

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 m=100 cm, 1 m²=10,000 cm² and 1 m³=1,000,000 cm³. Also 1 litre=1000 cm³, 1 kg=1000 g and 1 hour=3600 seconds. For a compound unit convert numerator and denominator, keeping the physical quantity unchanged.

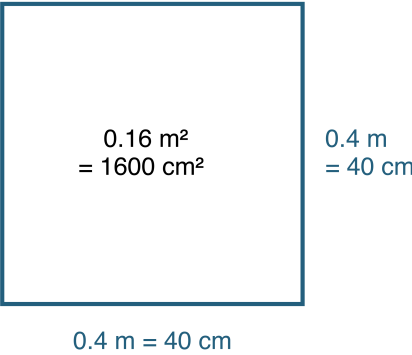
$$1\text{ m}^2 = 100^2\text{ cm}^2, \quad 72\frac{\text{km}}{\text{h}} = 20\frac{\text{m}}{\text{s}}$$

0.4 m=40 cm, so the tile area is 40×40=1600 cm², agreeing with 0.16×10,000. A 0.002 m³ container holds 2000 cm³=2 litres. A speed of 72 km/h is 72,000/3600=20 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.