

Part A: Conversion Rates

In order to ensure that you order the appropriate materials and that you can easily deal with materials in imperial and metric units the conversions below give a brief overview with practice of imperial and metric conversions.

- The imperial system is a collection of units that includes inches, feet, and miles for **length**.
- Cups, quarts, and gallons for **volume**.
- Ounces and pounds for **weight**.
- In the 1970's, the metric system and the International system on units (SI) were introduced in Canada and the majority of the rest of the world.
- This system was introduced to simplify measurement conversions. I.e. converting from centimetres to metres.
- However there are still countries and individuals, such as the construction industry, that work with the imperial system.
- Conversions can be made between the imperial system and the metric system using tables, calculators or online conversion tools.

Length Conversion Table

Inch (in)	$\begin{array}{c} \xrightarrow{x 2.54} \\ \xleftarrow{\div 2.54} \end{array}$	Centimetre (cm)
Foot (ft)	$\begin{array}{c} \xrightarrow{x 12} \\ \xleftarrow{\div 12} \end{array}$	Inch (in)
yard(yd)	$\begin{array}{c} \xrightarrow{x 3} \\ \xleftarrow{\div 3} \end{array}$	Foot (ft)
Yard (yd)	$\begin{array}{c} \xrightarrow{x 0.9144} \\ \xleftarrow{\div 0.9144} \end{array}$	Metre (m)
Mile (mi)	$\begin{array}{c} \xrightarrow{x 1.6093} \\ \xleftarrow{\div 1.6093} \end{array}$	Kilometre (km)

Example

1. Convert 34 feet to metres.

Since the above table does not have a conversion from feet to metres we must first convert from feet to yards then to yards to metres

$$\begin{aligned} 34 \text{ feet} \div 3 &= 11.3 \text{ yards} \\ 11.3 \text{ yards} \times 0.9144 &= \text{m} \\ &10.33\text{m} \end{aligned}$$

Practice

1. Convert each measure from imperial units to metric units as indicated.
 - a) 25 ft Metres _____
 - b) 38 in Centimetres _____
 - c) 300 yd Metres _____
 - d) 12 miles Kilometres _____
2. Convert each measure from metric units to imperial units as indicated.
 - a) 72 m Feet _____
 - b) 92 m Yards _____
 - c) 45 cm Inches _____
 - d) 260 km Miles _____

Example

1. Convert 350 in² to ft²

*In order to convert units of area we follow the same conversions as above however we need to multiply/divide by the specified value **twice** due to the in², ft², m², etc.*

$$\begin{aligned} 350 \text{ in}^2 \div 12 &= 29.16 \\ 29.16 \div 12 &= 2.43 \text{ ft}^2 \end{aligned}$$

Practice

3. Convert each measure from imperial units to metric units as indicated.
 - a) 412 ft² m² _____
 - b) 15 in² cm² _____
 - c) 120 yd² m² _____
 - d) 28 mi² km² _____
4. Convert each measure from imperial units to metric units as indicated.
 - e) 200 in² cm² _____
 - f) 58 ft² m² _____
 - g) 123 yd² m² _____
 - h) 95 mi² km² _____