

Constructions and Loci

ANSWERS

Ruler, compasses and protractor | 30 minutes | Total marks: 27

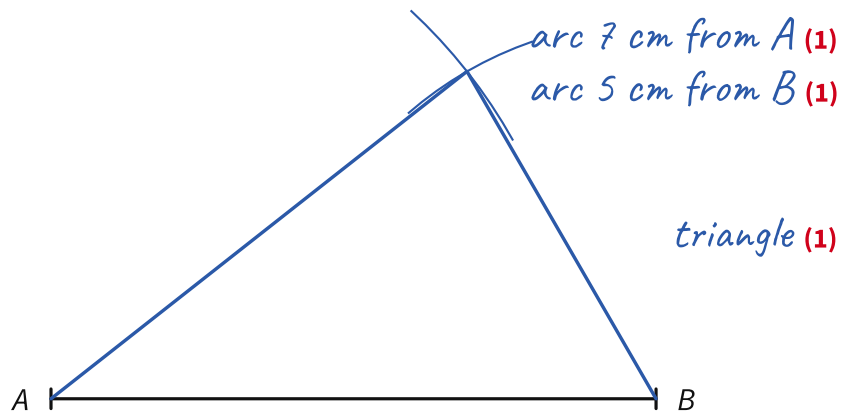
Name Class

1

The line AB is 8 cm long.

Use a ruler and compasses to construct triangle ABC with $AC = 7$ cm and $BC = 5$ cm

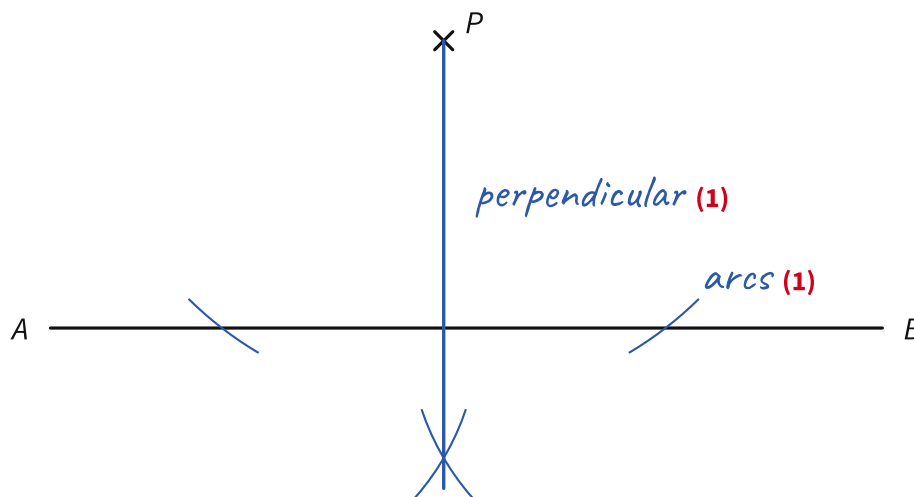
You **must** show all your construction arcs.



[3 marks]

2

- (a) Use a ruler and compasses to construct the perpendicular from the point P to the line AB .
You **must** show all your construction arcs.



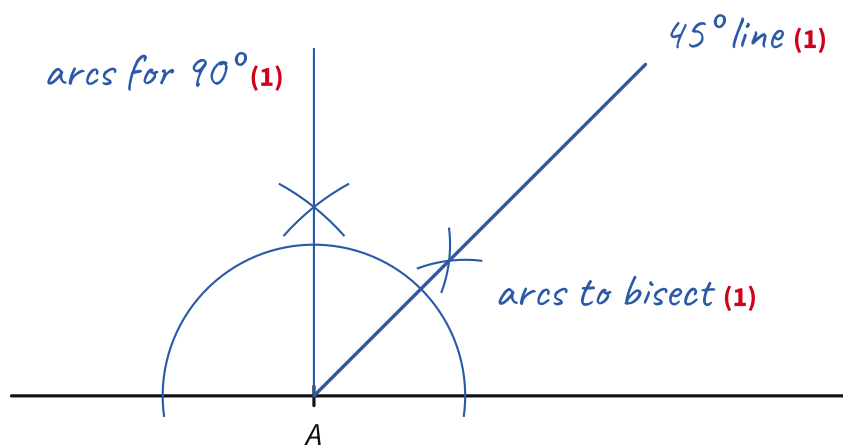
[2 marks]

- (b) Measure the shortest distance from P to the line AB .

Answer 3.8 (1) accept 3.6 to 4.0 cm [1 mark]

3

- Use a ruler and compasses to construct an angle of 45° at the point A on the line.
You **must** show all your construction arcs.

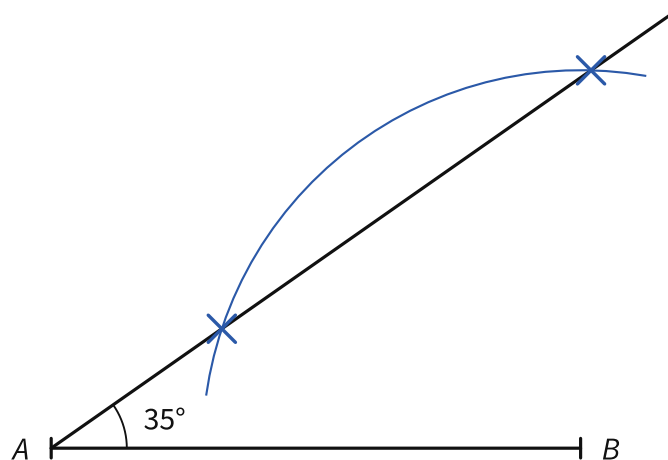


[3 marks]

4

In triangle ABC , $AB = 7$ cm, angle $BAC = 35^\circ$ and $BC = 5$ cm

The line AB and the angle of 35° have been drawn accurately.



arc 5 cm from B (1)
two crosses (1)

- (a) Use compasses to mark the two possible positions of C .

[2 marks]

- (b) Explain why two sides and an angle that is not between them do not always give one triangle.

The arc crosses the line twice, so two different triangles fit (1)

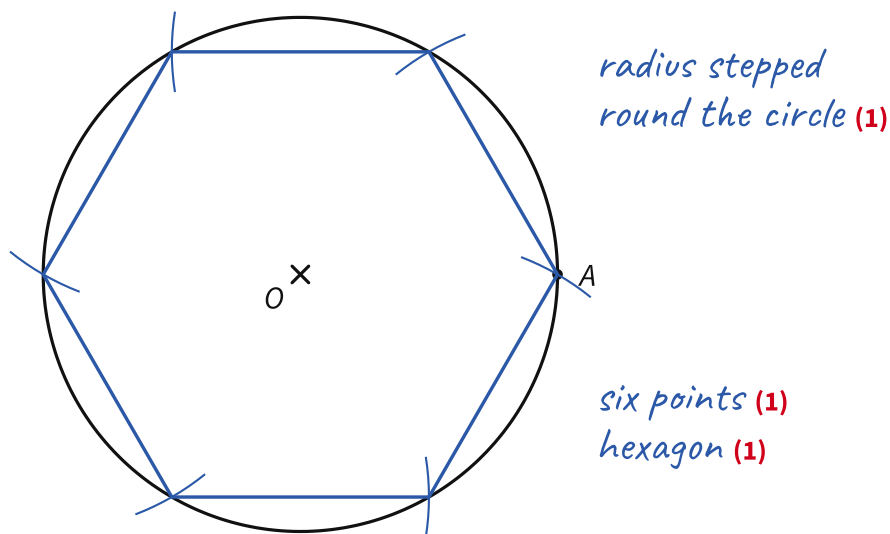
[1 mark]

5

The diagram shows a circle, centre O .

Use a ruler and compasses to construct a regular hexagon inside the circle.

The point A is one vertex of the hexagon.



[3 marks]

6

A map has a scale of 1 : 50 000

(a) Two villages are 7 cm apart on the map.

Work out the actual distance between the villages.

Give your answer in kilometres.

$$7 \times 50\,000 = 350\,000 \text{ cm (1)}$$

$$= 3500 \text{ m}$$

Answer 3.5 (1) km [2 marks]

(b) A lake is 12 km long.

Work out the length of the lake on the map.

$$12 \text{ km} = 1\,200\,000 \text{ cm (1)}$$

$$1\,200\,000 \div 50\,000$$

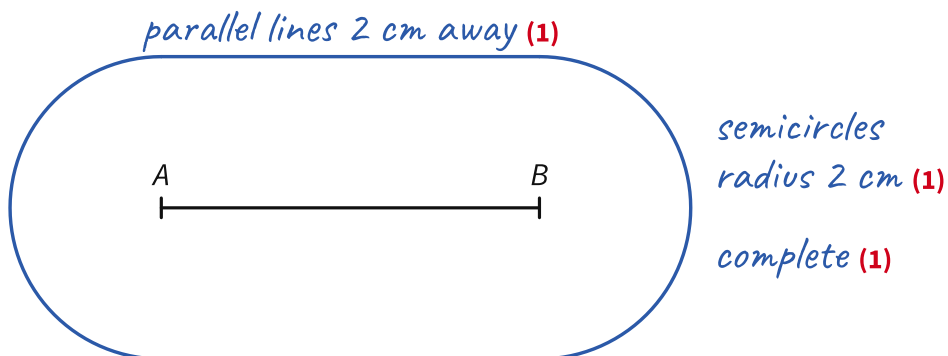
Answer 24 (1) cm [2 marks]

7

AB is a fence, drawn to a scale of 1 cm to 1 m.

A dog can go anywhere that is less than 2 m from the fence.

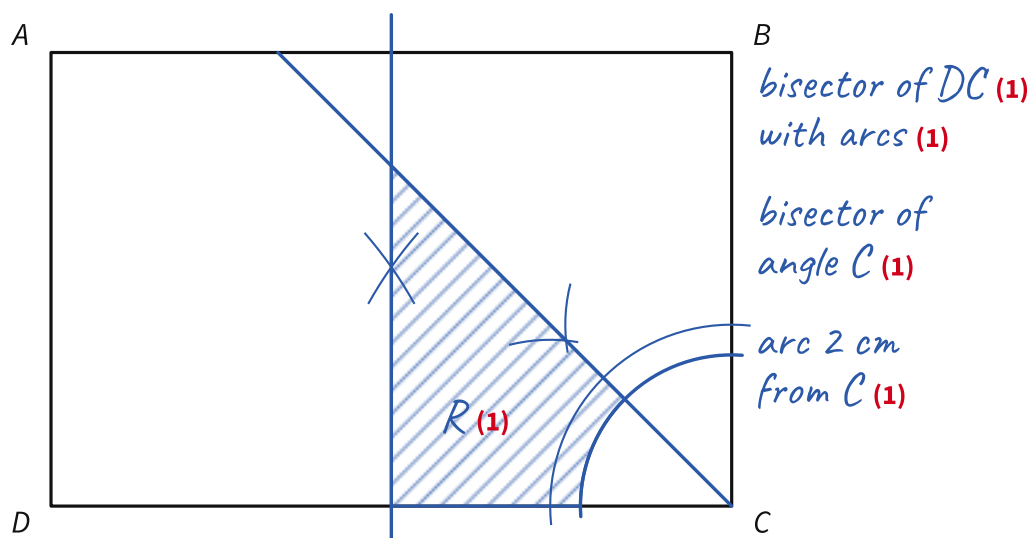
Draw the boundary of the region the dog can reach.



[3 marks]

8

$ABCD$ is a rectangular field, drawn to a scale of 1 cm to 2 m.



A mast is going to be put up in the field.

The mast must be nearer to C than to D .

The mast must be nearer to DC than to BC .

The mast must be more than 4 m from C .

Construct and shade the region where the mast can be put up.

[5 marks]

Question	Topic	RAG
1	I can construct a triangle when I know all three sides	
2	I can construct the perpendicular from a point to a line	
3	I can construct angles of 90° and 45°	
4	I know why two sides and a non-included angle can give two triangles	
5	I can construct a regular hexagon inside a circle	
6	I can use a map scale	
7	I can draw the locus of points a fixed distance from a line	
8	I can construct a region from a combination of loci	