

SINE AND COSINE RULE

[ESTIMATED TIME: 75 minutes]

GCSE

(+ IGCSE) EXAM QUESTION PRACTICE

1.

[3 marks]

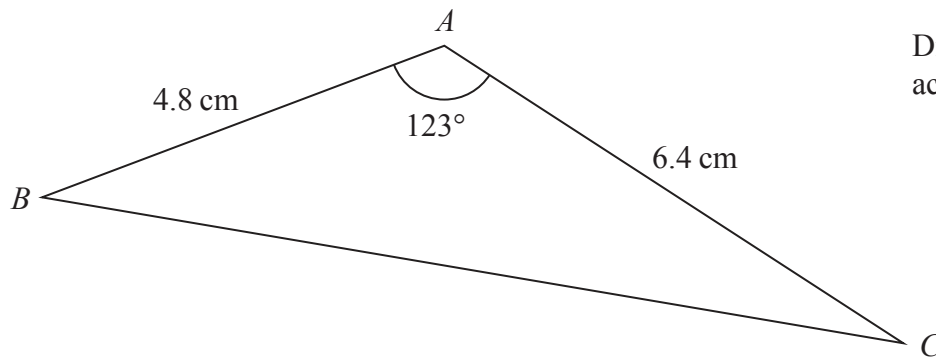


Diagram **NOT**
accurately drawn

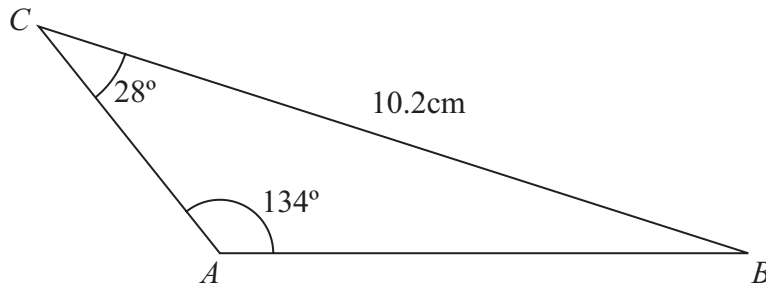
Calculate the length of BC .

Give your answer correct to 3 significant figures.

.....cm

The diagram shows triangle ABC .

Diagram **NOT**
accurately drawn



Angle $BCA = 28^\circ$

Angle $CAB = 134^\circ$

$BC = 10.2\text{ cm}$.

Calculate the length of AB .

Give your answer correct to 3 significant figures.

..... cm

3.

[4 marks]

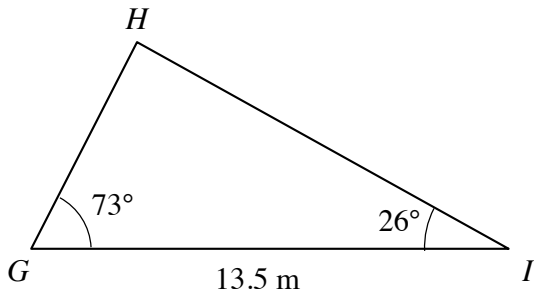


Diagram **NOT**
accurately drawn

Calculate the length of GH .
Give your answer correct to 3 significant figures.

.....
(4)

4.

[3 marks]

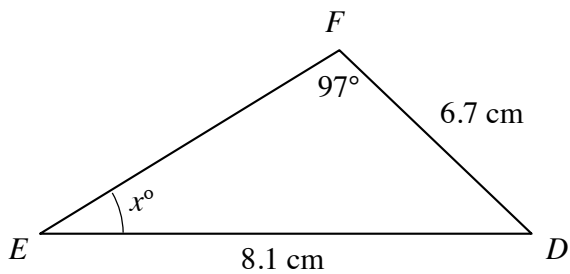


Diagram **NOT**
accurately drawn

Calculate the value of x .
Give your answer correct to 1 decimal place.

.....
(3)

5.

[3 marks]

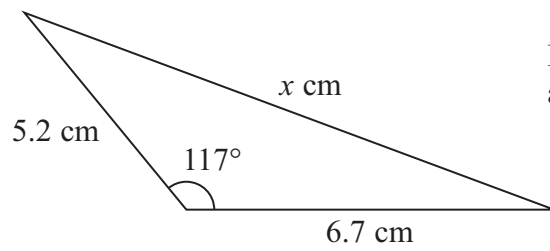


Diagram **NOT**
accurately drawn

Calculate the value of x .

Give your answer correct to 3 significant figures.

$x = \dots\dots\dots$

6.

[3 marks]

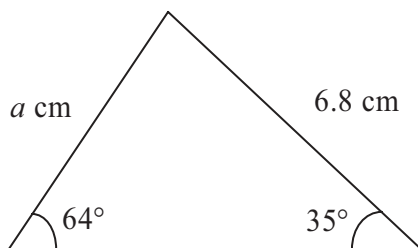


Diagram **NOT**
accurately drawn

Calculate the value of a .

Give your value correct to 3 significant figures.

$a = \dots\dots\dots$

7.

[3 marks]

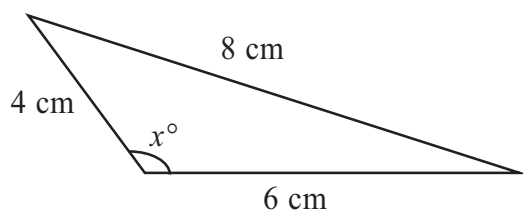


Diagram **NOT**
accurately drawn

Calculate the value of x .

Give your answer correct to 1 decimal place.

$x = \dots\dots\dots$

8.

[4 marks]

A triangle has sides of length 4 cm, 6 cm and 8 cm.

Calculate the size of the largest angle in this triangle.

Give your answer correct to 1 decimal place.

$\dots\dots\dots$
(4)

9.

[4 marks]

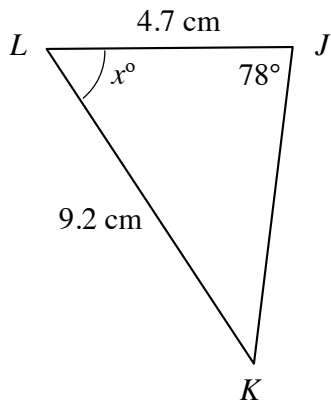


Diagram **NOT**
accurately drawn

Calculate the value of x .
Give your answer correct to 1 decimal place.

.....
(4)

10.

[5 marks]

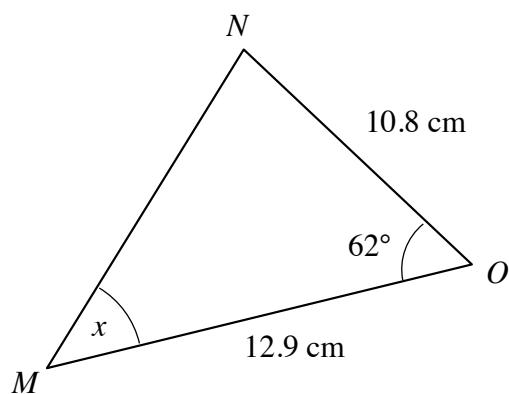


Diagram **NOT**
accurately drawn

Calculate the size of angle NMO .
Give your answer correct to 1 decimal place.

A circular clock face, centre O , has a minute hand OA and an hour hand OB .

$OA = 10$ cm.

$OB = 7$ cm.

Calculate the length of AB when the hands show 5 o'clock.

Give your answer correct to 3 significant figures.

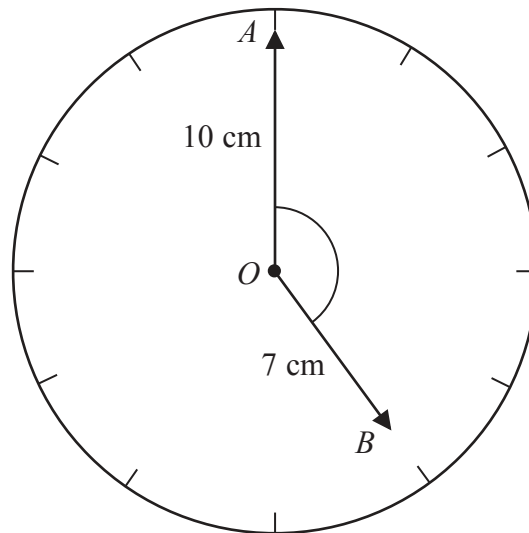


Diagram **NOT**
accurately drawn

..... cm

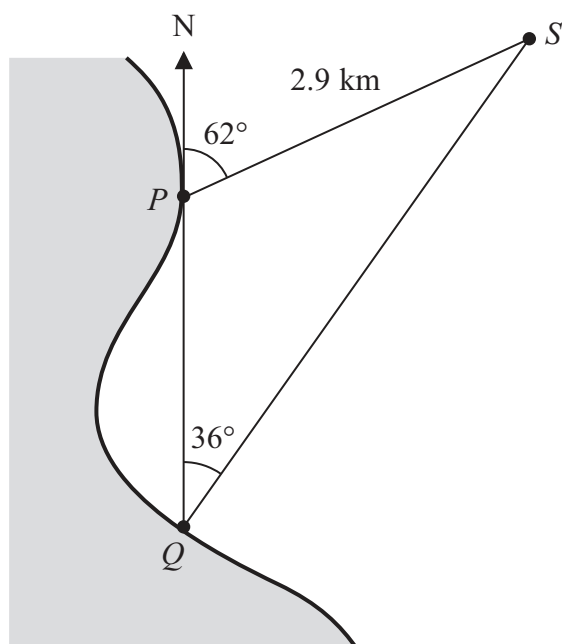


Diagram **NOT**
accurately drawn

P and Q are two points on a coast.

P is due North of Q .

A ship is at the point S .

$PS = 2.9$ km.

The bearing of the ship from P is 062°

The bearing of the ship from Q is 036°

Calculate the distance QS .

Give your answer correct to 3 significant figures.

..... km

The sides of triangle PQR are tangents to a circle.
 The tangents touch the circle at the points S , T and U .
 $QS = 6$ cm. $PS = 7$ cm.

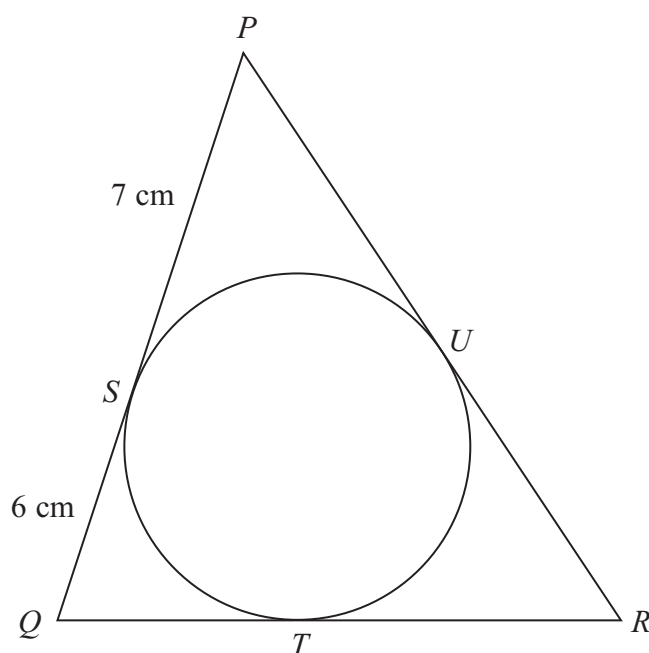


Diagram **NOT**
accurately drawn

- (a) (i) Write down the length of QT .

..... cm

- (ii) Give a reason for your answer.

.....
(2)

The perimeter of triangle PQR is 42 cm.

- (b) Calculate the size of angle PQR .
 Give your answer correct to 1 decimal place.

.....
(4)

The diagram shows the positions of two ships, A and B , and a lighthouse L .

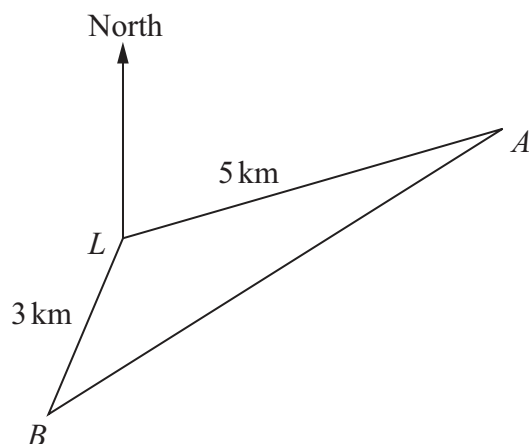
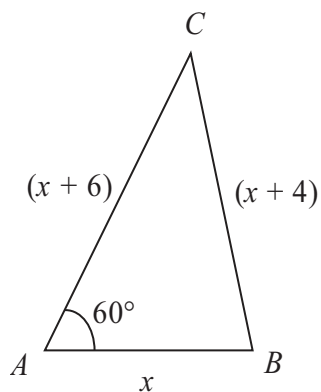


Diagram **NOT**
accurately drawn

Ship A is 5 km from L on a bearing of 070° from L .
Ship B is 3 km from L on a bearing of 210° from L .
Calculate the distance between ship A and ship B .
Give your answer correct to 3 significant figures.

..... km

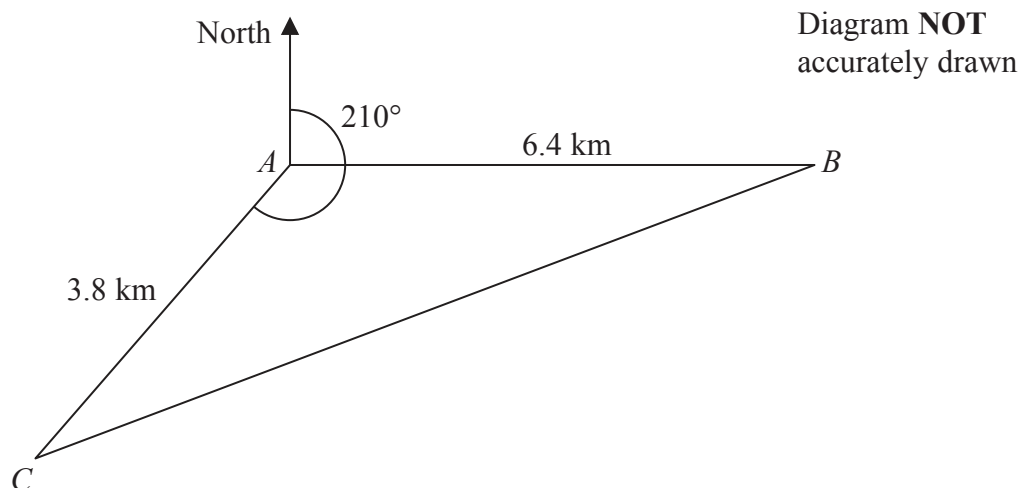
Diagram **NOT**
accurately drawn



The diagram shows the length, in centimetres, of each side of triangle ABC .
Angle $BAC = 60^\circ$.

Find the value of x .

$x = \dots\dots\dots$



A , B and C are 3 villages.

B is 6.4 km due east of A .

C is 3.8 km from A on a bearing of 210°

Calculate the bearing of B from C .

Give your answer correct to the nearest degree.

Show your working clearly.

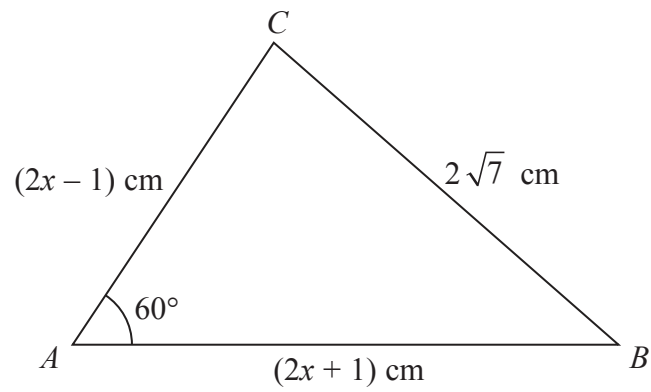


Diagram **NOT**
accurately drawn

The diagram shows a triangle ABC .

$AB = (2x + 1) \text{ cm}$, $AC = (2x - 1) \text{ cm}$ and $BC = 2\sqrt{7} \text{ cm}$.

Angle $BAC = 60^\circ$

Work out the value of x .

Show clear algebraic working.

$x = \dots\dots\dots$

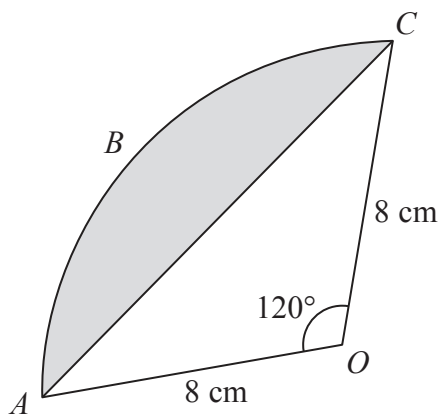


Diagram **NOT**
accurately drawn

ABC is an arc of a circle with centre O and radius 8 cm.

AC is a chord of the circle.

Angle $AOC = 120^\circ$

Calculate the perimeter of the shaded segment.

Give your answer correct to 3 significant figures.

..... cm

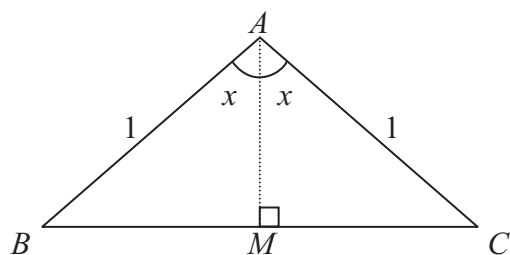


Diagram **NOT**
accurately drawn

ABC is an isosceles triangle.

$AB = AC = 1$

M is the midpoint of BC .

- (a) (i) Use trigonometry to find an expression, in terms of x , for BM .

.....

- (ii) Hence write down an expression, in terms of x , for BC .

.....

(2)

- (b) Use the cosine rule to find an expression, in terms of $\cos (2x)$, for BC^2 .

.....

(1)

- (c) Hence show that $\cos (2x) = 1 - 2(\sin x)^2$

(2)