Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination

Mathematics (Project Maths)

Paper 2

Foundation Level

Monday 14 June   Morning 9:30 – 12:00

300 marks

Examination number

Centre stamp

Running total	

For examiner	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
Total	

Grade

Instructions

There are **three** sections in this examination paper:

Section 0	Area and Volume (old syllabus)	100 marks	2 questions
Section A	Concepts and Skills	100 marks	4 questions
Section B	Contexts and Applications	100 marks	2 questions

Answer **all eight** questions.

Write your answers in the spaces provided in this booklet. There is space for extra work at the back of the booklet. You may also ask the superintendent for more paper. Label any extra work clearly with the question number and part.

The superintendent will give you a copy of the booklet of *Formulae and Tables*. You must return it at the end of the examination. You are not allowed to bring your own copy into the examination.

A sheet of formulae will also be given to you by the superintendent.

Marks will be lost if all necessary work is not clearly shown.

Answers should include the appropriate units of measurement, where relevant.
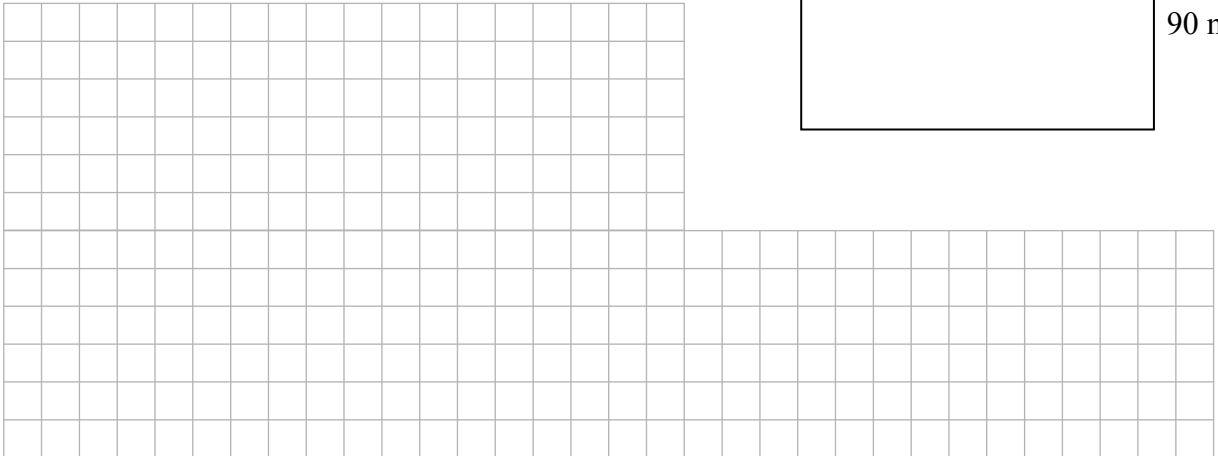
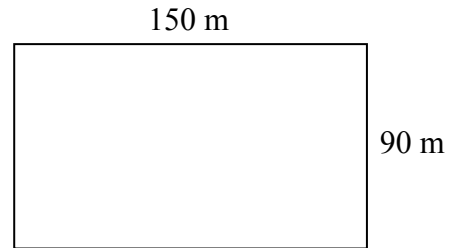Answers should be given in simplest form, where relevant.

| Section 0 | Area and Volume (old syllabus) | 100 marks |

Answer Question 1 and Question 2 from this section.

Question 1 **(50 marks)**
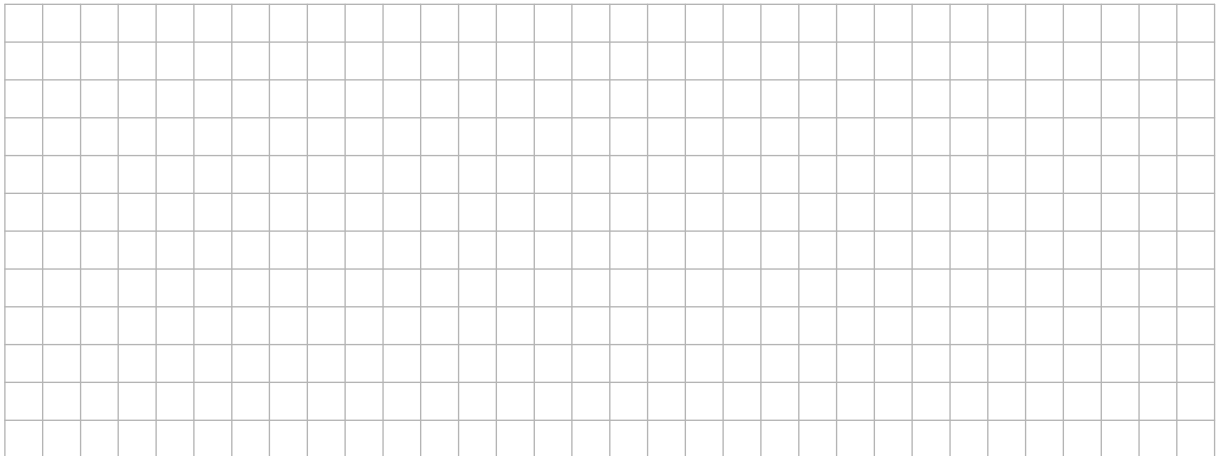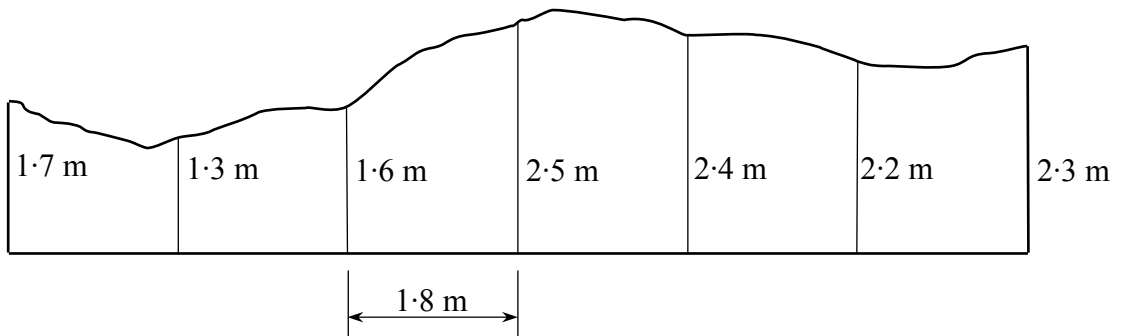
(a) A rectangular field is 150 m long and 90 m wide.

    (i) Find the area of the field.

150 m

90 m

    (ii) Find the length of the perimeter of the field.

(b) One side of an old garden fence is shown in the diagram.

The height of the fence is measured as 1·7, 1·3, 1·6, 2·5, 2·4, 2·2, and 2·3 metres at intervals of 1·8 metres along the base of the fence as shown.

(i) Use Simpson's rule to calculate the area of the side of the fence, in m^2.
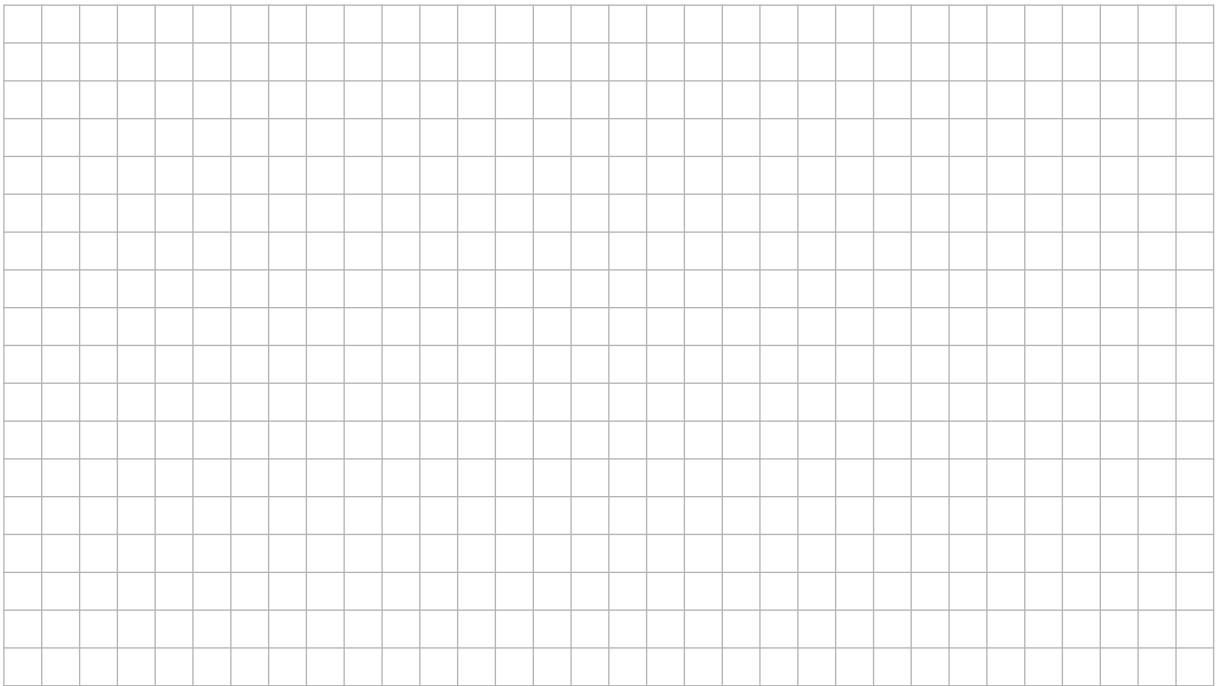
(ii) The owner paints this side of his fence.
One tin of paint covers 5·4 square metres.
How many tins of paint does he use?

Question 2 **(50 marks)**

(a) The diagram shows a rectangular block 70 cm long, 30 cm wide and 8 cm high.
Calculate the volume of the rectangular block.

(b) The diagram shows a circle inscribed in a square.
The radius of the circle is 8 cm.

    (i) Find the area of the circle.
        Give your answer correct to the nearest cm^2.

    (ii) Find the area of the square.

(c) A container in the shape of an inverted cone is filled with water.

The diameter of the cone is 9 cm and the height is 12 cm.
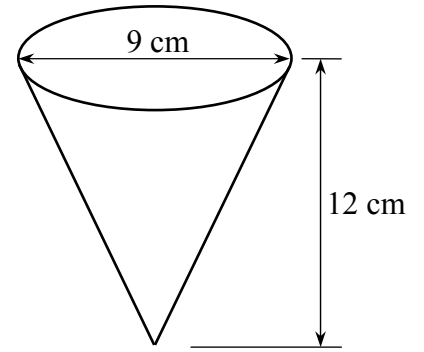
(i) Find the volume of water in the container, in terms of π.

(ii) The water is then poured out of the cone and into a cylindrical can of diameter 6 cm.

Find h, the depth of water in the can.
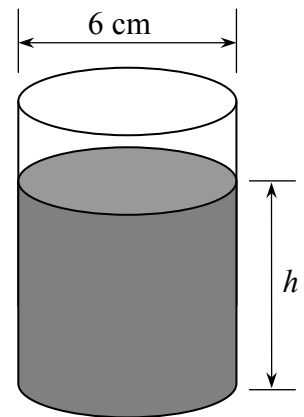
You may use this page for extra work

page	running

Answer **all four questions** from this section.

Question 3 (25 marks)

(a) A school canteen has the "lunch special" shown.
The following sandwiches and drinks are available.

Sandwich	**Drink**
chicken	tea
cheese	hot chocolate
tuna	fruit drink
salad	
egg	

Lunch special:
Any sandwich
& any drink
€3

(i) What is the total number of different options available?

(ii) Orla doesn't like tuna or tea. How many different options does she have?

(b) A fair spinner is divided into nine equal sections.
The sections are numbered as shown.

Michael says:
"There's a greater than even chance that you'll get a 2."

State whether Michael is correct and give a reason for your answer.

Answer: _____

Reason:

Question 4   **(25 marks)**

Robert has a bag of sweets.
The chart shows the number of red, orange
and green sweets in the bag.

Robert picks one sweet at random from the
bag.

(a) What is the probability that Robert picks a red sweet?

(b) What is the probability that Robert does not pick an orange sweet?

(c) The sweet that Robert picks is red. He eats it. He then picks another sweet at random from
the bag. Is the probability that this second sweet is red *greater than*, *less than*, or *the same as*
the original probability that the first sweet was red? Explain your answer.

Answer: _____

Explanation:

Question 5 **(25 marks)**

(a) The diagram shows a triangle and three parallel lines.
Find the value of x and the value of y.
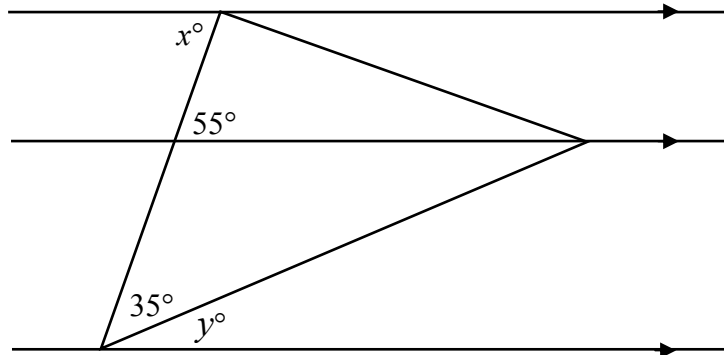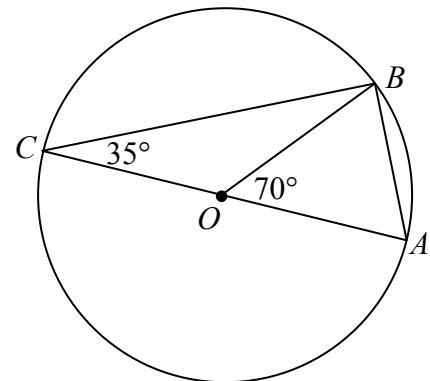
Answer: $x =$ _____ $y =$ _____

(b) $[AC]$ is a diameter of a circle with centre O.
B is a point on the circle.

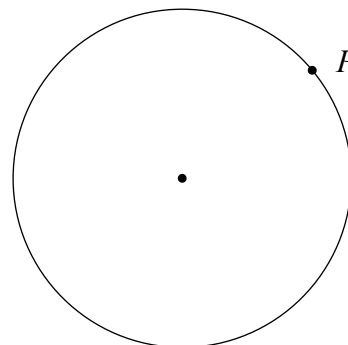   **(i)** Find $|\angle ABC|$.

   Answer: $|\angle ABC| =$ _____

   (ii) Find $|\angle ABO|$.
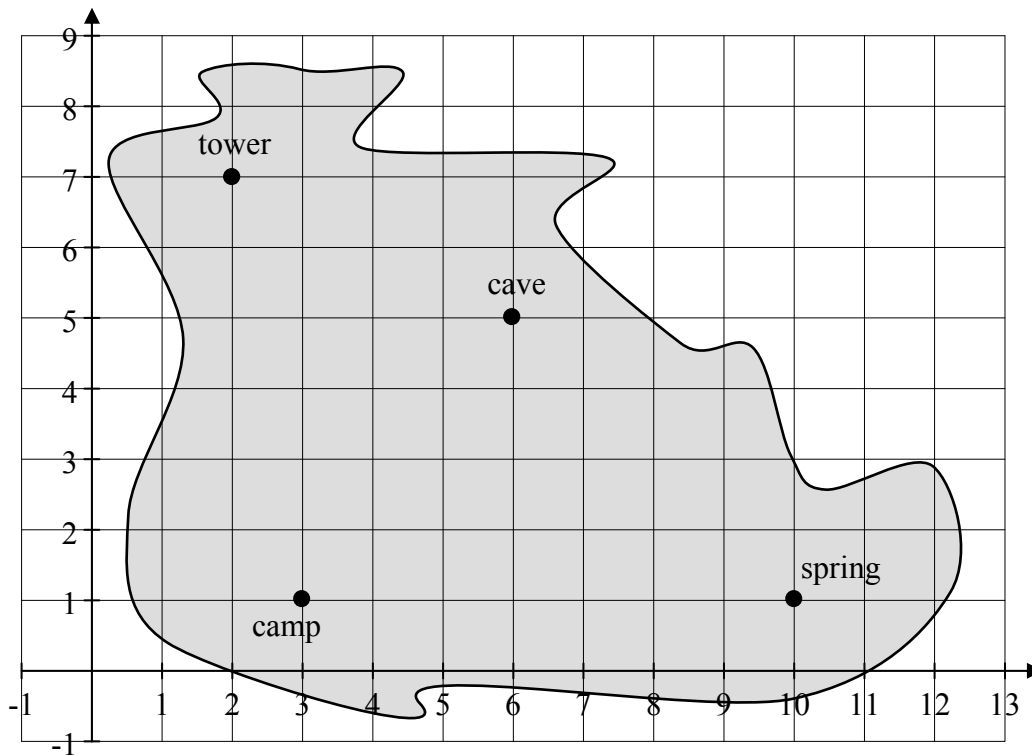
   Answer: $|\angle ABO| =$ _____

(c) On the diagram, show how to construct
the tangent to the circle at the point P.

Question 6 (25 marks)

A map of an island used in a computer game is shown. A co-ordinate grid covers the map.
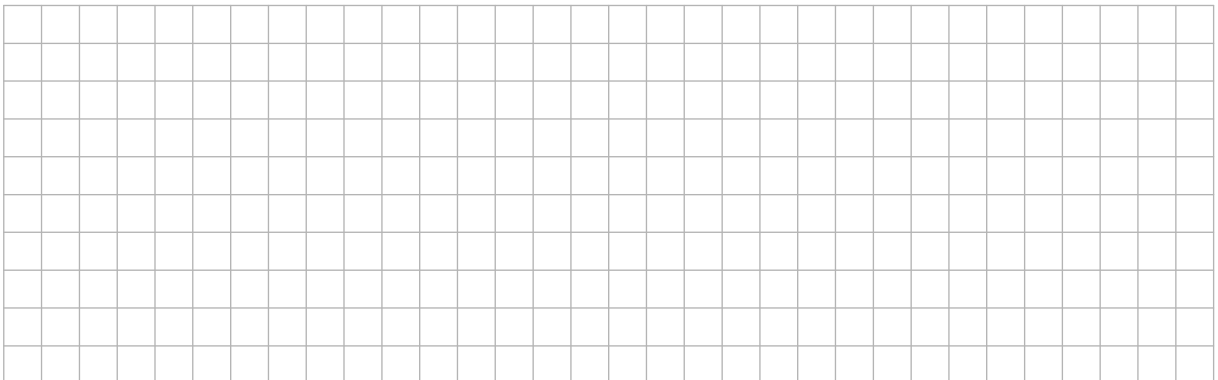

(a) Write down the co-ordinates of the cave and the camp.

cave (,) camp (,)

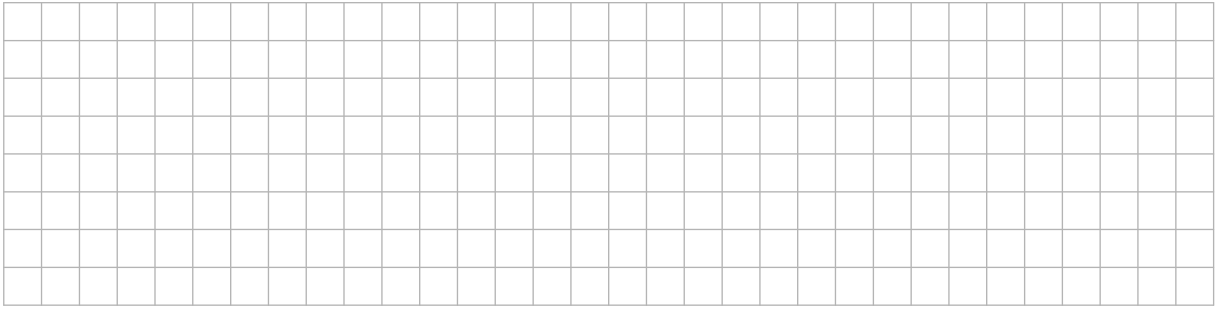**(b)** Find the co-ordinates of the point that is exactly halfway between the cave and the camp.
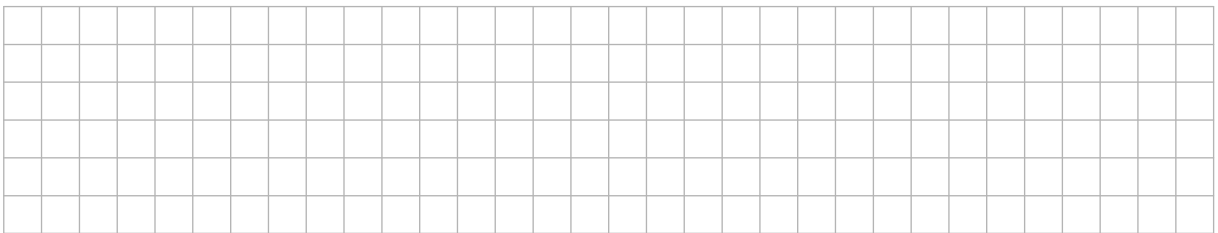
(c) Two teams are racing to get to the spring. The red team is at the cave. The blue team is at the point (5, 4). Use the distance formula to decide which team is closer to the spring.

Answer Question 7 and Question 8 from this section.

Question 7   **Probability and Statistics**   **(50 marks)**

(a)   Gary's class was doing a project. They went to the computer room to get information from the internet. Gary recorded the time, in minutes, that each of them spent on the internet. These are his results.

45	32	29	34	32
26	30	32	20	36
27	42	18	24	18
15	38	27	34	19

      (i)   Display the data in a stem-and-leaf plot.

      (ii)   What percentage of the students spent less than twenty minutes on the internet?

      (iii)   Deirdre asks Gary how long the class spent on the internet. Gary gave an answer that started: "Most of them spent…"
               Complete Gary's answer to give a good summary of the data in one sentence.

      "Most of them spent

(b) The marks Mary got in her maths tests for a term are listed in the table.

Test	Test 1	Test 2	Test 3	Test 4	Test 5
Mark	85	92	78	54	82

(i) What is Mary's median mark for the term?

(ii) Calculate Mary's mean mark for the term.

(iii) Which one of Mary's marks is out of line with the others?

Answer: _____

(iv) Which do you think is a fairer summary of Mary's work for the term: the mean or the median? Give a reason for your answer.

Answer: _____

Reason:

Question 8   **Geometry and Trigonometry**   **(50 marks)**

Seán is making a toy boat. His design is shown below. He is working on the sails.
$|AB|$ = 24 cm, $|BC|$ = 32 cm and $|\angle BCD|$ = 38°.

(a) Use Pythagoras' theorem to find $|AC|$.

(b) Use triangle BCD to find $|BD|$. Give your answer correct to the nearest centimetre.

(c) The sail *DEF* is a reduction of *BCD*. The scale factor is $\dfrac{3}{5}$. Find $|DF|$.
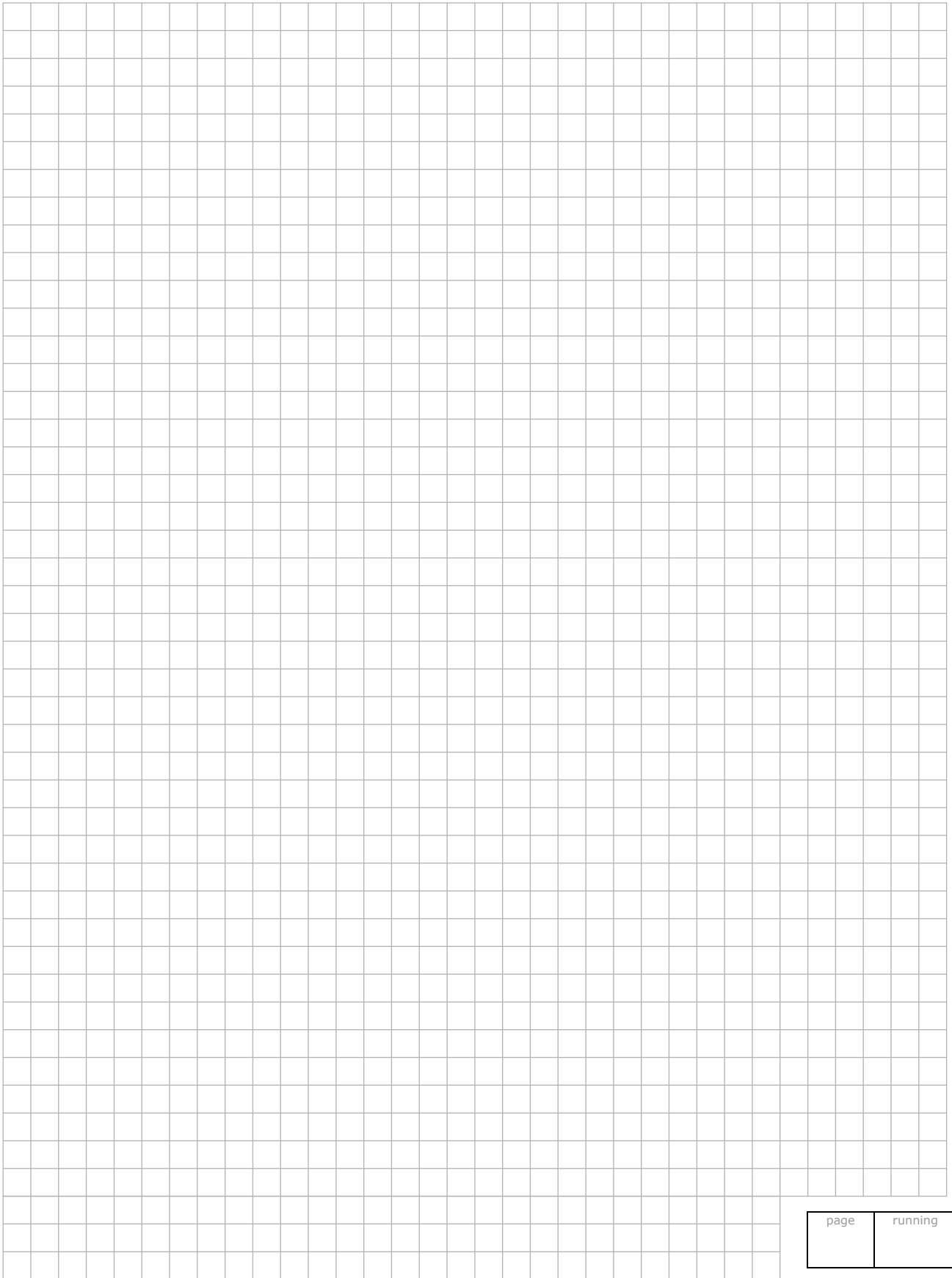
(d) Find the total distance from *A* to *F*.
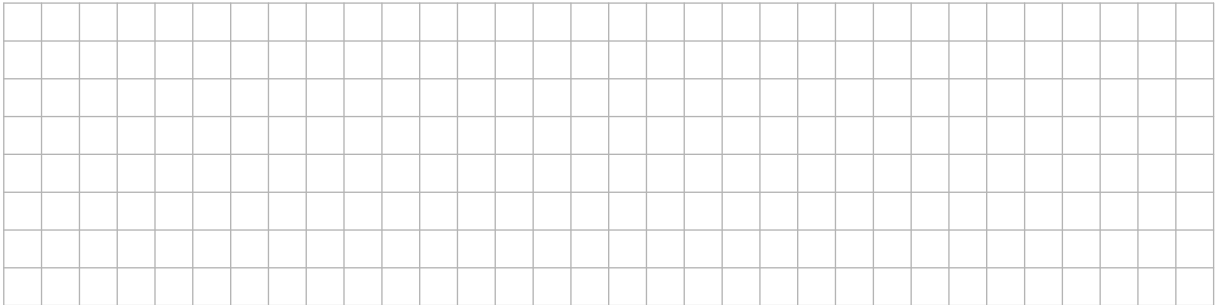
(e) Seán needs to make an accurate drawing of the flag at the top of the mast. The flag is a triangle with sides of length 7 cm, 7 cm, and 4 cm.
Construct this triangle accurately in the space below.

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