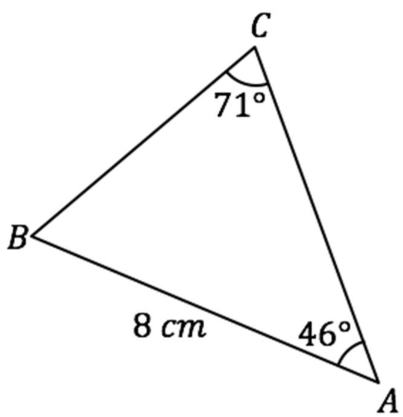
"Trigonometry on triangles, including sine/cosine rules and area of a triangle and exact values for

Question 1

Skill involved: E465: Sine rule (Law of Sines) and cosine rule (Law of Cosines) to determine lengths in a non-right angled triangle

Work out the length of BC.



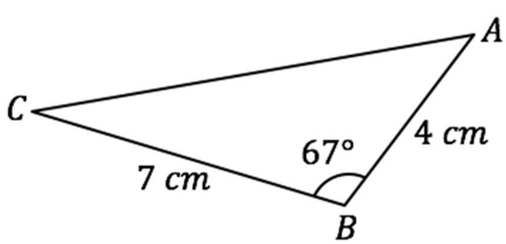
Give your answer to 2 decimal places.

.... cm

Question 2

Skill involved: E465: Sine rule (Law of Sines) and cosine rule (Law of Cosines) to determine lengths in a non-right angled triangle

Work out the length of AC.



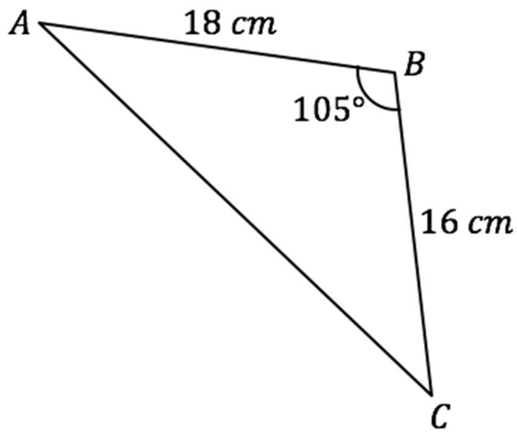
Give your answer to 2 decimal places.

.... cm

Question 3

Skill involved: E467: Area of a triangle using two lengths and the angle between them

Find the area of the triangle ABC, giving your answer correct to 2 decimal places.



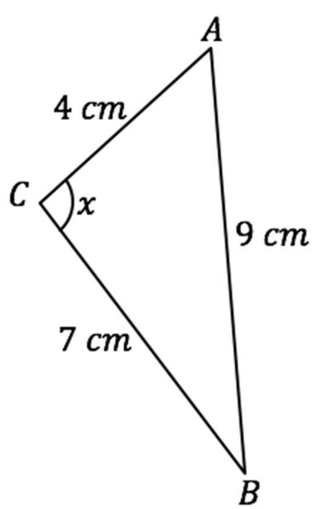
.... cm^2

Question 4

Skill involved: E466: Sine rule (Law of Sines) and cosine rule (Law of Cosines) to determine angles in a non-right angled triangle

Find the size of the angle marked x in the triangle drawn below.

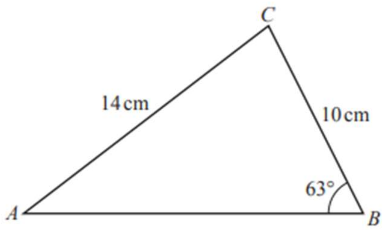
Give your answer correct to 1 decimal place.



.... °

Question 5

Skill involved: 465b: Use the cosine rule/Law of Cosines to determine unknown sides in non right-angled triangles.



The diagram shows triangle ABC, with AC = 14 cm, BC = 10 cm and angle ABC = 63°.

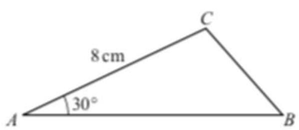
Find the length of AB.

.... cm

(2 marks)

Question 6

Skill involved: 465b: Use the cosine rule/Law of Cosines to determine unknown sides in non right-angled triangles.



The diagram shows triangle ABC, with AC = 8 cm and angle CAB = 30°.

The area of the triangle is 20 cm^2 and AB = 10 cm.

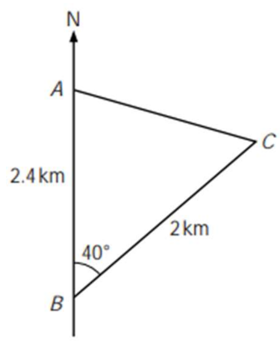
Find the length of BC, giving your answer correct to 3 significant figures.

.... cm

(2 marks)

Question 7

Skill involved: 321t: DELETED MOVE CODE Use trigonometry to determine a length in a bearings problem involving a right-angled triangle.



The diagram shows two points A and B on a straight coastline, with A being 2.4 km due north of B. A stationary ship is at point C, on a bearing of 040° and at a distance of 2 km from B.

It can be shown that AC = 1.55 km, correct to 3 significant figures.

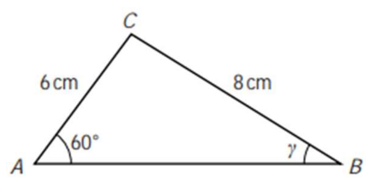
Find the shortest distance from the ship to the coastline.

.... km

(2 marks)

Question 8

Skill involved: 466a: Use the sine rule/Law of Sines to determine acute angles in non right-angled triangles.



The diagram shows a triangle ABC with AC = 6 cm, BC = 8 cm, angle BAC = 60° and angle ABC = γ. Find the exact value of $\sin\gamma$, simplifying your answer.

....

(3 marks)

Mark scheme

Question 1

6.09cm

Question 2

6.57cm

Question 3

$139.09cm^2$

Question 4

106.6°

Question 5

15.3cm

$c^2 = 10^2 + 14^2 - 2x10x14x\cos 77.5^\circ$ $c = 15.3$	M1	Attempt use of correct cosine rule, or equiv, inc attempt at 77.5°
	A1	Obtain 15.3, or better

Question 6

5.04cm

$BC^2 = 8^2 + 10^2 - 2 \text{ x } 8 \text{ x } 10 \text{ x } \cos 30$ $BC = 5.04$	M1	Attempt to use correct cosine rule, using their AB
	A1	Obtain 5.04, or better

Question 7

1.29km

$d = 2 \times \sin\ 40^\circ$ $= 1.29$ km	**M1**	Attempt perpendicular distance
	A1	Obtain 1.29, or better

Question 8

$\frac{3\sqrt{3}}{8}$

$\frac{\sin\gamma}{6} = \frac{\sin 60}{8}$	M1*	Attempt use of correct sine rule
	M1d*	Use $\sin 60^\circ = {}^{\sqrt{3}}/_{2}$
$\sin\gamma = \frac{3\sqrt{3}}{8}$	A1	Obtain $\sin\gamma$ as $\frac{3\sqrt{3}}{8}$