



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Congruence & Similarity · 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.

Congruence & Similarity

Total marks available: 100

● Congruence & Similarity

✓15 cm

Q1 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 12 \div 8 = 1.5$$

$$x = 10 \times 1.5 = 15$$

✓SSS

Q2 · ● Developing · 3 marks

METHOD

SSS (matching the equal sides/angles given by the reasoning).

✓20 cm

Q3 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 15 \div 12 = 1.25$$

$$x = 16 \times 1.25 = 20$$

✓25 cm

Q4 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 10 \div 4 = 2.5$$

$$x = 10 \times 2.5 = 25$$

✓25 cm

Q5 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 10 \div 8 = 1.25$$

$$x = 20 \times 1.25 = 25$$

✓14 cm

Q6 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 28 \div 16 = 1.75$$

$$x = 8 \times 1.75 = 14$$

✓RHS

Q7 · ● Developing · 3 marks

METHOD

RHS (matching the equal sides/angles given by the reasoning).

✓25 cm

Q8 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 15 \div 6 = 2.5$$

$$x = 10 \times 2.5 = 25$$

✓28 cm

Q9 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 21 \div 15 = 1.4$$

$$x = 20 \times 1.4 = 28$$

✓10 cm

Q10 · ● Developing · 3 marks

METHOD

$$\text{Scale factor} = 15 \div 12 = 1.25$$

$$x = 8 \times 1.25 = 10$$

✓24 cm²

Q11 · ● Secure · 3 marks

METHOD

Area scale factor = $2.5^2 = 6.25$

Area = $150 \div 6.25 = 24 \text{ cm}^2$

✓729 cm³

Q12 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.8^3 = 5.832$

Volume = $125 \times 5.832 = 729 \text{ cm}^3$

✓125 cm³

Q13 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.8^3 = 5.832$

Volume = $729 \div 5.832 = 125 \text{ cm}^3$

✓108 cm³

Q14 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.5^3 = 3.375$

Volume = $32 \times 3.375 = 108 \text{ cm}^3$

✓343 cm³

Q15 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.75^3 = 5.359375$

Volume = $64 \times 5.359375 = 343 \text{ cm}^3$

✓ 64 cm²

Q16 · ● Secure · 3 marks

METHOD

Area scale factor = $1.75^2 = 3.0625$

Area = $196 \div 3.0625 = 64 \text{ cm}^2$

✓ 128 cm³

Q17 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.75^3 = 5.359375$

Volume = $686 \div 5.359375 = 128 \text{ cm}^3$

✓ 375 cm³

Q18 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.25^3 = 1.953125$

Volume = $192 \times 1.953125 = 375 \text{ cm}^3$

✓ 147 cm²

Q19 · ● Secure · 3 marks

METHOD

Area scale factor = $1.4^2 = 1.96$

Area = $75 \times 1.96 = 147 \text{ cm}^2$

✓ 125 cm³

Q20 · ● Secure · 3 marks

METHOD

Volume scale factor = $1.4^3 = 2.744$

Volume = $343 \div 2.744 = 125 \text{ cm}^3$

✓ $x = 7, AC = 23 \text{ cm}$

Q21 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 14 \div 10 = 1.4$$

$$1.4 \times (4x - 5) = 32.2$$

$$4x - 5 = 32.2 \div 1.4 = 23$$

$$4x = 28$$

$$x = 7$$

✓ ASA

Q22 · ● Greater Depth · 4 marks

METHOD

ASA (matching the equal sides/angles established by the reasoning).

✓ SAS

Q23 · ● Greater Depth · 4 marks

METHOD

SAS (matching the equal sides/angles established by the reasoning).

✓ $x = 9, AC = 12 \text{ cm}$

Q24 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 14 \div 10 = 1.4$$

$$1.4 \times (2x - 6) = 16.8$$

$$2x - 6 = 16.8 \div 1.4 = 12$$

$$2x = 18$$

$$x = 9$$

✓ $x = 4$, $AC = 10$ cm

Q25 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 21 \div 12 = 1.75$$

$$1.75 \times (3x - 2) = 17.5$$

$$3x - 2 = 17.5 \div 1.75 = 10$$

$$3x = 12$$

$$x = 4$$

✓ $x = 4$, $AC = 5$ cm

Q26 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 14 \div 10 = 1.4$$

$$1.4 \times (2x - 3) = 7$$

$$2x - 3 = 7 \div 1.4 = 5$$

$$2x = 8$$

$$x = 4$$

✓ RHS

Q27 · ● Greater Depth · 4 marks

METHOD

RHS (matching the equal sides/angles established by the reasoning).

✓ $x = 9$, $AC = 30$ cm

Q28 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 28 \div 16 = 1.75$$

$$1.75 \times (4x - 6) = 52.5$$

$$4x - 6 = 52.5 \div 1.75 = 30$$

$$4x = 36$$

$$x = 9$$

✓ $x = 5, AC = 3 \text{ cm}$

Q29 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 12 \div 8 = 1.5$$

$$1.5 \times (2x - 7) = 4.5$$

$$2x - 7 = 4.5 \div 1.5 = 3$$

$$2x = 10$$

$$x = 5$$

✓ $x = 7, AC = 9 \text{ cm}$

Q30 · ● Greater Depth · 4 marks

METHOD

$$\text{Scale factor} = 12 \div 8 = 1.5$$

$$1.5 \times (2x - 5) = 13.5$$

$$2x - 5 = 13.5 \div 1.5 = 9$$

$$2x = 14$$

$$x = 7$$