Section 3.8 Rates, Ratios and Percents

Rate of a per b **a and b are two quantities measured in different units. i.e.** miles/hour; feet/sec; $$/lb, etc.

Unit rate **the rate per <u>one</u> given unit. i.e.** 80 miles/day; $.20/oz; 2 dogs/person; etc.

$3.15 for 5 cans of soup

$$\frac{\$3.15}{5} = \$.63/can$$

Examples

1. **Estimated Spending in U.S. in 1996**

Medical Care	$913 billion
Housing	$787 billion
Transportation	$602 billion

$$\frac{913000}{266} =$$

$$\frac{787,000}{266}$$

$$\frac{602000}{266}$$

unit rate

Find the cost per person in each of the above categories, assuming the U.S. population in 1996 was about 266 million.

1000 qqqqqq

MC: $3432 / person
H: $2958 / person
T: $2263 / person

2. You have recorded your car mileage and gasoline use for 5 weeks. Estimate the number of miles you can drive on a full 12-gallon tank of gasoline.

# of Miles	# of Gallons
159	5.0
237	6.9
195	6.0
215	6.5
183	5.7
Total 989	30.1

find unit rate

UR

$$\frac{989}{30.1} = 32.86 \, mi/gal$$

$$32.86 \times 12$$

394.29 mi

3. You tested a sample of 100 packages from a shipment of 6000 packages. You found that 7 packages were under weight. Estimate the number of packages that will be under weight.

def.

$$\frac{7}{Total \; 100} \bowtie \frac{x}{6000 \; Total}$$

$$\frac{42000}{100} = \frac{100x}{100}$$

420 = x

4. a. You are visiting Canada and you want to exchange $150 for Canadian dollars. The rate of currency exchange is 1.4 Canadian dollars per U.S. dollar. Find how many Canadian dollars you will receive.

   b. When you leave Canada you want to find how much you can get in U.S. dollars. The rate of currency exchange is now 1.3 Canadian dollars per U.S. dollar.

5. What percent of the votes for Bob Dole came from California?
   Votes: 39,197,469
   CA Votes: 3,828,380

6. About 74% of water used in houses is used in bathrooms, about 5% in kitchens, and about 21% in other places. About 9 gallons are used in the kitchen each day. Estimate the total gallons used each day.