Example 1	**Converting from Metres to Feet**

A bowling lane is approximately 19 m long.

What is this measurement to the nearest foot?

✓ **SOLUTION**   A length of 19 m is approximately 62 ft.

(Erase to reveal)

$$19 \text{ m} \times \frac{1.0936 \text{ yd}}{1 \text{ m}} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 62.34 \text{ ft}$$

CHECK YOUR UNDERSTANDING

1.3 Relating SI and Imperial Units

Example 1

1

TRY THIS ONE...

13. The tallest structure in Canada is the CN Tower in Toronto.
It is 553.3 m tall. The tallest structure in the United States
is the Willis Tower, previously known as the Sears Tower,
in Chicago. It is 1451 ft. tall.
    a) Determine the height of the CN Tower in feet and the
      height of the Willis Tower in metres.
    b) Which structure is taller? Explain how you know.
    c) Determine the difference in the heights of the structures,
      in metres and to the nearest foot.

a) $553.3 \text{ m} \times \dfrac{1.0936 \text{ yd}}{\text{m}} \times \dfrac{3 \text{ ft}}{1 \text{ yd}} = 1815.27'$

$1451 \text{ ft} \times \dfrac{1 \text{ yd}}{3 \text{ ft}} \times \dfrac{\text{m}}{1.0936 \text{ yd}} = 442.27 \text{ m}$

b) CN Tower is taller because $1815.27'$ is greater
than $1451'$

c) feet   1815.27   meters   4.3 Relating SI and Imperial Units
      − 1451.00

$$\begin{array}{r} 1815.27 \\ -1451.00 \\ \hline 364.27' \end{array} \qquad \begin{array}{r} 553.3 \\ -442.27 \\ \hline 111.03 \text{ m} \end{array}$$

Exercise #13

2

TRY THIS ONE...

9. The Fraser River is approximately 1375 km long.
The Tennessee River is approximately 886 mi. long.
Which river is longer? Justify your answer.

$$886 \text{ mi} \times \frac{1.6093 \text{ km}}{1 \text{ mi}} = 1425.84 \text{ km}$$

The Tennessee River is longer.

1.3 Relating SI and Imperial Units

Exercise #9

Example 3   Solving a Problem that Involves Unit Conversions

Alex is 6 ft. 2 in. tall. To list his height on his driver's license application, Alex needs to convert this measurement to centimetres.

What is Alex's height to the nearest centimetre?

✓ **SOLUTION**   Alex is approximately 185 cm tall.

(Erase to reveal)

(using 1" = 2.5cm)

$$6'2'' = 74''$$

$$74'' \times \frac{2.54 \text{ cm}}{\text{in}} = 187.96 \text{ cm}$$

1.3 Relating SI and Imperial Units

CHECK YOUR UNDERSTANDING

Example 3

4

Example 4   Estimating and Calculating Using Unit Conversions

A truck driver knows that her semitrailer is 3.5 m high. The support beams of a bridge are 11 ft. 9 in. high. Will the vehicle fit under the bridge? Justify the answer.

✓ **SOLUTION**

(Erase to reveal)

Bridge

$$11\ ft + 9\ in = 141''$$

$$141'' \times \frac{2.54\ cm}{in} \times \frac{1\ m}{100\ cm} = 3.58\ m$$

The semitrailer is only 3.5m so it will fit under the support beams.

1.3 Relating SI and Imperial Units

CHECK YOUR UNDERSTANDING

Example 4

TRY THIS ONE...

11. A retail fabric store advertises a storewide sale. It lists a certain material for $0.89/yd. A fabric warehouse is selling the same material for $0.93/m.

a) Which store has the better price?

b) Use mental math and estimation to justify that the answer is reasonable.

$$\frac{\$0.89}{yd} \times \frac{1.0936 \, yd}{1m} = \frac{\$0.97}{m}$$

2nd store has better price $0.93/m

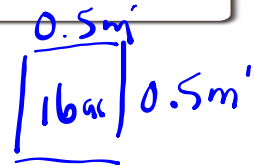1.3 Relating SI and Imperial Units

LAND AREAS...

18. The imperial unit to measure an area of land is the *acre*. During the initial agricultural expansion of the western provinces, the Canadian government offered 160 acres of land free to settlers who were willing to immigrate to Canada. Today, Canada uses the *hectare* to measure land area:
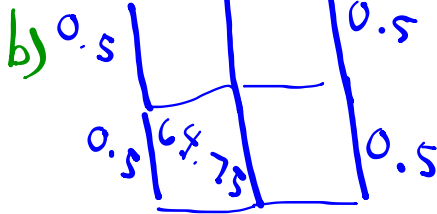
1 hectare ≐ 2.471 acres

a) How many hectares did each settler receive?

b) One hundred sixty acres is a square with a side length of one-half a mile. How many hectares are in one square mile?

18. a) Approximately 65 hectares
    b) Approximately 259 hectares

0.5 mi

| 16 ac | 0.5 m' |

a) $160 \text{ acres} \times \dfrac{1 \text{ hectare}}{2.471 \text{ acres}} = 64.75 \text{ hectares}$

b) $64.75 \times 4 = 259 \text{ hectares}$

1.3 Relating SI and Imperial Units

HOMEWORK...

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End of lesson

CHECK YOUR UNDERSTANDING

1. A Canadian football field is approximately 59 m wide.

   What is this measurement to the nearest foot?

1.3 Relating SI and Imperial Units

CHECK YOUR UNDERSTANDING

2. After meeting in Osoyoos, B. C., Takoda drove 114 km north and Winona drove 68 mi. south. Who drove farther?

1.3 Relating SI and Imperial Units

CYU Question 2

CHECK YOUR UNDERSTANDING

3. Nora knows that she is 5 ft. 7 in. tall.

   a) What height in centimetres will she list on her driver's license application?

   b) Use mental math and estimation to justify that the answer is reasonable.

1.3 Relating SI and Imperial Units

CHECK YOUR UNDERSTANDING

4. A truck driver knows that his load is 15 ft. wide. Regulations along his route state that any load over 4.3 m wide must have wide-load markers and an escort with flashing lights. Does this vehicle need wide-load markers? Justify your answer.

1.3 Relating SI and Imperial Units

Attachments

Worksheet - Converting Measurements.docx