The Cosine Rule

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

HOMEWORK Consolidation

1 In triangle ABC, $b = 9.4$ cm, $c = 6.8$ cm and $A = 47°$. Find a.
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2 A triangle has sides 8 cm, 11 cm and 14 cm. Show that its largest angle is obtuse, and find it.
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3 In triangle PQR, $PQ = 5.6$ cm, $QR = 8.1$ cm and angle $PQR = 134°$. Find PR.
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4 A triangle has sides 7 cm, 9 cm and 12 cm. Find its smallest angle.
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5 Without a calculator, show that the angle opposite the 7 cm side of a triangle with sides 5 cm, 7 cm and 8 cm is 60°.
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6 A triangle has sides 3 cm, 5 cm and 6 cm. The largest angle is θ. Show that $\cos\theta = -\frac{1}{15}$.
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7 In triangle ABC, $AB = x$ cm, $AC = (x + 3)$ cm, angle $BAC = 60°$ and $BC = 7$ cm. Find x.
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8 A boat leaves harbour H and sails 15 km on a bearing of 070° to A. It then sails 8 km on a bearing of 190° to B.
(a) Show that angle $HAB = 60°$.
(b) Find the distance HB.
(c) Find the bearing of B from H.
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9 An isosceles triangle has two sides of 10 cm and a base of 7 cm. Find the angle between the two equal sides.
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10 In quadrilateral $ABCD$, $AB = 6$ cm, $BC = 7$ cm, $CD = 5$ cm, $DA = 8$ cm and angle $ABC = 110°$.
(a) Find the length of the diagonal AC.
(b) Find angle ADC.
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11 *AQA-style*. In triangle PQR, $PQ = 2x$ cm, $QR = (x + 4)$ cm, $PR = 7$ cm and angle $PQR = 60°$.
(a) Show that $3x^2 = 33$. [3 marks]
(b) Find the exact perimeter of the triangle. [2 marks]
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12 *Edexcel-style*. Two boats leave port P at the same time. Boat A sails at 12 km/h on a bearing of 035°. Boat B sails at 9 km/h on a bearing of 115°.
(a) Find the distance between the boats after 2 hours. [3 marks]
(b) Find the bearing of B from A at that time. [3 marks]
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