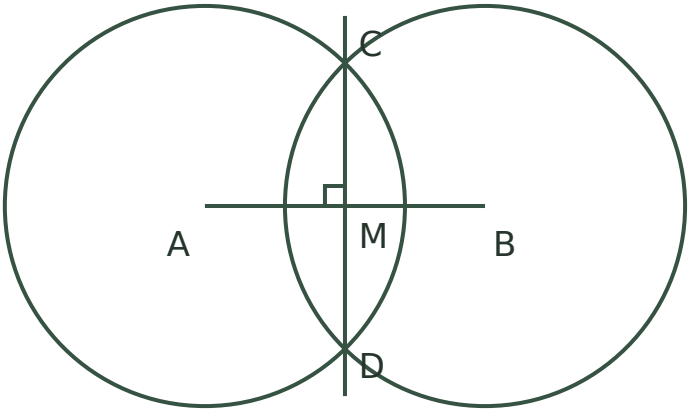
Construction/spatial algorithms

6 questions | 16 marks

Equivalent correct methods earn the corresponding marks.

1. Draw a segment AB of length 6 cm. Use ruler and compass to construct its perpendicular bisector. Leave your construction arcs visible. [3 marks]



Use a radius greater than 3 cm from both endpoints.

Join both arc intersections.

Answer: The line through the two equal-radius arc intersections bisects AB at 90°.

2. A segment is 12 cm long. Which radii 4, 6 and 8 cm produce two equal-circle intersections? [2 marks]

The radius must be greater than 6 cm.

Answer: Only 8 cm.

3. Explain why each arc intersection is equidistant from A and B in this construction. [2 marks]

This is how the two circles are constructed.

Answer: Both distances equal the unchanged compass radius.

4. Give a coordinate check for the perpendicular bisector of A=(−2, 1), B=(6, 1). [3 marks]

The midpoint is(2, 1).

AB is horizontal, so its perpendicular bisector is vertical.

Answer: x=2

5. A student measures the midpoint with a ruler and then draws an approximate perpendicular. Is this the same as proving a compass construction? Explain. [3 marks]

Measurement can approximate the result.

A construction proof uses exact geometric relationships.

Answer: No.

6. List one input condition and one output condition for an algorithm constructing a square from side AB. [3 marks]

A zero-length segment cannot form a square.

The output conditions must define the required shape.

Answer: Input: A and B are distinct; output: four equal sides and four right angles.