Solving Triangle Problems

Specification: AQA 7357: E1 · Edexcel 9MA0: 5.1

INDEPENDENT **You do**

A · Which rule?

1 In triangle ABC, angle $ABC = 90°$, $AB = 8.4$ cm and angle $BAC = 33°$. Find BC.

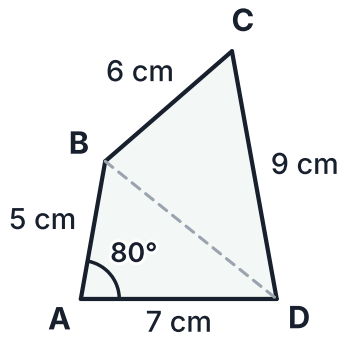
2 In triangle ABC, $AB = 6.5$ cm, $BC = 9.1$ cm and angle $ABC = 72°$. Find AC.

3 In triangle ABC, angle $BAC = 48°$, angle $ABC = 63°$ and $BC = 11$ cm. Find AC.

4 A triangle has sides 8 cm, 13 cm and 15 cm. Find its largest angle.

B · Multi-step problems

5 The diagram shows quadrilateral $ABCD$.
(a) Find the length of BD.
(b) Find angle BCD.
(c) Find the area of $ABCD$.



6 Two ships leave port P. Ship A sails 14 km on a bearing of 035°. Ship B sails 9 km on a bearing of 110°.
(a) Find the distance AB.
(b) Find the bearing of B from A.

7 A and B are 60 m apart on level ground, in a straight line with the foot of a mast, with B nearer the mast. The angles of elevation of the top of the mast from A and B are 22° and 35°. Find the height of the mast.

8 A triangle has sides 9 cm, 10 cm and 13 cm.
(a) Find its area.
(b) Find the shortest distance from the opposite vertex to the 13 cm side.

C · Is it a triangle? No calculator for this section.

9 Which of these sets of lengths can be the sides of a triangle? Explain each answer.
(a) 4 cm, 7 cm, 10 cm
(b) 3 cm, 8 cm, 12 cm
(c) 5 cm, 5 cm, 10 cm

10 A triangle has sides 6 cm, 10 cm and x cm. Find the range of possible values of x.

11 Explain why there is no triangle ABC with $AB = 9$ cm, $BC = 4$ cm and angle $BAC = 30°$.

D · Exact answers No calculator for this section.

12 In triangle ABC, $AB = 3$ cm, $AC = 5$ cm and angle $BAC = 120°$.
(a) Show that $BC = 7$ cm.
(b) Find the exact area of the triangle.

13 In triangle PQR, $PQ = 8$ cm, angle $QPR = 30°$ and angle $PRQ = 45°$. Show that $QR = 4\sqrt{2}$ cm.

14 In triangle ABC, $AB = 2\sqrt{3}$ cm, $AC = 2$ cm and angle $ABC = 30°$.
(a) Show that angle $ACB = 60°$ or $120°$.
(b) Find the exact length of BC in each case.

E · Exam-style question Use the mark scheme to self-assess.

15 The diagram shows a plot of land *ABCD*. *AB* = 45 m, *BC* = 60 m, angle *ABC* = 100°, angle *CAD* = 55° and angle *ACD* = 40°.

(a) Find the length of *AC*. [2 marks]

(b) Find the length of *AD*. [3 marks]

(c) Find the area of the plot. [3 marks]

