



Name: _____

Date: _____

IBSL Year 1

Trigonometry Quiz - Paper 2
Triangle and Sectors

Score: /45

CAC%:

IB:

INSTRUCTIONS TO CANDIDATES

- Write your name in the box above.
- Do not open this examination paper until instructed to do so.
- A graphic display calculator is required for this paper.
- Section A: answer all questions in the boxes provided.
- Section B: answer all questions in the answer booklet provided. Write your name on the front of the answer booklet turn it in with your examination paper.
- Unless otherwise stated in the question, all numerical answers should be given exactly or correct to three significant figures.
- A clean copy of the *Mathematics SL formula booklet* is required for this paper.
- The maximum mark for this examination paper is [45 marks].

Full marks are not necessarily awarded for a correct answer with no working. Answers must be supported by working and/or explanations. In particular, solutions found from a graphic display calculator should be supported by suitable working, for example if graphs are used to find a solution, you should sketch these as part of your answer. Where an answer is incorrect, some marks may be given for a correct method, provided this is shown by written working. You are therefore advised to show all working.

Section A

Answer **all** questions in the space provided. Working may be continued in the answer booklet.

1. The following diagram shows triangle ABC.

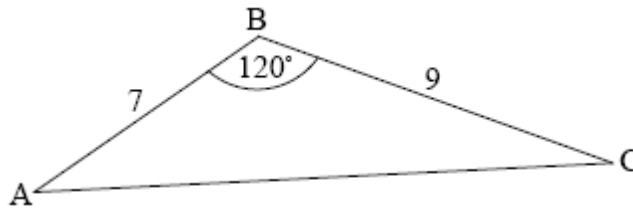


diagram not to scale

$AB = 7$ cm, $BC = 9$ cm and $\hat{A}BC = 120^\circ$.

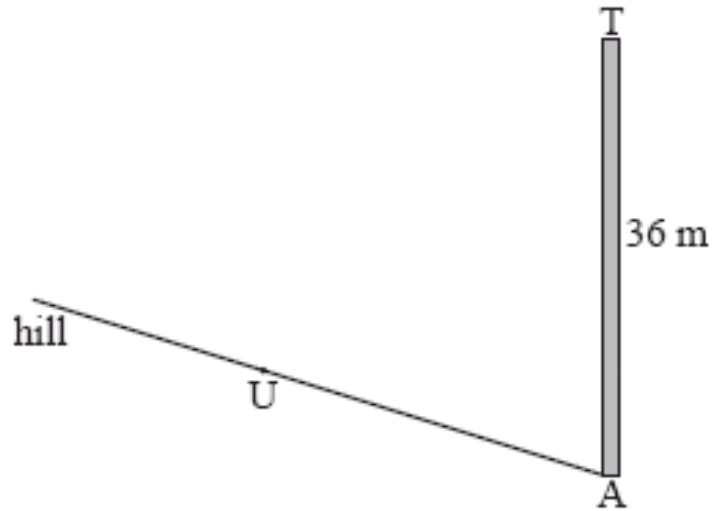
- (a) Find AC.

(3)

- (b) Find $\hat{B}AC$.

(3)
(Total 6 marks)

2. There is a vertical tower TA of height 36 m at the base A of a hill. A straight path goes up the hill from A to a point U. This information is represented by the following diagram.



The path makes a 4° angle with the horizontal.
The point U on the path is 25 m away from the base of the tower.
The top of the tower is fixed to U by a wire of length x m.

- (a) Complete the diagram, showing clearly all the information above.

(3)

- (b) Find x .

(4)

(Total 7 marks)

3. A ship leaves port A on a bearing of 030° . It sails a distance of 25 km to point B. At B, the ship changes direction to a bearing of 100° . It sails a distance of 40 km to reach point C. This information is shown in the diagram below.

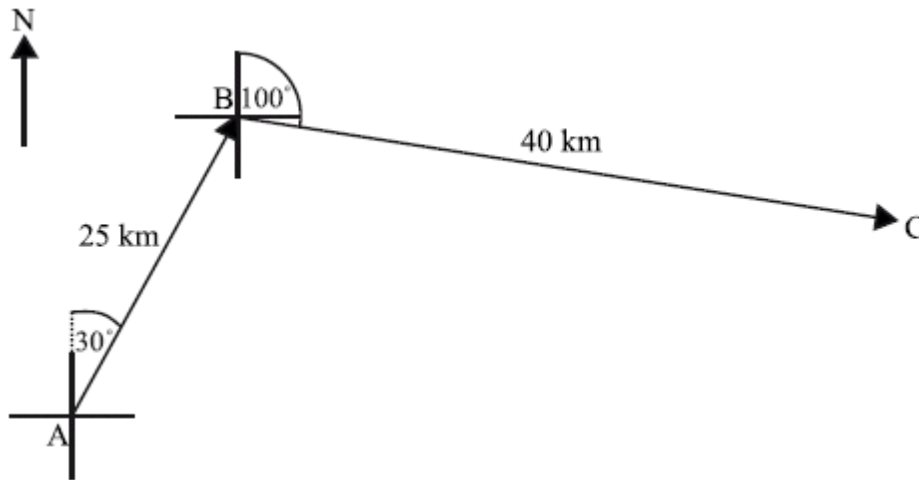


diagram not to scale

A second ship leaves port A and sails directly to C.

- (a) Find the distance the second ship will travel.

(4)

- (b) Find the bearing of the course taken by the second ship.

(3)

(Total 7 marks)

4. The diagram below shows a circle centre O , with radius r . The length of arc ABC is 3π cm and $\hat{AOC} = \frac{2\pi}{9}$.

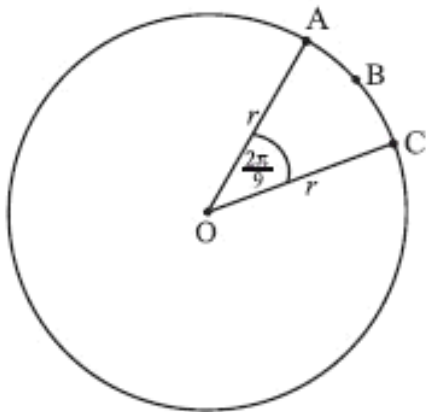


diagram not to scale

- (a) Find the value of r .

(2)

- (b) Find the perimeter of sector $OABC$.

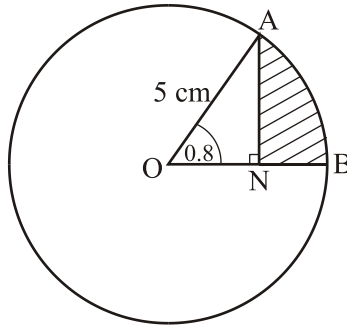
(2)

- (c) Find the area of sector $OABC$.

(2)

(Total 6 marks)

5. The diagram below shows a circle of radius 5 cm with centre O. Points A and B are on the circle, and \widehat{AOB} is 0.8 radians. The point N is on [OB] such that [AN] is perpendicular to [OB].



Find the area of the shaded region.

Working:

Answer:

.....

(Total 6 marks)

Do **NOT** write solutions on this page.

Section B

Answer **all** questions in the answer booklet provided. Please start each question on a new page.

6. The following diagram shows a circle with centre O and radius 4 cm.

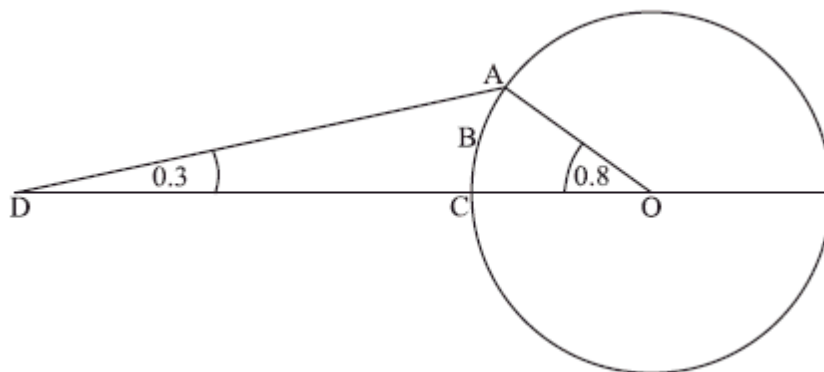


diagram not to scale

The points A, B and C lie on the circle. The point D is outside the circle, on (OC).
Angle ADC = 0.3 radians and angle AOC = 0.8 radians.

- (a) Find AD. (3)
- (b) Find OD. (4)
- (c) Find the area of sector OABC. (2)
- (d) Find the area of region ABCD. (4)

(Total 13 marks)