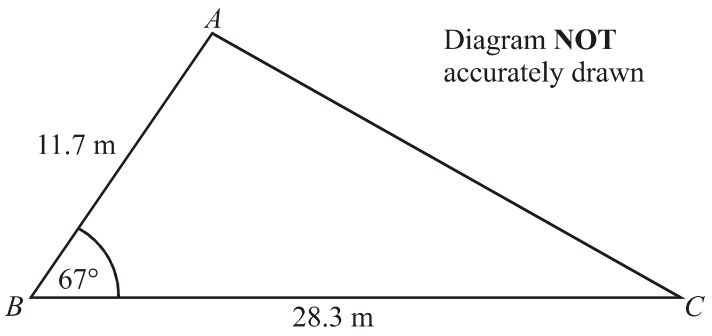
1.



$AB = 11.7$ m.
$BC = 28.3$ m.
Angle $ABC = 67^0$.

(a) Calculate the area of the triangle ABC.
Give your answer correct to 3 significant figures.

area = $\frac{1}{2}ab\sin C$
$= \frac{1}{2}(11.7)(28.3)\sin(67)$
$= 152.394181$

..... 152 ..... m^2

(2)

(b) Calculate the length of AC.
Give your answer correct to 3 significant figures.

$a^2 = b^2 + c^2 - 2bc\cos A$
$x^2 = 11.7^2 + 28.3^2 - 2(11.7)(28.3)\cos(67)$
$x = 26.058\,2047$

..... 26.1 ..... m

(3)
(Total 5 marks)

2.

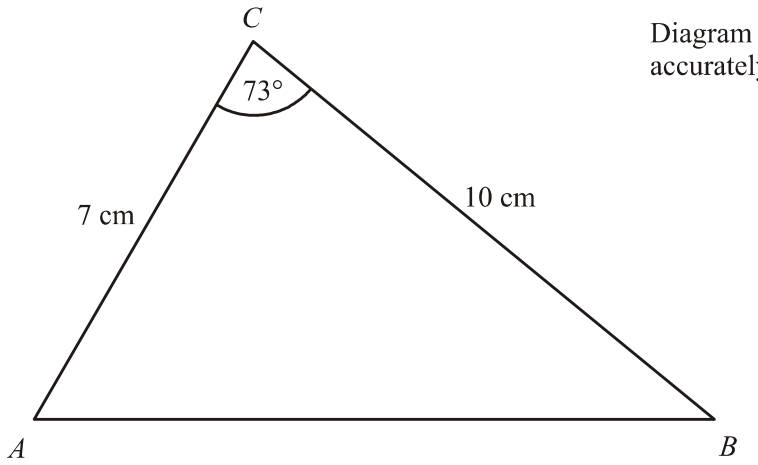


Diagram **NOT** accurately drawn

In triangle *ABC,*
AC = 7 cm,
BC = 10 cm,
angle *ACB* = 73°.

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

$a^2 = b^2 + c^2 - 2bc\cos A$

$x^2 = 7^2 + 10^2 - 2(7)(10)\cos(73)$

$x^2 = 108.0679613$

$x = 10.39557412$

10.4 ..... cm

(Total 4 marks)

3.

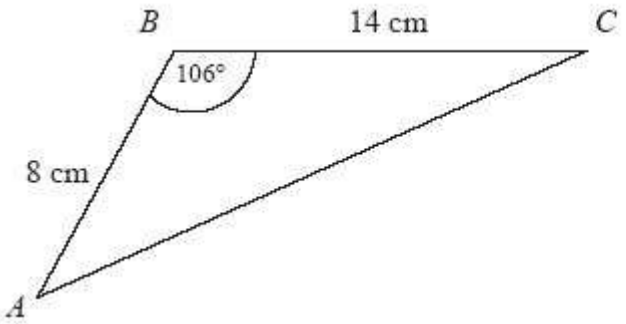


Diagram **NOT** accurately drawn

ABC is a triangle.

AB = 8 cm

BC = 14 cm

Angle *ABC* = 106 °

Calculate the area of the triangle.

Give your answer correct to 3 significant figures.

Area = $\frac{1}{2}$ ab sin C

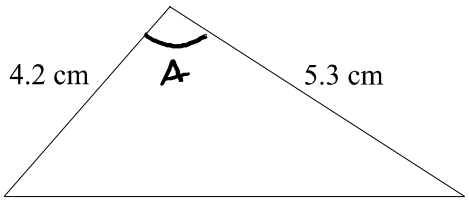
= $\frac{1}{2}$(8)(14) sin(106)

= 53.830654 97

53.8 ..... cm^2

(Total 3 marks)

4.



a

Diagram **NOT** accurately drawn

The lengths of the sides of a triangle are 4.2 cm, 5.3 cm and 7.6 cm.

(a) Calculate the size of the largest angle of the triangle.
Give your answer correct to 1 decimal place.

$a^2 = b^2 + c^2 - 2bc \cos A$

$\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$

$= \dfrac{(4.2)^2 + (5.3)^2 - (7.6)^2}{2(4.2)(5.3)}$

$A = 105.6770987$

105.7 .....°

(3)

(b) Calculate the area of the triangle.
Give your answer correct to 3 significant figures.

$\frac{1}{2}ab\sin(C)$

use whole answer

$\frac{1}{2}(4.2)(5.3)\sin(105.7)$

10.71596 21

10.7 ..... cm^2

(3)
(Total 6 marks)

5.

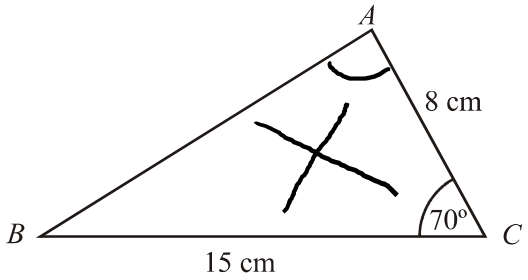


Diagram **NOT** accurately drawn

In triangle ABC,
$AC = 8$ cm,
$BC = 15$ cm,
Angle $ACB = 70°$.

(a) Calculate the length of AB.
Give your answer correct to 3 significant figures.

$a^2 = b^2 + c^2 - 2bc\cos A$

$= 8^2 + 15^2 - 2(8)(15)\cos(70)$

$a^2 = 206.91516 56$

$a = 14.38454607$

.....14.4..... cm

(3)

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

$\frac{\sin A}{a} = \frac{\sin B}{b}$

$\frac{\sin A}{15} = \frac{\sin 70}{14.4}$

$\sin A = \frac{\sin 70}{14.4} \times 15$

$= 0.979898096 5$

$A = 78.49235568$ .....78.5.....°

(2)

(Total 5 marks)

6.

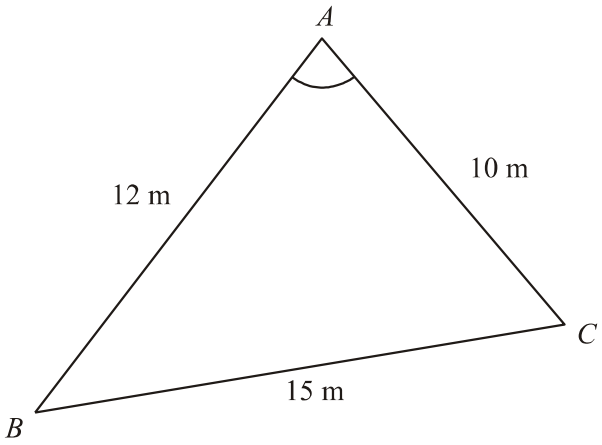


Diagram **NOT** accurately drawn

ABC is a triangle.
AB = 12 m.
AC = 10 m.
BC = 15 m.

Calculate the size of angle *BAC*.
Give your answer correct to one decimal place.

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$= \frac{(12)^2 + (10)^2 - (15)^2}{2(12)(10)}$$

$$A = 85.45933267$$

85.5 .....°

(Total 3 marks)

7.

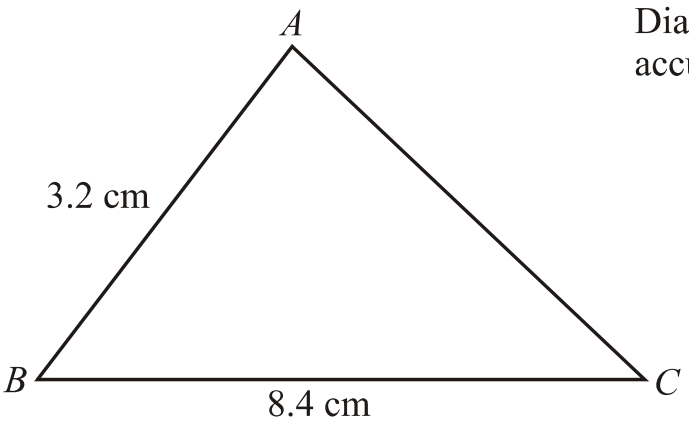


Diagram **NOT** accurately drawn

$AB = 3.2$ cm
$BC = 8.4$ cm

The area of triangle ABC is 10 cm^2.

Calculate the perimeter of triangle ABC.
Give your answer correct to three significant figures.

$\frac{1}{2}ab\sin C = 10$

$\frac{1}{2}(3.2)(8.4)\sin C = 10$

$\sin C = 0.74404762\ldots$

$C = 48.07736171^\circ$

$a^2 = b^2 + c^2 - 2bc\cos A$

$= (3.2)^2 + (8.4)^2 - 2(3.2)(8.4)\cos(48.1)$

$= 44.88151451$

$a = 6.699366724$

$ANS + 3.2 + 8.4 = 18.29936672$

18.3 ..... cm

(Total 6 marks)