Units and Compound Measures: exam questions

10 questions · 26 marks · mark schemes at the end

Name _____ Date _____ Score / 26

- Calculators are allowed on both 4MA1 Higher papers (1H and 2H). Show your working: most marks are for method.
- Mark schemes start after the questions. M marks are for a correct method, A marks for an accurate answer that follows a correct method, and B marks for a correct result on its own.
- Online, with more practice: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/units-and-compound-measures

1. **2 marks**

(a) Change 4.5 m² into cm². **(1)**

(b) Change 2.4 litres into cm³. **(1)**

2. **2 marks**

A coach travels 135 km in 1 hour 30 minutes.

Work out its average speed in km/h.

3. **2 marks**

Change 72 km/h into metres per second.

4. **2 marks**

A piece of metal has a mass of 540 g. The density of the metal is 7.2 g/cm^3.

Work out the volume of the piece of metal.

5. **3 marks**

An empty tank holds 2.4 m^3 of water. Water flows into the tank at 12 litres per minute.

How long does it take to fill the tank? Give your answer in hours and minutes.

6. **3 marks**

300 cm^3 of liquid A, of density 0.8 g/cm^3, is mixed with 200 cm^3 of liquid B, of density 1.3 g/cm^3.

Work out the density of the mixture.

7. **4 marks**

Raj drives 40 km at an average speed of 80 km/h. He then drives 60 km at an average speed of 50 km/h.

Work out his average speed for the whole journey. Give your answer correct to 1 decimal place.

8. **3 marks**

A metal block has a volume of 0.0035 m^3. The density of the metal is 8.9 g/cm^3.

Work out the mass of the block in kilograms.

9. **2 marks**

A snail moves at 1.2 cm per second.

How far does it move in one hour? Give your answer in metres.

10. **3 marks**

A train 120 m long travels at 108 km/h. It passes through a station whose platform is 180 m long.

How many seconds does it take from the front of the train reaching the platform to the back of the train leaving it?

Answers and worked solutions

Question 1 — 2 marks

(a)

B1 $45000\,\text{cm}^2$

(b)

B1 $2400\,\text{cm}^3$

Answer: (a) $45000\,\text{cm}^2$; (b) $2400\,\text{cm}^3$

Question 2 — 2 marks

M1 $135 \div 1.5$

A1 $90\,\text{km/h}$

Answer: $90\,\text{km/h}$

Question 3 — 2 marks

M1 $72 \times 1000 \div 3600$

A1 $20\,\text{m/s}$

Answer: $20\,\text{m/s}$

Question 4 — 2 marks

M1 $540 \div 7.2$

A1 $75\,\text{cm}^3$

Answer: $75\,\text{cm}^3$

Question 5 — 3 marks

B1 $2.4\,\text{m}^3 = 2400$ litres

M1 $2400 \div 12 = 200$ minutes

A1 3 hours 20 minutes

Answer: 3 hours 20 minutes

Question 6 — 3 marks

M1 masses $300 \times 0.8 = 240\,g$ and $200 \times 1.3 = 260\,g$

M1 $\dfrac{240 + 260}{500}$

A1 $1\ \text{g/cm}^3$

Answer: $1\ \text{g/cm}^3$

Question 7 — 4 marks

M1 $40 \div 80 = 0.5\,h$ or $60 \div 50 = 1.2\,h$

M1 total time 1.7 hours

M1 $100 \div 1.7$

A1 $58.8\,\text{km/h}$

Answer: $58.8\,\text{km/h}$

Question 8 — 3 marks

B1 $0.0035\,\text{m}^3 = 3500\,\text{cm}^3$

M1 $3500 \times 8.9 = 31\,150\,g$

A1 31.15 kg

Answer: 31.15 kg

Question 9 — 2 marks

M1 $1.2 \times 3600 = 4320$ cm

A1 43.2 m

Answer: 43.2 m

Question 10 — 3 marks

B1 $108\,\text{km/h} = 30\,\text{m/s}$

M1 distance $120 + 180 = 300\,m$, time $300 \div 30$

A1 10 seconds

Answer: 10 seconds

Online, with every solution: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/units-and-compound-measures
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