Lesson Two – Relating SI and Imperial Units

LENGTH:	
Metric	***Imperial***
1 millimetre (mm)	0.0394 in
1 centimetre (cm) 10 mm	0.3937 in
1 metre (m) 100 cm	1.0936 yd
1 kilometre (km) 1000 m	0.6214 mi
Imperial	***Metric***
1 inch (in)	2.54 cm
1 foot (ft) 12 in	0.3048 m
1 yard (yd) 3 ft	0.9144 m
1 mile (1760 Yd)	1.6093 km
1 int nautical mile (2025.4 yd)	1.852 km

Example – Converting Between Systems of Measurement

1. A Canadian football field is approximately 59 m wide. What is this measurement to the nearest foot?

Set up a ratio: $\frac{what\ you\ have}{what\ you\ want} = \frac{conversion\ table\ (what\ you\ have)}{conversion\ table\ (what\ you\ want)}$

$\frac{59m}{x\ ft} = \frac{0.3048\ m}{1\ ft}$, cross multiply

$(59) \times 1 = x \times 0.3048$, divide each side by 0.3048

$\frac{59}{0.3048} = \frac{x(0.3048)}{0.3048}$

194 ft $= x$

or $59\text{m} \cdot \frac{1\ \text{ft}}{0.3048\ \text{m}}$

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

Convert 68 mi → km

unit conversion
1 km = 0.6214 mi

$68 \text{ mi} \cdot \frac{1 \text{ km}}{0.6214 \text{ mi}}$

109.4 km

$\frac{68}{x \text{ (km)}} = \frac{0.6214}{1 \text{ km}}$ cross multiply

$\frac{68(1)}{0.6214} = \frac{0.6214x}{0.6214}$

$x = 109.4 \text{ km}$

∴ Mark drove further since 114 km > 109.4 km
Mark drove 4.6 km farther.

3. Nora knows that she is 5 ft. 7 in. tall. What height in centimetres will she list on her driver's license application?

5 ft 7 in → 67 in
(5 × 12) + 7

$67 \text{ in} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}}$

170 cm

$\frac{67 \text{ in}}{x \text{ (cm)}} = \frac{1 \text{ in}}{2.54 \text{ cm}}$

$67(2.54) = x$

$170.18 \text{ cm} = x$

∴ she would list 170 cm

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?

15 ft → m

$15 \text{ ft} \cdot \frac{0.3048 \text{ m}}{1 \text{ ft}}$

$x = 4.572 \text{ m}$

$\frac{15 \text{ ft}}{x \text{ (m)}} = \frac{1 \text{ ft}}{0.3048 \text{ m}}$

$x = 15(0.3048)$

$x = 4.572 \text{ m}$

∴ He will need markers.

Assignment: Pg. 22; 5 (a,b), 6 (b,c), 8, 11, 12, 16