2.6 Expressing Imperial Units as Metric Units

Page 54 to 55

Try These:
Use Mental Math to calculate the following

i. $\frac{3}{5} = \frac{6}{10}$

ii. $\frac{2.54}{1} = \frac{25.4}{10}$

iii. $\frac{9}{15} = \frac{6}{10}$

iv. $\frac{35}{14} = \frac{5}{2}$

- You often need to express a length measure in imperial units in metric units.

- Look at a tap measure that shows both measurement systems.

1. About how many centimeters are then in an inch?
   - 1 in ≅ 2.5cm

2. About how many centimeters are there in a foot?
   - 1ft ≅ 30.4 cm

3. About how many centimeters are there in a yard?
   - 1 yd ≅ 91.2 cm

Example 1: A soccer goal is 24 ft wide. About how wide is it in meters?

- Solution

A. About how many centimeters are there in 24 feet?
   - 1 ft ≅ 30.4 cm
   - 24 ft x 30.4 cm/ft ≅ 729.6 cm

B. About how many meters are in 24 feet?
   - 1 m = 100 cm, so
   - 24 ft ≅ 7.296 m

- When you need to know more precise values, you can use the relationships among common units. The degree of precision you use will depend on the situation.

Imperial to Metric
1 in. ≅ 2.54 cm
1 ft. ≅ 0.31 m
1 yd ≅ 0.91 m
1 mi ≅ 1.61 km

Example 2: Alfonso drove his truck from Edmonton to Regina, a distance of 436 miles. What is this distance in kilometers?

Solution 1

- How far did Alfonso drive in kilometers?
  - 1 mi ≅ 1.61 km
  - 436 mi x 1.61 km/mi = 701.96 km

Solution 2

- Set up equivalent ratios to relate the units.
- Then solve the equation
  - $\frac{1.61\ km}{1\ mi} = \frac{?km}{436\ mi}$
  - $? \cong \frac{1.61\ km}{1\ mi} x\ 436\ mi$
  - $? \cong 701.96\ km$

Alfonso drove about 702 km

Example 3: Andrea’s height is 5’7”. What is her height in centimeters

Solution 1:

A. What is Andrea's height in inches
   - 1 ft = 12 in., so 5 ft x 12 in./ft + 7 in. = 67 in.

B. what is Andrea’s height in centimeters?
   - 1 in. ≅ 2.54 cm
   - 67 in. x 2.54 cm/in. ≅ 170. 18 cm

Andrea is about 170 cm tall

Example 3

Solution 2:

A. What is Andrea's height in inches? 67 in.
B. Set up equivalent ratios and solve the equation.
   - $\frac{2.54\ cm}{1\ in.} = \frac{?\ cm}{67\ in.}$
   - $?\ \cong \frac{2.54\ cm}{1\ in.}\ x\ 67\ in. \cong 170.18\ cm$
   - $?\ \cong 170\ cm$

Andrea is about 170 cm tall

Assignment

- Complete the following in your duo-tang and hand in
  - A&W 10 Page 56 # 1 – 5, 8 and 9
  - A&W 11 Page 56 # 1 to 10
  - Some of the assignments will be very similar