

1.2.3 Metric Units

Name: _____ Class: _____ Date: _____

KEY WORDS conversion factor

<!-- Session 2 native-skill companion -->

Objective

Practise metric units within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Metric and compound-unit conversions · Foundation

Convert each dimension. Since $1 \text{ m} = 100 \text{ cm}$, $1 \text{ m}^2 = 10,000 \text{ cm}^2$ and $1 \text{ m}^3 = 1,000,000 \text{ cm}^3$. Also $1 \text{ litre} = 1000 \text{ cm}^3$, $1 \text{ kg} = 1000 \text{ g}$ and $1 \text{ hour} = 3600 \text{ seconds}$. For a compound unit convert numerator and denominator, keeping the physical quantity unchanged.

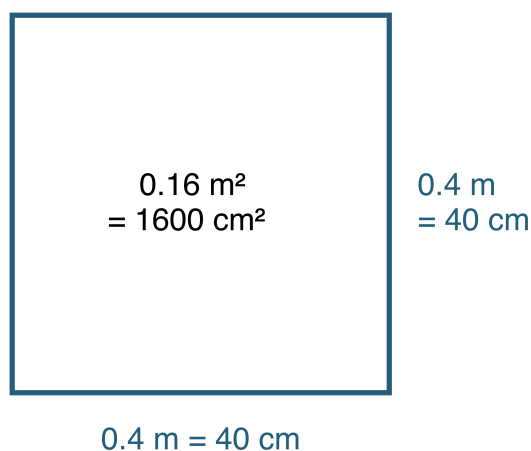
$$1 \text{ m}^2 = 100^2 \text{ cm}^2, \quad 72 \frac{\text{km}}{\text{h}} = 20 \frac{\text{m}}{\text{s}}$$

$0.4 \text{ m} = 40 \text{ cm}$, so the tile area is $40 \times 40 = 1600 \text{ cm}^2$, agreeing with $0.16 \times 10,000$. A 0.002 m^3 container holds $2000 \text{ cm}^3 = 2 \text{ litres}$. A speed of 72 km/h is $72,000/3600 = 20 \text{ m/s}$. Write the units at each stage so the conversion can be checked.

The area multiplier is the square of the length multiplier; the volume multiplier is its cube. An hour is 60 minutes, not 100. Converting only the numerator of a speed gives an inconsistent unit.

AQA N13 and R1 include metric length, area, volume, capacity and compound measures. Use given conversion factors for unfamiliar imperial units; do not guess them.

Convert both dimensions before multiplying



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 (Foundation) Convert 0.16 m² to cm².

2.2 (Foundation) Convert 0.002 m³ to litres.

2.3 (Foundation) Convert 72 km/h to m/s.

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: To convert square metres to square centimetres, multiply by 100.

Solutions

2.1 Multiply 0.16 by 100^2 : 1600.

2.2 $0.002 \times 1,000,000 = 2000 \text{ cm}^3$; divide by 1000 for 2 litres.

2.3 $72 \times 1000 / 3600 = 20$.

3.1 False. A 1 m by 1 m square has sides 100 cm, hence area 10000 cm^2 . Square the length conversion factor.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.