubs every 15 feet

$$\frac{5}{15} = \frac{1}{3} \text{ shrub/feet}$$

b. 6 lasers printers for every 28 computers

$$\frac{6}{28} = \frac{3}{14} \text{ printer/computer}$$

c. 330 calories in a 3-oz serving.

$$\frac{330}{3} = 110 \text{ cal/oz}$$

**6.1 Objective C: Find Unit Rates.****Writing a Rate as a Unit Rate**

To write a rate as a unit rate, divide the numerator of the rate by the denominator.

**Ex. 4.** Write as a unit rate:

- a. 3200 feet every 8 seconds

$$\frac{3200}{8} = 400 \text{ ft/sec}$$

- b. 375 riders in 5 subways

$$75 \text{ riders/subway}$$

- c. A hummingbird moves at a rate of 5400 wing beats a minute. Write this rate in wing beats per second.

$$90 \text{ beats/sec}$$

- d. A \$1,000,000 lottery winning paid over 20 years.

$$\$50,000/\text{year}$$

**6.1 Objective D - Find Unit Prices.**

When a unit rate is "money per item," it is also called a unit price.

$$\text{unit price} = \frac{\text{price}}{\text{number of units}}$$

**Ex. 5.** An automobile rental agency charges \$170 for 5 days for a certain model car. What is the unit price in dollars per day?

$$\frac{\$170}{5 \text{ days}} = \$34/\text{day}$$

"per"

**Ex. 6.** Find each unit price and decide which is the better buy.

*less \$/unit*

a. Crackers

\$3.29 for 8 ounces

\$4.79 for 12 ounces

$$\frac{3.29}{8} = \$0.41/\text{oz}$$

$$\frac{4.79}{12} = \$0.40/\text{oz}$$

b. Frozen Orange Juice

\$1.89 for 16 ounces

\$0.69 for 6 ounces

$$\begin{array}{r} \$0.12/\text{oz} \\ - 0.118 \end{array}$$

$$\begin{array}{r} \$0.12/\text{oz} \\ 0.115 \end{array}$$