



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Compound Measures · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☐ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Compound Measures

Total marks available: 104

● Compound Measures

✓ 66 km/h

Q1 · ● Developing · 4 marks

METHOD

Total distance = $355 + 41 = 396$ km

Total time = $5 + 1 = 6$ hours

Average speed = $396 \div 6 = 66$ km/h

✓ 65 km/h

Q2 · ● Developing · 4 marks

METHOD

Total distance = $63 + 132 = 195$ km

Total time = $1 + 2 = 3$ hours

Average speed = $195 \div 3 = 65$ km/h

✓ 22 km/h

Q3 · ● Developing · 4 marks

METHOD

Total distance = $48 + 84 = 132$ km

Total time = $2 + 4 = 6$ hours

Average speed = $132 \div 6 = 22$ km/h

✓ 64 km/h

Q4 · ● Developing · 4 marks

METHOD

Total distance = $414 + 290 = 704$ km

Total time = $6 + 5 = 11$ hours

Average speed = $704 \div 11 = 64$ km/h

✓71 km/h

Q5 · ● Developing · 4 marks

METHOD

Total distance = $360 + 350 = 710$ km

Total time = $5 + 5 = 10$ hours

Average speed = $710 \div 10 = 71$ km/h

✓49 km/h

Q6 · ● Developing · 4 marks

METHOD

Total distance = $98 + 294 = 392$ km

Total time = $2 + 6 = 8$ hours

Average speed = $392 \div 8 = 49$ km/h

✓13 m²

Q7 · ● Developing · 3 marks

METHOD

Area = force $\div$ pressure = $182 \div 14 = 13$ m²

✓126 N

Q8 · ● Developing · 3 marks

METHOD

Force = pressure $\times$ area = $18 \times 7 = 126$ N

✓15 m²

Q9 · ● Developing · 3 marks

METHOD

Area = force $\div$ pressure = $120 \div 8 = 15$ m²

✓75 km/h

Q10 · ● Developing · 4 marks

METHOD

Total distance = $304 + 146 = 450$ km

Total time = $4 + 2 = 6$ hours

Average speed = $450 \div 6 = 75$ km/h

✓185.0 m/s

Q11 · ● Secure · 3 marks

METHOD

$666.0 \text{ km/h} \div 3.6 = 185.0 \text{ m/s}$ ($1 \text{ m/s} = 3.6 \text{ km/h}$)

✓136.0 m/s

Q12 · ● Secure · 3 marks

METHOD

$489.6 \text{ km/h} \div 3.6 = 136.0 \text{ m/s}$ ($1 \text{ m/s} = 3.6 \text{ km/h}$)

✓99.0 m/s

Q13 · ● Secure · 3 marks

METHOD

$356.4 \text{ km/h} \div 3.6 = 99.0 \text{ m/s}$ ($1 \text{ m/s} = 3.6 \text{ km/h}$)

✓150.0 m/s

Q14 · ● Secure · 3 marks

METHOD

$540.0 \text{ km/h} \div 3.6 = 150.0 \text{ m/s}$ ($1 \text{ m/s} = 3.6 \text{ km/h}$)

✓94.0 m/s

Q15 · ● Secure · 3 marks

METHOD

$338.4 \text{ km/h} \div 3.6 = 94.0 \text{ m/s}$ ($1 \text{ m/s} = 3.6 \text{ km/h}$)

✓ 239.0 m/s

Q16 · ● Secure · 3 marks

METHOD

$$860.4 \text{ km/h} \div 3.6 = 239.0 \text{ m/s} \text{ (1 m/s = 3.6 km/h)}$$

✓ 84.0 m/s

Q17 · ● Secure · 3 marks

METHOD

$$302.4 \text{ km/h} \div 3.6 = 84.0 \text{ m/s} \text{ (1 m/s = 3.6 km/h)}$$

✓ 2 g/cm³

Q18 · ● Secure · 4 marks

METHOD

$$\text{Total mass} = 16 + 12 = 28\text{g}$$

$$\text{Total volume} = 8 + 6 = 14 \text{ cm}^3$$

$$\text{Density} = 28 \div 14 = 2 \text{ g/cm}^3$$

✓ 222.0 m/s

Q19 · ● Secure · 3 marks

METHOD

$$799.2 \text{ km/h} \div 3.6 = 222.0 \text{ m/s} \text{ (1 m/s = 3.6 km/h)}$$

✓ 218.0 m/s

Q20 · ● Secure · 3 marks

METHOD

$$784.8 \text{ km/h} \div 3.6 = 218.0 \text{ m/s} \text{ (1 m/s = 3.6 km/h)}$$

✓ 20 km, total time 19 hours

Q21 · ● Greater Depth · 4 marks

METHOD

Time for first part = $27 \div 3 = 9$ hours

Second part = $47 - 27 = 20$ km

Time for second part = $20 \div 2 = 10$ hours

Total time = $9 + 10 = 19$ hours ✓

✓ 9.4 N/m²

Q22 · ● Greater Depth · 3 marks

METHOD

Pressure = force $\div$ area = $84.6 \div 9 = 9.4$ N/m²

✓ 5.8 N/m²

Q23 · ● Greater Depth · 3 marks

METHOD

Pressure = force $\div$ area = $11.6 \div 2 = 5.8$ N/m²

✓ 36 km, total time 18 hours

Q24 · ● Greater Depth · 4 marks

METHOD

Time for first part = $24 \div 2 = 12$ hours

Second part = $60 - 24 = 36$ km

Time for second part = $36 \div 6 = 6$ hours

Total time = $12 + 6 = 18$ hours ✓

✓ 55 km, total time 22 hours

Q25 · ● Greater Depth · 4 marks

METHOD

Time for first part = $44 \div 4 = 11$ hours

Second part = $99 - 44 = 55$ km

Time for second part = $55 \div 5 = 11$ hours

Total time = $11 + 11 = 22$ hours ✓

✓ 10 km, total time 9 hours

Q26 · ● Greater Depth · 4 marks

METHOD

Time for first part = $20 \div 5 = 4$ hours

Second part = $30 - 20 = 10$ km

Time for second part = $10 \div 2 = 5$ hours

Total time = $4 + 5 = 9$ hours ✓

✓ 10 km, total time 15 hours

Q27 · ● Greater Depth · 4 marks

METHOD

Time for first part = $40 \div 4 = 10$ hours

Second part = $50 - 40 = 10$ km

Time for second part = $10 \div 2 = 5$ hours

Total time = $10 + 5 = 15$ hours ✓

✓ 6.0 N/m²

Q28 · ● Greater Depth · 3 marks

METHOD

Pressure = force $\div$ area = $12.0 \div 2 = 6.0$ N/m²

✓ 3.3 N/m²

Q29 · ● Greater Depth · 3 marks

METHOD

Pressure = force $\div$ area = $6.6 \div 2 = 3.3$ N/m²

✓ 42 km, total time 14 hours

Q30 · ● Greater Depth · 4 marks

METHOD

Time for first part = $28 \div 4 = 7$ hours

Second part = $70 - 28 = 42$ km

Time for second part = $42 \div 6 = 7$ hours

Total time = $7 + 7 = 14$ hours ✓