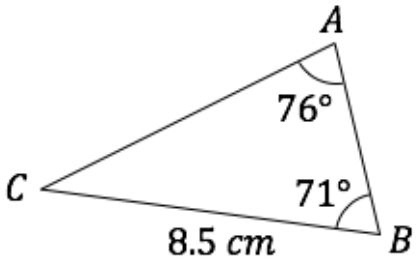
Sine and Cosine Rule

Question 1

Which rule would you use to find the length of AC?

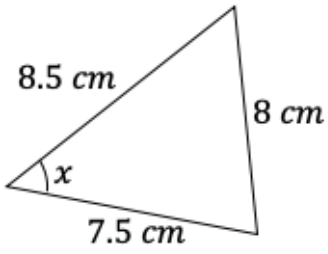


[ ] The sine rule

[ ] The cosine rule

Question 2

Which rule would you use to find the value of x?

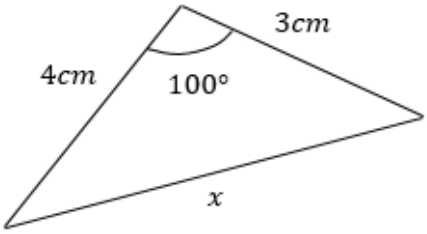


[ ] The Sine rule

[ ] The Cosine rule

Question 3

Which of the following equations is true?



[ ] $3^2 + 4^2 = x^2$

[ ] $x^2 = 3^2 + 4^2 - 2 \times 3 \times 4 \times \cos 100$

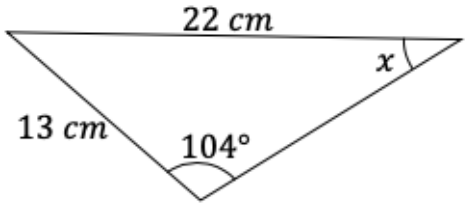
[ ] $3^2 = x^2 + 4^2 - 2 \times x \times 4 \times \cos 100$

[ ] $100^2 = 3^2 + 4^2 - 2 \times 3 \times 4 \times \cos x$

[ ] $x \cos 100 = \frac{3}{4}$

Question 4

Which equation is correct?



[ ] $\frac{\sin 13}{x} = \frac{\sin 104}{22}$

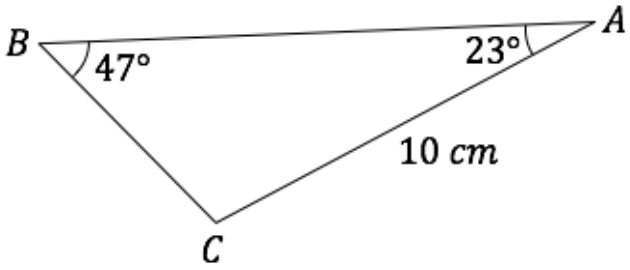
[ ] $\frac{\sin x}{13} = \frac{\sin 104}{22}$

[ ] $22^2 = 13^2 + 104^2 - 2 \times 104 \times 13 \times \cos x$

[ ] $13^2 = 22^2 + 104^2 - 2 \times 104 \times 22 \times \cos x$

Question 5

Which of the following equations is true to find the length BC?



[ ] $BC^2 = 23^2 + 10^2 - 2 \times 23 \times 10 \cos 47$

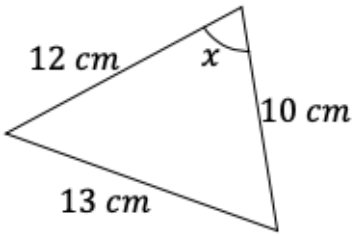
[ ] $\frac{BC}{23} = \frac{\cos 47}{10}$

[ ] $\frac{BC}{\sin 23} = \frac{10}{\sin 47}$

[ ] $\frac{BC}{\cos 23} = \frac{10}{\cos 47}$

Question 6

Which equation is correct?



[ ] $13^2 = 12^2 + 10^2 - 2 \times 10 \times 12 \times \cos x$

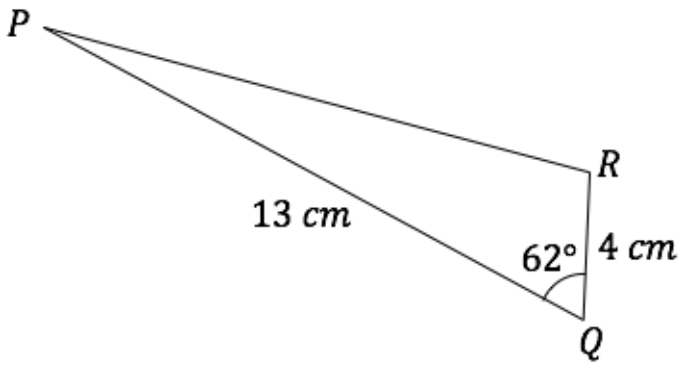
[ ] $10^2 = 12^2 + 13^2 - 2 \times 13 \times 12 \times \cos x$

[ ] $\frac{\sin x}{13} = \frac{\sin 12}{10}$

[ ] $\frac{\sin x}{13} = \frac{\sin 10}{12}$

Question 7

Which of the following equations is true to find the length PR?



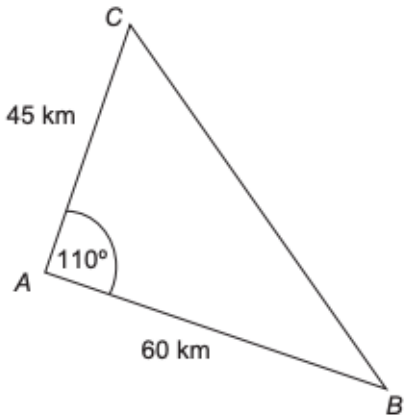
[ ] $PR^2 = 4^2 + 13^2 - 4 \times 13 \times \cos 62$

[ ] $\frac{PR}{\sin 62} = \frac{4}{13}$

[ ] $PR^2 = 4^2 + 13^2 - 2 \times 4 \times 13 \sin 62$

[ ] $PR^2 = 4^2 + 13^2 - 2 \times 4 \times 13 \cos 62$

Question 8



Not drawn accurately

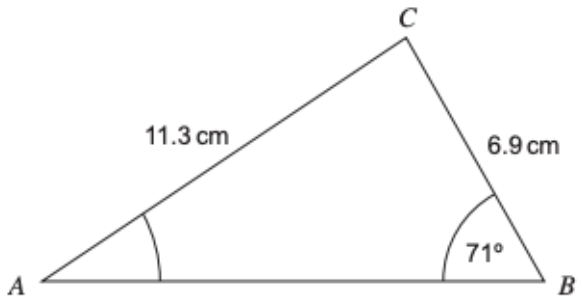
Work out the length BC.

..... km

(3 marks)

Question 9

Work out the size of angle A.



Not drawn accurately

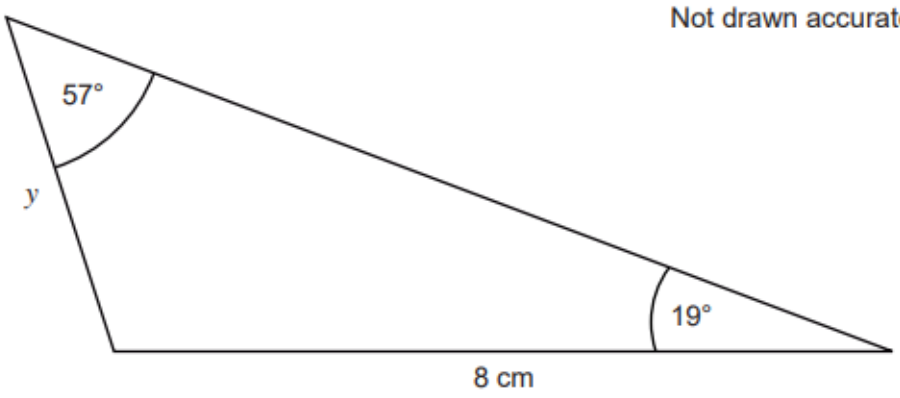
Give your answer to a suitable degree of accuracy.

angle $A =$ ..... °

(4 marks)

Question 10

Work out the length y.



Not drawn accurately

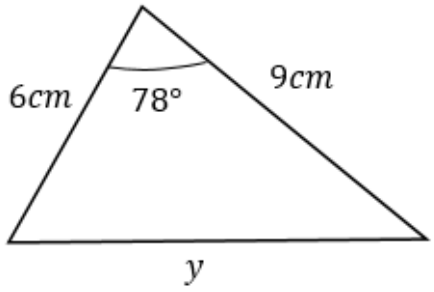
Give your answer to 1 decimal place.

.....

(1 mark)

Question 11

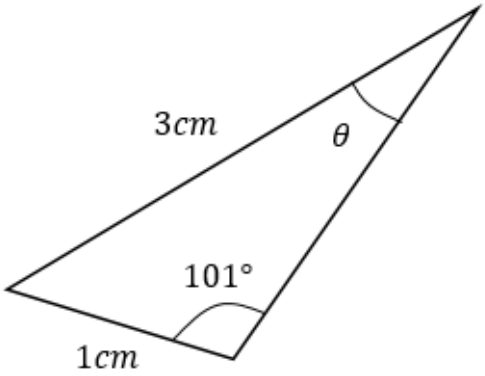
Determine the length of y, giving your answer correct to 3 significant figures.



$y =$ ..... cm

Question 12

Determine the angle θ, giving your answer correct to 3 significant figures.



..... °

Question 13

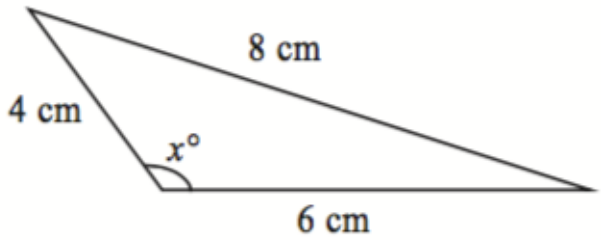


Diagram **NOT** accurately drawn

Calculate the value of x.

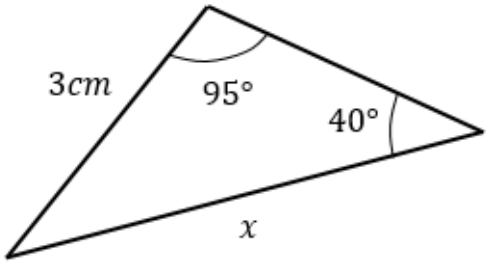
Give your answer correct to 1 decimal place.

$x =$ ..... °

(3 marks)

Question 14

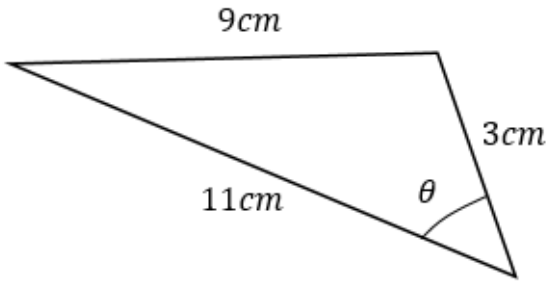
Determine the length x, giving your answer correct to 3 significant figures.



..... cm

Question 15

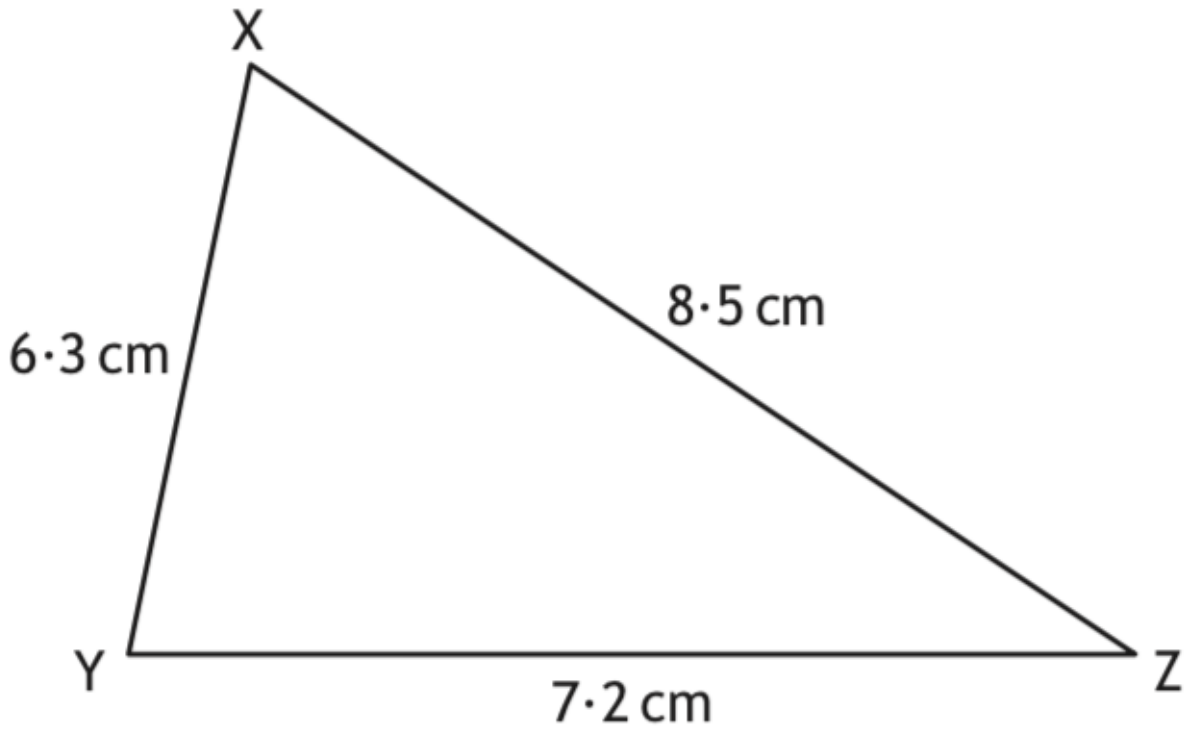
Determine the angle θ, giving your answer correct to 3 significant figures.



..... °

Question 16

Triangle XYZ is shown below.



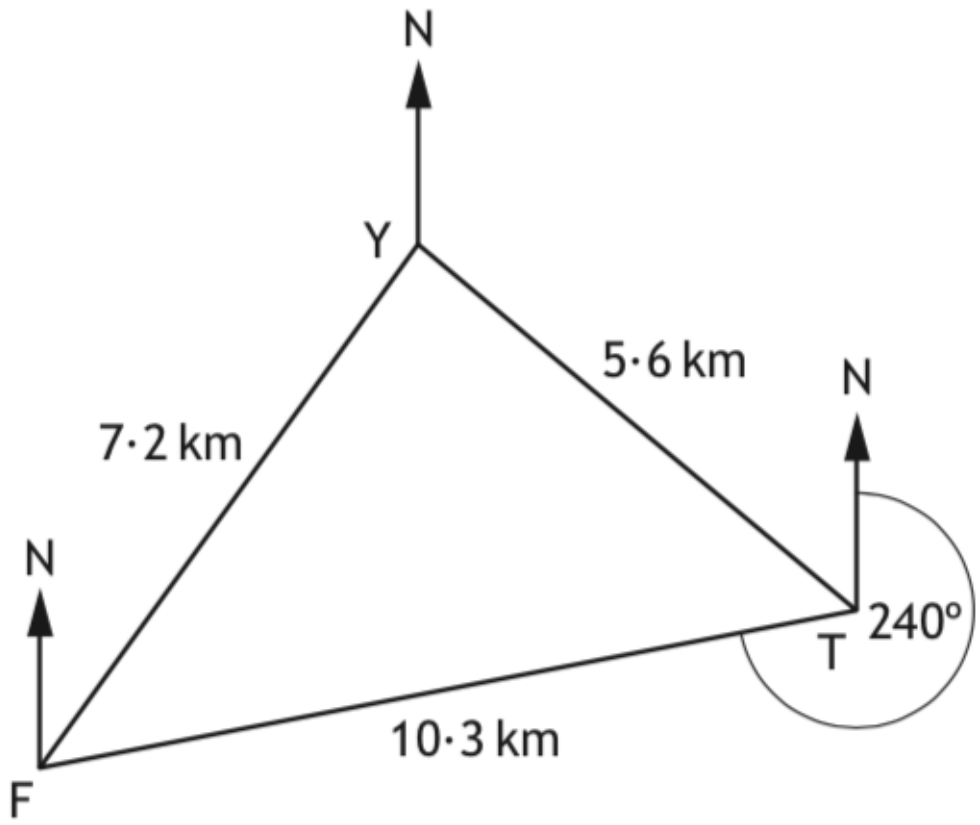
Calculate the size of the smallest angle in triangle XYZ.

..... °

(3 marks)

Question 17

A ferry and a trawler receive a request for help from a stranded yacht. On the diagram the points F, T and Y show the positions of the ferry, the trawler and the yacht respectively.



$bullet\ quad$ FY is 7.2 kilometres. $bullet\ quad$ TY is 5.6 kilometres. $bullet\ quad$ FT is 10.3 kilometres. $bullet\ quad$ F is on a bearing of 240 $^{\circ}$ from T.

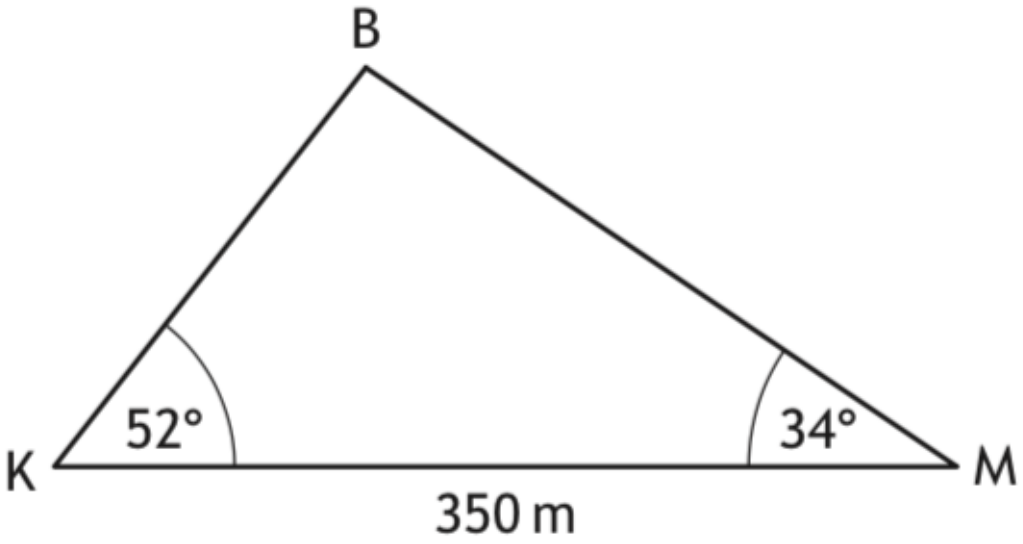
Calculate the bearing of the yacht from the trawler.

..... $^{\circ}$

(4 marks)

Question 18

Katy and Mona are looking up at a hot-air balloon.
In the diagram below, K, M and B represent the positions of Katy, Mona and the balloon respectively.



$bullet\ \ quad$ The angle of elevation of the balloon from Katy is 52 $^{\circ}$ $bullet\ \ quad$ The angle of elevation of the balloon from Mona is 34 $^{\circ}$ $bullet\ \ quad$ Katy and Mona are 350 metres apart on level ground

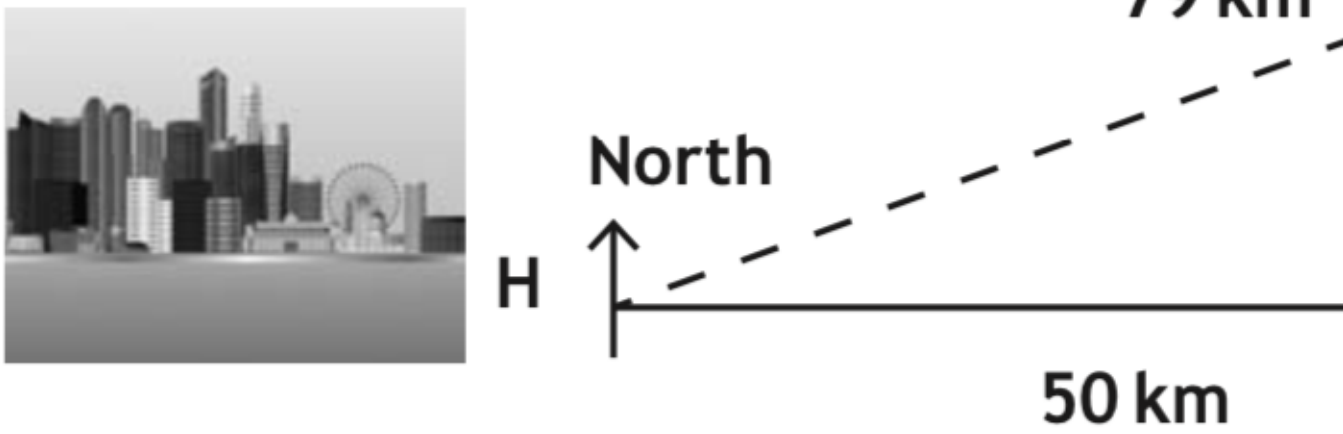
Calculate the height of the hot-air balloon above the ground.

..... metres

(5 marks)

Question 19

A yacht sails from a harbour H to a point C, then to a point D as shown below.



C is 50 kilometres due east of H.
D is on a bearing of 040 ° from C and is 79 kilometres from H.

Calculate the size of angle CDH.

∠ CDH = ... °

(4 marks)

Question 20

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

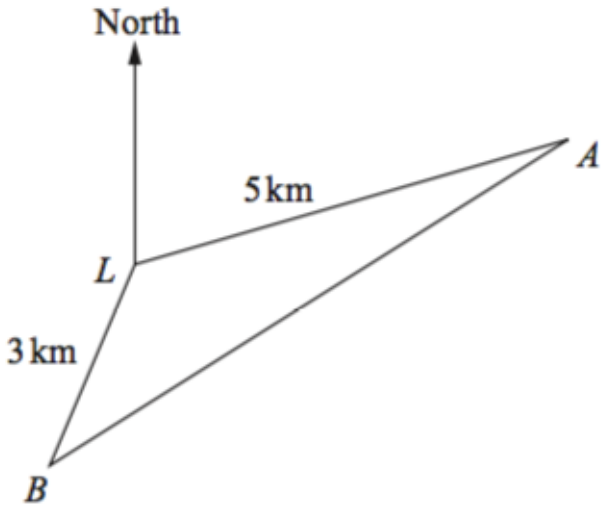


Diagram **NOT** accurately drawn

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

..... km

(3 marks)
