

1.3 Relating SI and Imperial Units

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

What is this measurement to the nearest foot?

$$m \rightarrow ft$$

$$1 m = 100 cm$$

$$30.48 cm = 1 ft$$

$$59 m \times \frac{100 \cancel{cm}}{1 m} \times \frac{1 ft}{30.48 \cancel{cm}} = \left(\frac{59 \times 100}{30.48} \right) ft$$
$$= 193.57 ft$$

$$= 194 ft$$

Comparing ... You must have
the same units

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

$$\begin{aligned} \text{km} &\rightarrow \text{mi} & 1 \text{ mi} &= 1.609 \text{ km} \\ \text{mi} &\rightarrow \text{km} \end{aligned}$$

$$68 \text{ mi} \times \frac{1.609 \text{ km}}{1 \text{ mi}} = 109.4 \text{ km}$$

$$\begin{array}{ccc} \text{Win.} & & \text{Tak} \\ 109.4 \text{ km} & < & 114 \text{ km} \end{array}$$

Takoda drove farther.

$$1 \text{ in} = 2.54 \text{ cm}$$

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?

$$5 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} = 60 \text{ in}$$

$$\text{Nora's height: } 60 \text{ in} + 7 \text{ in} = 67 \text{ in}$$

$$67 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 170.18 \text{ cm}$$
$$= 170 \text{ cm}$$


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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.

$$1 \text{ ft} = 30.48 \text{ cm}$$
$$100 \text{ cm} = 1 \text{ m}$$

$$15 \cancel{\text{ft}} \times \frac{30.48 \cancel{\text{cm}}}{1 \cancel{\text{ft}}} \times \frac{1 \text{ m}}{100 \cancel{\text{cm}}} = 4.572 \text{ m}$$

$$4.572 > 4.3$$

 he needs wide-load markers
therefore