The Sine rule, Cosine rule & area of a triangle Difficulty: Medium

Question Paper 1

Level	AS & A Level
Subject	Maths - Pure
Exam Board	Edexcel
Topic	Trigonometric Ratios
Sub-Topic	The Sine rule, Cosine rule & Area of a triangle
Difficulty	Medium
Booklet	Question Paper 1

Time allowed: **58 minutes**

Score: **/57**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>76%	61%	52%	42%	33%	23%	<23%

ABCD is a parallelogram.

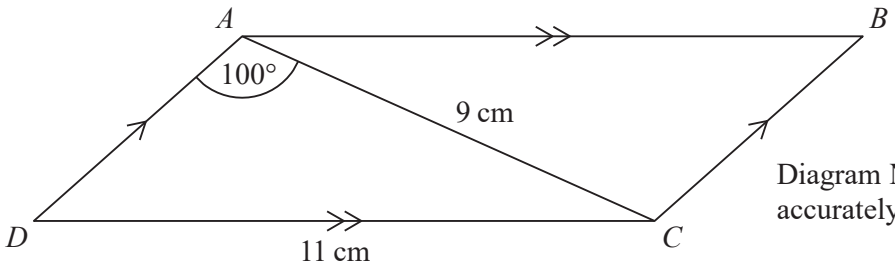

Diagram **NOT** accurately drawn

$AC = 9$ cm
$DC = 11$ cm
Angle $DAC = 100°$

Calculate the area of the parallelogram.
Give your answer correct to 3 significant figures.

(Total 5 marks)

Question 2

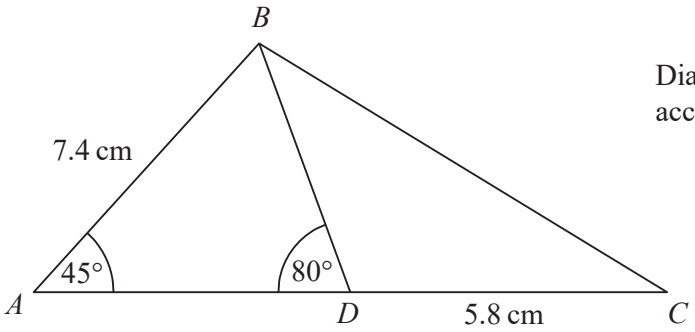

Diagram **NOT** accurately drawn

ABC is a triangle.
D is a point on *AC*.
Angle *BAD* = 45°
Angle *ADB* = 80°
AB = 7.4 cm
DC = 5.8 cm

Work out the length of *BC*.
Give your answer correct to 3 significant figures.

(Total 5 marks)

Question 3

ABC is a triangle.

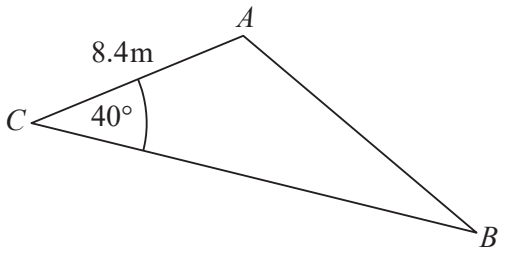

Diagram **NOT** accurately drawn

$AC = 8.4$ m
Angle $ACB = 40°$

The area of the triangle = 100 m^2.

Work out the length of AB.

Give your answer correct to 3 significant figures.
You must show all your working.

(Total 5 marks)

Question 4

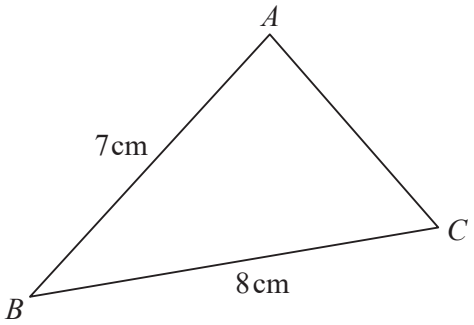

Diagram **NOT** accurately drawn

ABC is an acute-angled triangle.
$BA = 7$ cm
$BC = 8$ cm

The area of triangle ABC is 18 cm^2.

Work out the size of angle BAC.

Give your answer correct to 3 significant figures.
You must show all your working.

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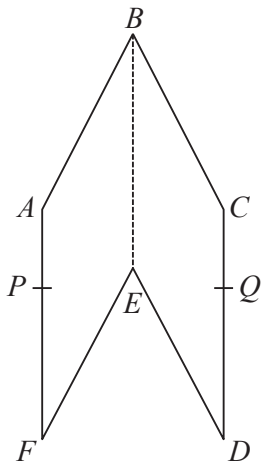
(Total 6 marks)

The diagram shows a hexagon $ABCDEF$.



$ABEF$ and $CBED$ are congruent parallelograms where $AB = BC = x$ cm.
P is the point on AF and Q is the point on CD such that $BP = BQ = 10$ cm.

Given that angle $ABC = 30°$,

prove that $\cos PBQ = 1 - \dfrac{(2-\sqrt{3})}{200}x^2$

(Total 5 marks)

Question 6

ABC is an acute angled triangle.

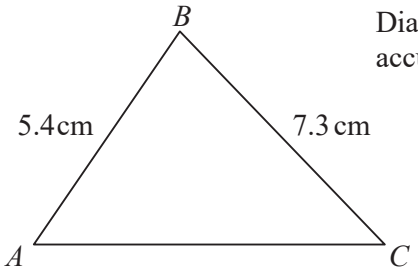


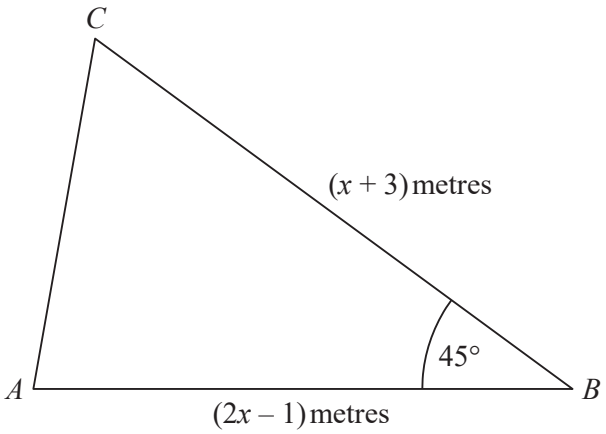
Diagram **NOT** accurately drawn

The area of triangle *ABC* is 19 cm^2.

Work out the size of angle *ACB*.
Give your answer correct to 3 significant figures.

(Total 6 marks)

Question 7



The area of triangle ABC is $6\sqrt{2}$ m^2.

Calculate the value of x.
Give your answer correct to 3 significant figures.

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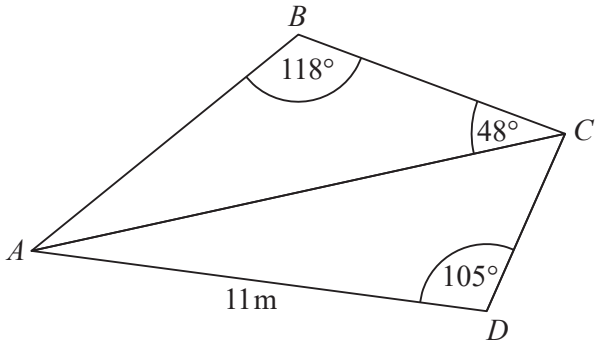
(Total 5 marks)

ABC and *ADC* are triangles.

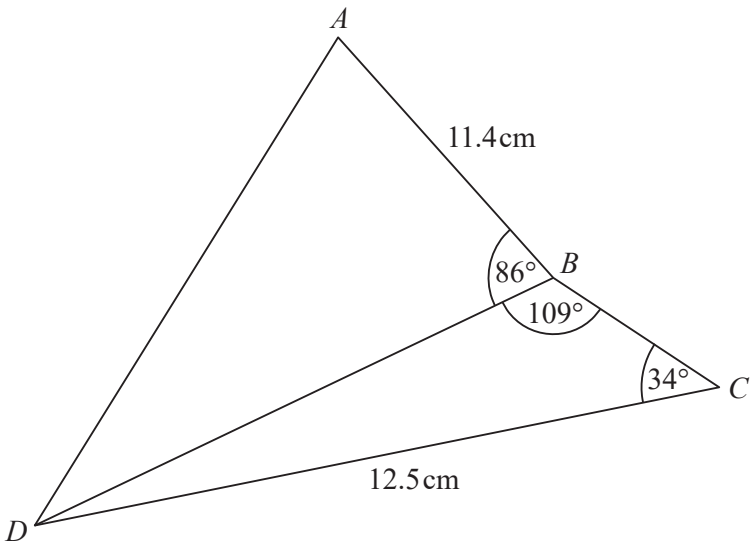


The area of triangle *ADC* is 56 m^2

Work out the length of *AB*.
Give your answer correct to 1 decimal place.

(Total 5 marks)

Question 9



Work out the length of AD.
Give your answer correct to 3 significant figures.

(Total 5 marks)

In triangle RPQ,

$RP = 8.7$ cm
$PQ = 5.2$ cm
Angle $PRQ = 32°$

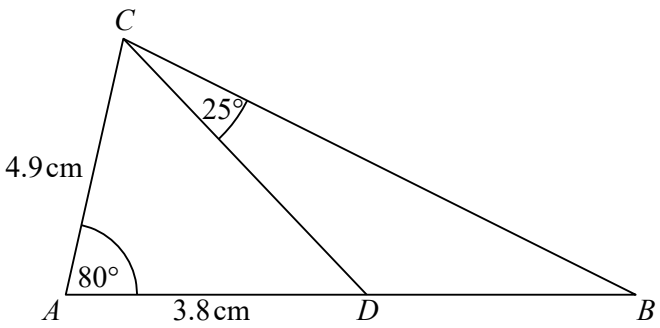
(a) Assuming that angle PQR is an acute angle,
calculate the area of triangle RPQ.
Give your answer correct to 3 significant figures. **(4)**

(b) If you did not know that angle PQR is an acute angle, what effect would this have on your calculation of the area of triangle RPQ?

(1)

(Total 5 marks)

Question 11



ABC is a triangle.
D is a point on AB.

Work out the area of triangle BCD.
Give your answer correct to 3 significant figures.

(Total 5 marks)