

# METRIC AND IMPERIAL UNITS OF MEASUREMENT

## length

### Metric

$$\begin{aligned}
 1000 \text{ millimetres} &= 1 \text{ metre} \\
 100 \text{ centimetres} &= 1 \text{ metre} \\
 (\text{so } 10 \text{ mm} &= 1 \text{ cm}) \\
 1000 \text{ metres} &= 1 \text{ kilometre}
 \end{aligned}$$

### Imperial

$$\begin{aligned}
 * 12 \text{ inches} &= 1 \text{ foot} * \\
 3 \text{ feet} &= 1 \text{ yard} \\
 1760 \text{ yards} &= 1 \text{ mile} \\
 (\text{abbreviations: } 12'' &= 1', \quad 3' = 1 \text{ yd})
 \end{aligned}$$

### Conversions

$$\begin{aligned}
 1 \text{ inch} &\approx 2.5 \text{ cm} \quad (2.54 \text{ cm}) \\
 \text{so } 1 \text{ foot} &\approx 30 \text{ cm} \\
 \rightarrow 1 \text{ mile} &\approx 1.6 \text{ km. or } 1600 \text{ m} \\
 (\text{so } 5 \text{ miles} &\approx 8 \text{ km})
 \end{aligned}$$

### Examples

① From Bicester to Oxford is 12 miles.  
How many km is this?

$$\begin{aligned}
 1 \text{ mile} &\approx 1.6 \text{ km} \\
 12 \text{ miles} &\approx 12 \times 1.6 \text{ km} \\
 &\approx \underline{\underline{19.2 \text{ km}}}
 \end{aligned}$$

- ② An exercise book is 22.5 cm high.  
How many inches is this?

$$\begin{aligned}2.5 \text{ cm} &\approx 1 \text{ inch} \\22.5 \text{ cm} &\approx \frac{22.5 \text{ inches}}{2.5} \\&\approx \underline{\underline{9 \text{ inches}}}\end{aligned}$$

## Area

### Metric

$$\begin{aligned}1 \text{ m}^2 &= 1000 \times 1000 \text{ mm}^2 = 1000000 \text{ mm}^2 \\1 \text{ m}^2 &= 100 \times 100 \text{ cm}^2 = 10000 \text{ cm}^2 \\1 \text{ hectare} &= 100 \times 100 \text{ m}^2 = 10000 \text{ m}^2\end{aligned}$$

## Volume

### Metric

$$\begin{aligned}1 \text{ m}^3 &= 100 \times 100 \times 100 \text{ cm}^3 = 1000000 \text{ cm}^3 \\1 \text{ litre} &= 1000 \text{ cm}^3 \\1 \text{ litre} &= 1000 \text{ millilitres} \\(\text{so } 1 \text{ cm}^3 &\text{ is the same as } 1 \text{ millilitre})\end{aligned}$$

### Imperial

$$1 \text{ gallon} = 8 \text{ pints}$$

### Conversions

$$1 \text{ litre} \approx 1.75 \text{ pints.}$$

# Mass

## Metric

$$1000 \text{ grams} = 1 \text{ kilogram}$$

$$1000 \text{ kg} = 1 \text{ tonne}$$

(note spelling!)

## Imperial

$$14 \text{ pounds (lb)} = 1 \text{ stone}$$

$$2240 \text{ lb} = 1 \text{ ton}$$

## Conversion

$$1 \text{ kg} \approx 2.2 \text{ lb}$$

$$(so 1 \text{ tonne} = 1000 \text{ kg} \approx 2200 \text{ lb})$$