Congruence and similarity - topic test

Name: _____ Date: _____

15 questions | 33 marks | 45 minutes

Match parts, select valid tests, solve proportional lengths, and justify a geometric claim.

No calculator needed.

1. Given $\triangle ABC \cong \triangle DEF$, name the side corresponding to BC. [1 mark]

2. Congruent triangles have corresponding sides $2x + 1$ cm and 11 cm. Find x. [2 marks]

3. Two triangles each have sides 6, 8 and 10 cm. State a congruence test. [1 mark]

4. Two right triangles have equal hypotenuses and one equal corresponding shorter side. State a congruence test. [1 mark]

5. Two triangles each have angles 40°, 60° and 80°. Must they be congruent? Explain. [2 marks]

6. A similar enlargement changes a 6 cm side to 15 cm. Find its scale factor. [2 marks]

7. Similar rectangles have corresponding widths 4 cm and 10 cm. The smaller height is 6 cm. Find the larger height. [3 marks]

8. Triangles have sides 4, 6, 8 cm and 6, 9, 12 cm. Decide whether they are similar and give a reason. [2 marks]

9. Triangle ABC has A = 35° and B = 70°. Triangle DEF has D = 35° and E = 70°. State why the triangles are similar. [2 marks]

10. A photo 18 cm wide and 12 cm high is reduced to width 9 cm without distortion. Find the new height. [3 marks]

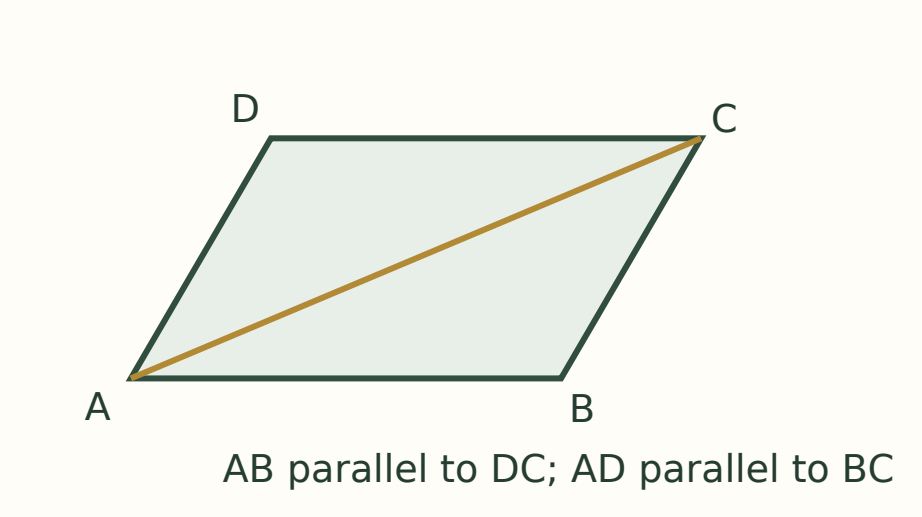
11. Parallelogram diagonals AC and BD meet at O. AO = 7 cm and BO = 5 cm. Find AC and BD. [3 marks]

12. Reflect point $(-4,3)$ in the y axis. [2 marks]

13. A triangle is enlarged by factor 2 about the origin. Point $A(-2,1)$ becomes A'. Find A' and state whether the image triangle is congruent to the original. [3 marks]

14. A side-ratio program obtains 3, 3 and 2.8 but reports “similar” because two factors agree. Explain and correct its decision. [2 marks]

15. ABCD is a parallelogram. Diagonal AC is drawn, as shown. [4 marks]



(a) Explain why triangles ABC and CDA are congruent. [3 marks]

(b) Use that congruence to explain why AB = CD. [1 mark]