Test - Constructions and congruence

Year: Year 8 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Can the triangle exist?

Answer each part and explain your answer.

a. Can a triangle have sides 5 cm, 7 cm and 13 cm? (2 marks)
b. Can a triangle have sides 6 cm, 8 cm and 10 cm? (1 mark)
c. Is it a right-angled triangle? Show your working. (1 mark)

Question 2 (4 marks)

Question 2 – Constructions

Use a ruler and compasses. Leave your construction arcs.

a. Construct the perpendicular bisector of a line AB of length 9 cm. (2 marks)
b. Construct a triangle with sides 6 cm, 7 cm and 8 cm. (2 marks)

Question 3 (4 marks)

Question 3 – Congruent triangles

Triangles ABC and PQR are congruent, with A matching P, B matching Q and C matching R. $AB = 9$ cm, $PR = 12$ cm and angle $P = 48^\circ$.

a. Write down the length of PQ. (1 mark)
b. Write down the length of AC. (1 mark)
c. Write down angle A. (1 mark)
d. Name a test that could prove the triangles congruent if two sides and an angle are known. Say which angle is needed. (1 mark)

Question 4 (4 marks)

Question 4 – Problem: the playground

Two paths in a park meet at a point O at an angle of 80°. The council wants to put a bench the same distance from both paths.

a. On which line must the bench be placed? (1 mark)
b. Construct this line. (2 marks)
c. What angle does it make with each path? (1 mark)

Question 5 (4 marks)

Question 5 – Problem: the sail

A sail is made from an isosceles triangle of cloth. The two equal sides are each 5 m. The base is 6 m. A seam is sewn from the apex to the midpoint of the base.

a. Explain why the seam splits the sail into two congruent triangles. (2 marks)
b. Find the length of the seam using Pythagoras. (1 mark)
c. Find the area of the whole sail. (1 mark)