

6-3 Converting Rates and Measures

Before we begin: How do we multiply fractions?

$$\frac{2}{3} \cdot \frac{5}{7} = \frac{10}{21} \approx$$

What if you multiply a number by 1?

Let's make a list of equal measurements.

$$12 \text{ in} = 1 \text{ foot} \quad 1 \text{ month} = 30 \text{ days}$$

$$36 \text{ in} = 1 \text{ yd}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ year} \approx 365 \text{ days}$$

Equal measurements can be written as fractions that are equal to 1.

$$\frac{5}{5}$$

$$\frac{12 \text{ in.}}{1 \text{ ft.}}$$

$$\frac{1 \text{ ft.}}{12 \text{ in.}}$$

Ex. 1 Last year Mr. Ebert ran 520 miles. How many miles is this per month?

$$\frac{520 \text{ miles}}{\cancel{\text{year}}} \cdot \frac{\cancel{1 \text{ year}}}{12 \text{ months}} = \frac{520 \text{ mi.}}{12 \text{ mo.}}$$

43.3 miles/month

How many miles is this per day?

$$\frac{520 \text{ miles}}{\cancel{\text{year}}} \cdot \frac{\cancel{1 \text{ yr.}}}{365 \text{ days}} = \frac{520 \text{ mi}}{365 \text{ days}}$$

1.4 miles/day

Ex. 2

Mr. Ebert is driving at 88 km per hour. How many meters per hour is this?

$$88,000 \text{ m/hr} \cdot \frac{88 \cancel{\text{ km}}}{1 \cancel{\text{ km}}} \cdot \frac{1000 \text{ m}}{1 \cancel{\text{ km}}} = 88 \cdot 1000$$

How many meters per second is this?

$$\frac{88,000 \text{ m}}{\cancel{\text{ hr}}} \cdot \frac{1 \cancel{\text{ hr}}}{60 \cancel{\text{ min}}} \cdot \frac{1 \cancel{\text{ min}}}{60 \text{ sec.}} = \frac{88,000 \text{ m}}{3600 \text{ s}}$$

24.4 m/s

Ex. 3

How many inches is 12 cm?

$$\frac{12 \cancel{\text{ cm}}}{1} \cdot \frac{1 \text{ in}}{2.54 \cancel{\text{ cm}}} = \frac{12}{2.54}$$

4.7 in.

How many liters is 4 quarts?

$$\frac{4 \cancel{\text{ quarts}}}{1} \cdot \frac{.95 \text{ L}}{1 \cancel{\text{ qt.}}} = 3.8 \text{ Liters}$$

Ex. 4 Skydivers fall at 176 feet per second. How many miles per hour is this?

If I drive 55 miles per hour, how many feet per second is this?

Ex. 5 In Brazil, about 20 acres of rainforest are destroyed each minute. How much rainforest is destroyed per day?

Ex. 6 An elephant can eat up to 440 pounds of
vegetation each day. How many grams per minute
is this?

Homework
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