3.5 Sine Rule, Cosine Rule and Area of a Triangle: 10-minute Pack

AQA 8365 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question tests recall of the key formulae for solving non-right-angled triangles. In each part, let triangle ABC have sides a, b and c opposite angles A, B and C respectively.

(a) State the sine rule. **(1)**

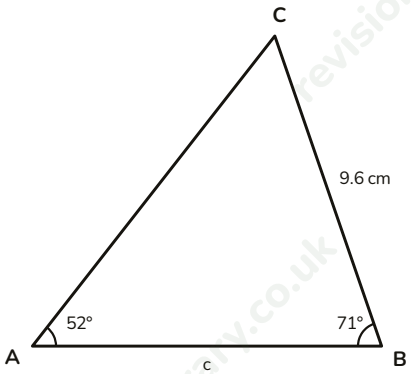
(b) State the cosine rule for finding the length of side a. **(1)**

(c) State the formula for the area of triangle ABC in terms of sides a and b and the angle C between them. **(1)**

(Total for Question 1 is 3 marks)

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2 In triangle ABC, angle A = 52 degrees, angle B = 71 degrees, and side a (opposite angle A, i.e. BC) = 9.6 cm.



(a) Calculate the length of side c (opposite angle C, i.e. AB), giving your answer correct to 3 significant figures. **(3)**

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(Total for Question 2 is 3 marks)

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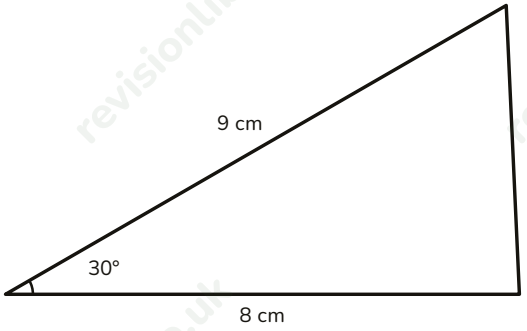
3 A triangle has all three side lengths known and no angles known. Which rule must be used first to find an angle?

- ☐ A) Sine rule
- ☐ B) Cosine rule
- ☐ C) Area formula
- ☐ D) Pythagoras' theorem

(Total for Question 3 is 1 mark)

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4 A triangle has two sides of length 8 cm and 9 cm with an included angle of 30 degrees.



(a) Show that the area of the triangle is exactly 18 cm². **(3)**

(Total for Question 4 is 3 marks)

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Mark scheme · 3.5 Sine Rule, Cosine Rule and Area of a Triangle: 10-minute Pack

Question 1

(a) a/sin(A) = b/sin(B) = c/sin(C) oe (reciprocal form also accepted) **B1**

(a) Answer: a/sin(A) = b/sin(B) = c/sin(C)

(b) $a^2 = b^2 + c^2 - 2bc*\cos(A)$ oe **B1**

(b) Answer: $a^2 = b^2 + c^2 - 2bc*\cos(A)$

(c) Area = 1/2 * a * b * sin(C) oe **B1**

(c) Answer: Area = (1/2)*a*b*sin(C)

Question 2

(a) angle C = 180 - 52 - 71 = 57 (angle sum of a triangle) **M1**

(a) correct sine rule setup: c/sin(57) = 9.6/sin(52) oe **M1**

(a) c = 10.2 cm awrt **A1**

(a) Answer: c = 10.2 cm

Question 3

B cao **B1**

Answer: B) Cosine rule

Question 4

(a) Area = 1/2 * 8 * 9 * sin(30) **M1**

(a) sin(30) = 1/2 used exactly oe **M1**

(a) Area = 36 * (1/2) = 18 cm², fully shown cso **A1**

(a) Answer: 18 cm^2 (shown)

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