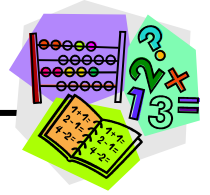


# Metric and Imperial Linear Conversions



## Estimating Metric and Imperial Linear Conversions

People estimate distance, time, height and other measurements in everyday life. Estimates are often made using familiar measurements.

For example, to measure distance, people may know that 1 step is approximately 1 metre or 1 yard. Using the stride estimate, sizes of rooms, yards and fields can be estimated by walking around them. People often estimate heights of other people based on their own heights.

Conversions between metric and imperial units can be estimated using the following guidelines:

- 1 inch is approximately 3 centimetres
- 1 yard is approximately 1 metre
- 1 foot is approximately 0.3 metre
- 1 mile is approximately 1.5 km.

### Examples

- A) A 6-inch pen is approximately  $6 \times 3 \text{ cm} = 18 \text{ cm}$ .
- B) A 5-foot sign is approximately  $5 \times 0.3 = 1.5 \text{ metres}$ .
- C) A distance of 10 yards is approximately 10 metres.
- D) 60 miles/h is approximately 100 km/h.



## Calculating Metric and Imperial Linear Conversions

It is useful to know how to convert between units in the metric and imperial systems for many reasons, such as when travelling to the United States or following directions to construct something manufactured in the U.S.A.

Also, many Canadians refer to height in feet and inches. Imperial measurement is often used in sports, e.g., the yardage in football, lines on a basketball court,  $\frac{1}{4}$  mile horse race.

Common conversions between the metric and imperial systems of linear measurement are shown below.

**Imperial to Metric**

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

$$1 \text{ foot} = 0.3048 \text{ m}$$

$$1 \text{ mile} = 1.609 \text{ km}$$

**Metric to Imperial**

$$1 \text{ km} = 0.625 \text{ miles}$$

$$1 \text{ m} = 3\frac{1}{4} \text{ feet}$$

To convert from imperial to metric units of length, multiply the original unit by the conversion value of the desired unit.

**Examples**

**A)**  $2 \text{ inches} = ? \text{ cm}$   
 $= 2 \times 2.54 \text{ cm}$   
 $= 5.08 \text{ cm}$

**B)**  $84 \text{ miles} = ? \text{ km}$   
 $84 \times 1.6 \text{ km}$   
 $= 134 \text{ km}$

**Metric and Imperial Linear Conversion Chart**

Imperial	Metric
1 inch	2.54 centimetres
1 inch	25.4 millimetres
1 foot	30.5 centimetres
1 foot	305 millimetres
1 foot	0.305 metres
1 yard	0.915 metres
1 mile	1.6 kilometres



## Practice: Converting Metric and Imperial Linear Measurements

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1. Use mathematical operations, conversion charts or another method to convert the following lengths. Use fractions and/or mixed numbers (whole numbers plus fractions) for the imperial system.

a) 7 feet = \_\_\_\_\_ m

b) 32 km/h = \_\_\_\_\_ miles/h

c) 42 inches = \_\_\_\_\_ cm

d) 40 m = \_\_\_\_\_ yards

e) 50 km = \_\_\_\_\_ miles

f) 270 km = \_\_\_\_\_ miles

g) 35 m = \_\_\_\_\_ feet

h) 10 feet = \_\_\_\_\_ m

i) 320 miles = \_\_\_\_\_ km

2. Christine drove 240 km on one tank of gas. How many miles did she travel?

3. Marlo's prize calf measured 1.32 m. How many feet and inches long was the calf?

4. Kyle travelled a total of 762 miles during his vacation to the United States. How many kilometres did he travel?

5. The speed limit on many American highways is 60 miles per hour. What is this speed in kilometres?
6. Antoine's family is taking a summer vacation through the northern United States. On day one of the trip, the family will be travelling 85 miles. On day two of the trip, they will travel 125 miles, and on the third day they will travel 176 miles. How many kilometres will Antoine and his family travel each day? (Calculate to the nearest kilometre.)

How many miles and kilometres will they travel in total?

### Think About ...

Canadians often use inches and feet to measure rooms in their houses. Furniture and other things that you need to fit into a room are often measured in centimetres or metres, so sometimes you have to convert your measurements.

Ask your parents or guardians if they have had to convert their measurements at home and in stores.