

CONVERTING MEASUREMENTS BETWEEN SYSTEMS

It is important to be able to convert metric units to imperial units, and vice versa. Below are some of the common conversions available for units of length. Note that the sign "≈" means approximately. These conversions are not exact but are what will be used for this course. Online conversions calculators give more precise conversions if needed.

multiply if going from IMP to SI
 (left to right) \times

1 inch ≈ 2.54 centimetres
1 foot ≈ 30.5 centimetres
1 foot ≈ 0.305 metres
1 yard ≈ 0.915 metres
1 mile ≈ 1.6 kilometres

divide if going from SI to IMP
 (right to left) \div

Use these conversion factors by multiplying when converting from left to right or by dividing when converting from right to left.

Example 1: 24 ft = _____ m

The conversion from ft to m is 0.305. This is a left to right conversion so multiply.

So, $24 \text{ ft} \times 0.305 = 7.32 \text{ m}$

or

$$\frac{24 \text{ ft}}{x \text{ m}} = \frac{1 \text{ ft}}{0.305 \text{ m}}$$

set up proportion if you prefer

Example 2: Andrea's height is 5'8". What is her height in centimetres?

First convert Andrea's height all to inches.

$$5' \times 12 = 60" + 8" = 68"$$

Then change the inches to centimetres by using the conversion factor. This can be done by multiplying or by setting up a proportion and solving.

$68" \times 2.54 = 173 \text{ cm}$

or

$$\frac{\text{cm}}{\text{in.}} = \frac{2.54}{1} = \frac{x}{68}$$

$$x = 2.54 \times 68$$

$$x = 173 \text{ cm}$$

Example 3: Jo has a miniature pony that is .961 m tall. How tall in ft is the pony?

$$\frac{.961 \text{ m}}{x \text{ ft}} = \frac{.305 \text{ m}}{1 \text{ ft}}$$

$$.305 x = .961$$

$$x = \frac{.961}{.305} \quad x = 3.15 \text{ ft}$$

or

$$.961 \text{ m} \div .305 \text{ m/ft} = 3.15 \text{ ft}$$

ASSIGNMENT 3 – CONVERTING MEASUREMENTS BETWEEN SYSTEMS

1) Convert the following measurements. 2 Decimal places

a) 8 in = $8 \times 2.54 = 20.32$ cm

f) 145 m = $14500 \text{ cm} \div 2.54 = 5708.66$ in

b) 9.5 mi = $9.5 \times 1.6 = 15.20$ km

g) 1.5 m = $1.5 \div .305 = 4.92$ ft

c) 25 yd = $25 \text{ yd} \times .915 = 22.88$ m

h) 123 km = $123 \div 1.6 = 76.88$ mi

d) 67 ft = $67 \text{ ft} \times .305 = 20.44$ m

i) 27 cm = $27 \div 2.54 = 10.63$ in

e) 24 ft = $24 \text{ ft} \times 30.5 = 732$ cm

j) 55 cm = $55 \div 30.5 = 1.80$ ft



can also do proportions

2) Mount Logan is Canada's highest mountain. It measures 19 551 ft. What is that height in metres?

$$\frac{19551 \text{ ft}}{x \text{ m}} = \frac{1 \text{ ft}}{.305 \text{ m}}$$

or

$$19551 \text{ ft} \times .305 \text{ m/ft} = 5963.06 \text{ m}$$

$$x = 19551 (.305)$$

$$x = 5963.06 \text{ m}$$

★ Mt. Logan is 5963.06 m high

3) The Capilano Suspension Bridge in North Vancouver is 173 m across and 70 m above the river. What are these distances in feet?

$$\frac{173 \text{ m}}{x} = \frac{.305 \text{ m}}{1 \text{ ft}}$$

$$\frac{70 \text{ m}}{x} = \frac{.305 \text{ m}}{1 \text{ ft}}$$

$$173 \text{ m} \div .305 = 567.21 \text{ ft}$$

$$.305x = 173 \text{ m}$$

$$x = \frac{173}{.305}$$

$$x = 567.21 \text{ ft}$$

$$x = \frac{70}{.305}$$

$$x = 229.51$$

or

$$70 \text{ m} \div .305 = 229.51 \text{ ft}$$

4) Jiri's boat and trailer is 20 ft 6 in. long. His garage is 6.2 m long. Will the boat and trailer fit in his garage?

$$\frac{20.5 \text{ ft}}{x} = \frac{1 \text{ ft}}{.305 \text{ m}}$$

$$x = 20.5 \text{ ft} \times .305 \text{ m/ft}$$

or

$$20.5 \text{ ft} \times .305 \text{ m/ft} = 6.25 \text{ m}$$

$$x = 6.25 \text{ m}$$

★ No it won't fit!

- 5) Charlie drove from Calgary to Saskatoon. If this distance is 620 km, how far is this in miles?

$$620 \text{ km} \div 1.6 \frac{\text{km}}{\text{mi}} = 387.50 \text{ mi}$$

or

$$\frac{620 \text{ km}}{x \text{ mi}} = \frac{1.6 \text{ km}}{1 \text{ mi}}$$

$$1.6x = 620 \rightarrow x = \frac{620}{1.6} x = 387.50 \text{ mi}$$

- 6) Carla needs 3.5 m of cloth. However, the cloth she wants to buy costs \$9.79 per yard. How much will this cloth cost?

$$3.5 \text{ m} \div .915 \text{ m/yd} = 3.83 \text{ yds} \times 9.79 \$$$

$$= 37.50 \$ \text{ for the cloth}$$

or

or

$$\frac{3.5 \text{ m}}{x \text{ yd}} = \frac{.915 \text{ m}}{1 \text{ yd}}$$

- 7) A nickel is 1.95 mm thick. About how long is a \$2.00 roll of nickels in inches? Round your answer to the nearest whole inch. Hint: How many nickels (5¢) are in \$2.00?

$$40 \times 1.95 \text{ mm} = 78 \text{ mm for } \$ 2.00 \text{ roll.}$$

$$78 \text{ mm} = 7.8 \text{ cm.}$$

$$7.8 \text{ cm} \div 2.54 = 3.07 \text{ inches} = 3 \text{ in}$$

or

$$\frac{7.8 \text{ cm}}{x \text{ in}} = \frac{2.54 \text{ cm}}{1 \text{ in}}$$

- 8) An airline has size limits for checked baggage. The length, width and height of all luggage must add up to no more than 157 cm. Will the airline accept a suitcase that measures 17 in. by 26 in. by 14 in.?

$$17 + 26 + 14 = 57 \text{ in}$$

$$57 \text{ in} \times 2.54 \frac{\text{cm}}{\text{in}} = 144.78 \text{ cm}$$

★ Yes, the airline will take the bag!