

Cosine Rule

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You **can** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

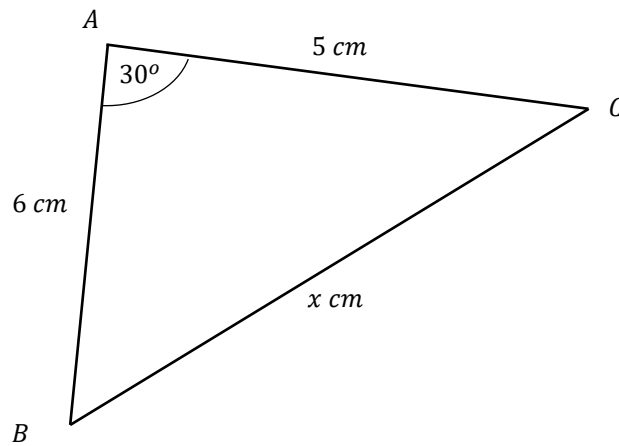
- In all calculations, show clearly how you work out your answer.

1

Consider the following triangle

(Level 6)

$\angle BAC = 30^\circ$

Not drawn
accuratelyFind x .

Give your answer to 1 decimal place.

[3 marks]

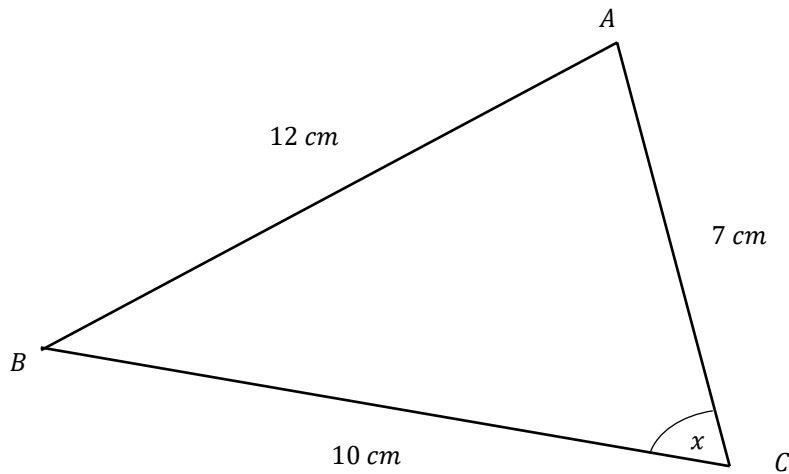
Answer _____ cm

Turn over for next question

Turn over ►

2 The diagram below shows a triangle.

(Level 6)



Not drawn accurately

Calculate the value of x .

Give your answer to an appropriate degree of accuracy.

[3 marks]

Answer _____



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Turn over ►

3 OL and NL are planks leaning against a slope. (Level 6)

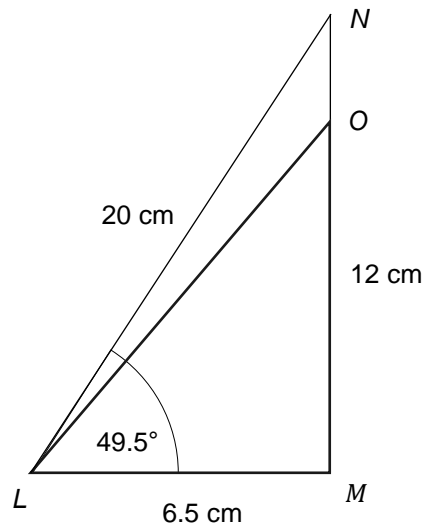
$$OM = 12 \text{ cm}$$

$$LM = 6.5 \text{ cm}$$

$$LN = 20 \text{ cm}$$

$$\angle NLM = 49.5^\circ$$

$$\angle LMO \neq 90^\circ$$



Not drawn
accurately

3(a) Find the length of the line ON .

Give your answer to an appropriate degree of accuracy.

[3 marks]

Answer _____ cm

3(b) Find the size of $\angle LMN$

[3 marks]

Answer _____ °

Turn over for next question

4 At 16:00 hours, two ships depart from Port Phasmatys. (Level 7)
Ship A leaves on a bearing of 062° at 20 km per hour.
Ship B leaves on a bearing of 140° at 12 km per hour.

4(a) How far is ship A from Port Phasmatys after 90 minutes? [1 mark]

Answer _____ km

4(b) Calculate the distance between A and B after 90 minutes.
Give your answer to a suitable degree of accuracy. [3 marks]

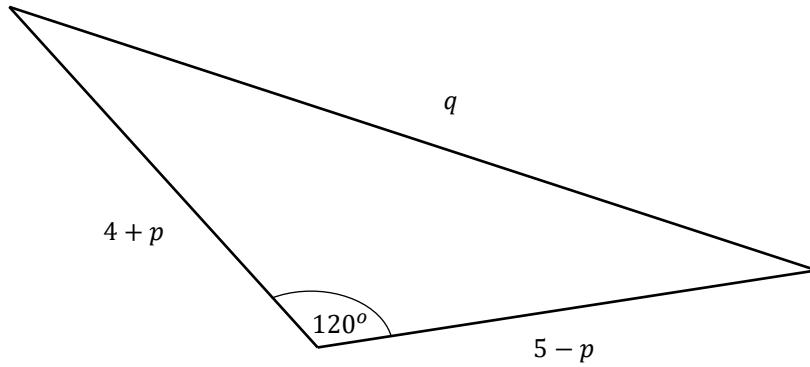
Answer _____ km

Turn over for next question

Turn over ►

5 The diagram below shows a triangle.

(Level 7)



Not drawn accurately

5(a) Show that $q^2 = p^2 - p + 61$

[2 marks]

5(b) p is given to be 0.5. Find the value of q .

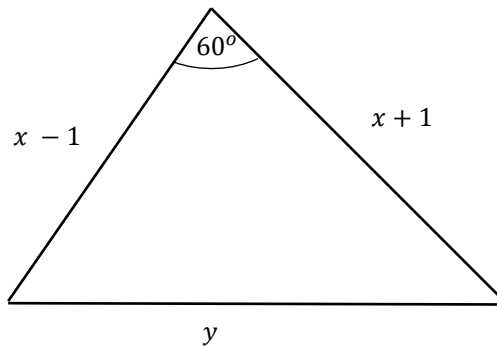
[2 marks]

Answer _____

Turn over for next question

6 Consider the following triangle

(Level 7)



Not drawn accurately

6(a) Show that $y^2 = x^2 + 3$

[3 marks]

Answer _____

6(b) x is an even number.
Explain why y^2 must be odd.

[2 marks]

Answer _____

End of questions