



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2017

Mathematics

Paper 2

Ordinary Level

Monday 12 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	
9	
Total	

Grade

Instructions

There are **two** sections in this examination paper.

Section A	Concepts and Skills	150 marks	6 questions
Section B	Contexts and Applications	150 marks	3 questions

Answer **all nine** questions.

Write your answers in the spaces provided in this booklet. You may lose marks if you do not do so. 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 *Formulae and Tables* booklet. You must return it at the end of the examination. You are not allowed to bring your own copy into the examination.

You will lose marks if you do not show all necessary work.

You may lose marks if you do not include appropriate units of measurement, where relevant.

You may lose marks if you do not give your answers in simplest form, where relevant.

Write the make and model of your calculator(s) here:

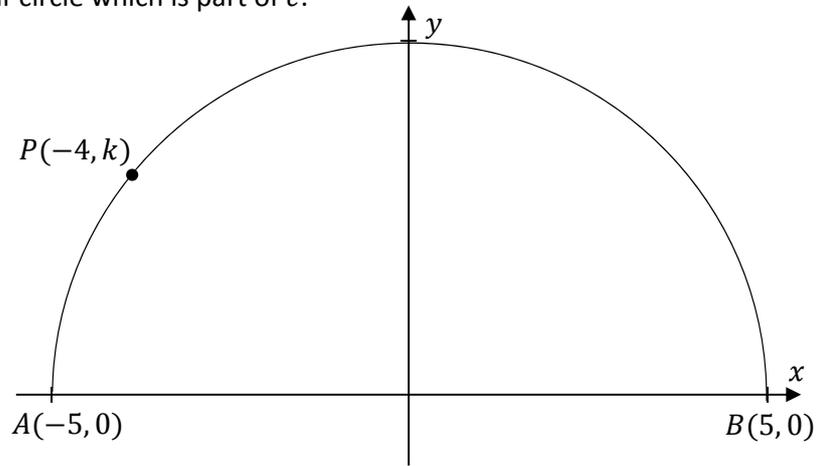
Question 2

(25 marks)

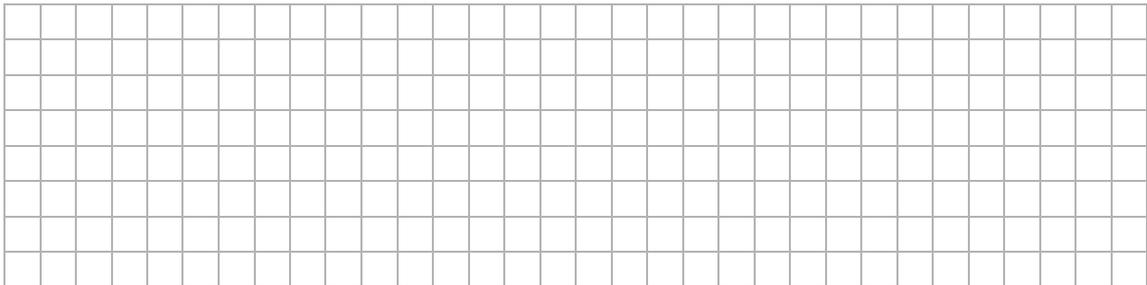
- (a) The circle c has centre $(0, 0)$ and radius 5 units. Write down the equation of c .

Equation of c : _____

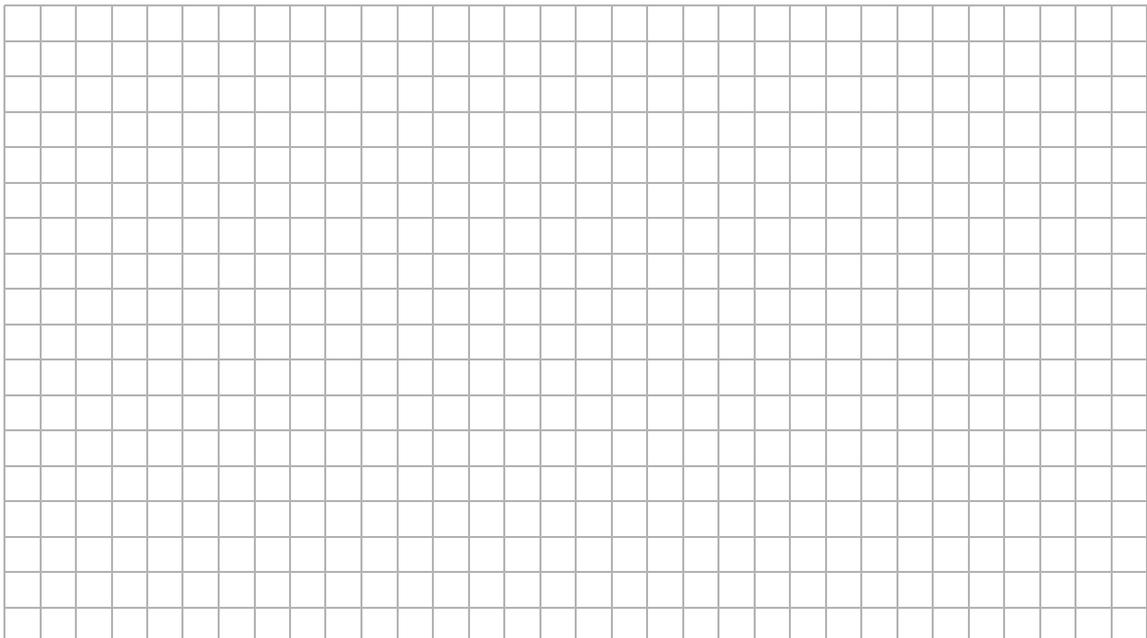
- (b) The diagram shows a semi-circle which is part of c .



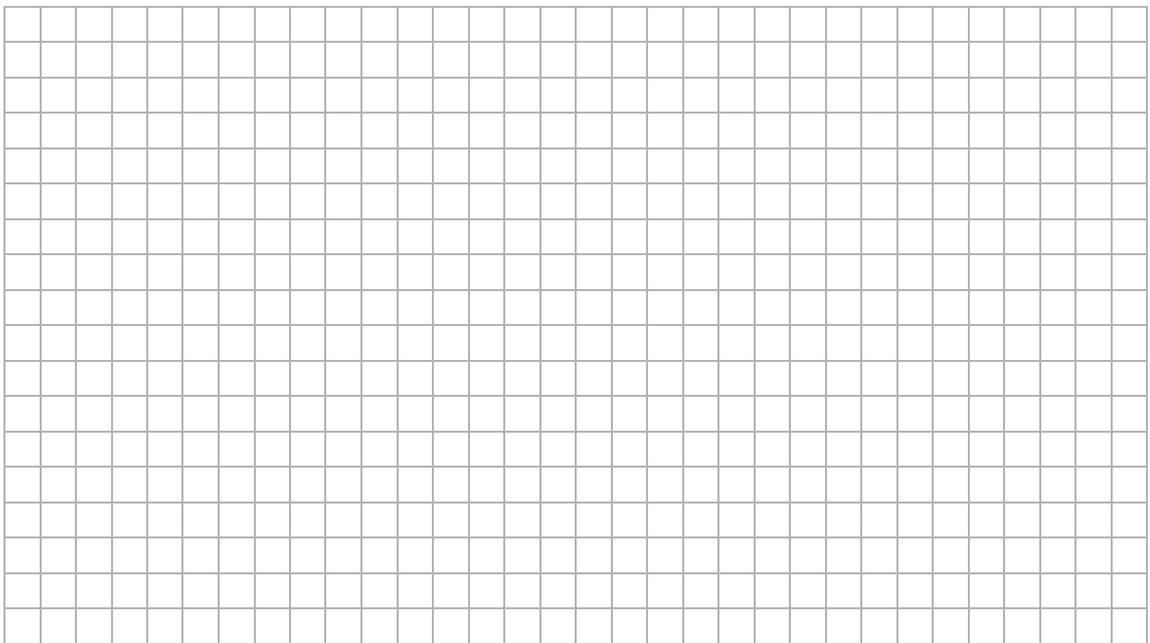
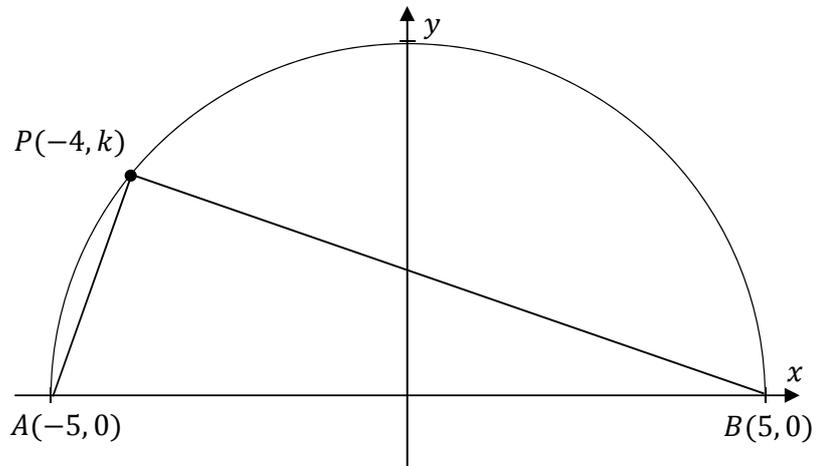
- (i) The point $P(-4, k)$, $k > 0$, is on the semi-circle. Find the value of k .



- (ii) Show that the triangle ABP is right-angled at P .



- (c) Find the area of the region which is inside the semi-circle but outside the triangle ABP .
Give your answer, in square units, correct to 2 decimal places.



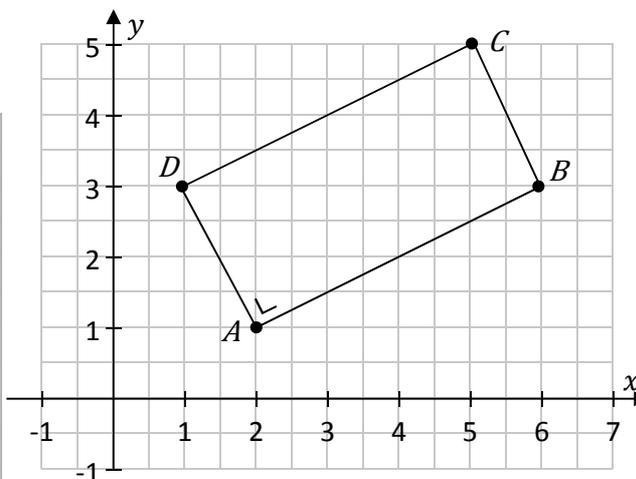
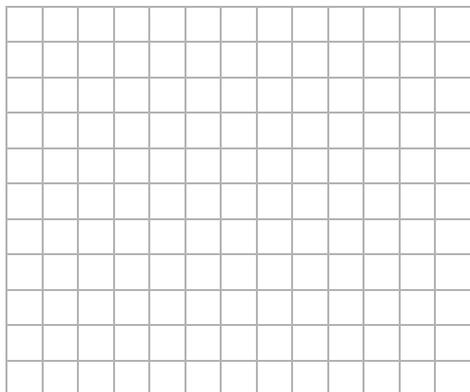
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Question 3

(25 marks)

- (a) The points $A(2, 1)$, $B(6, 3)$, $C(5, 5)$, and $D(1, 3)$ are the vertices of the rectangle $ABCD$ as shown.

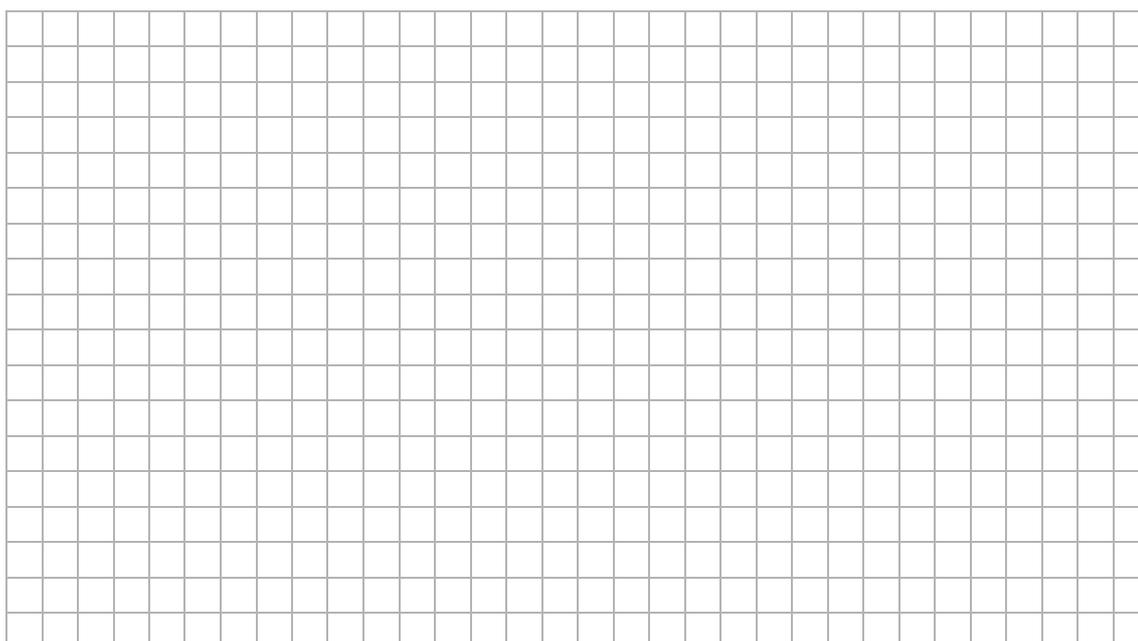
- (i) Show that $|AD| = \sqrt{5}$ units.



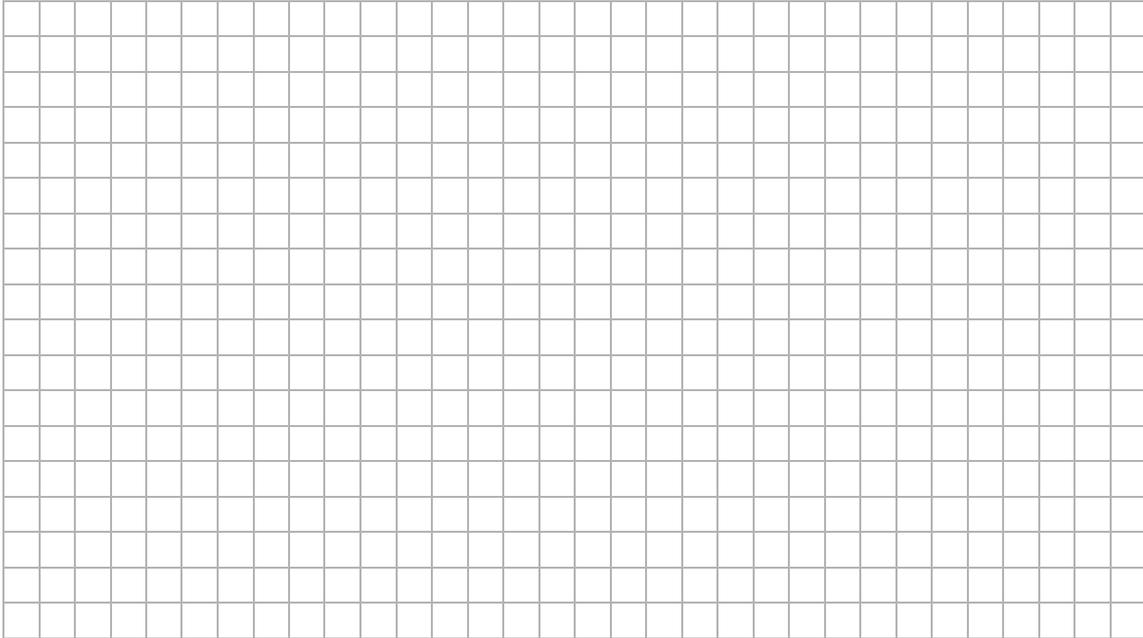
- (ii) Find, in square units, the area of the rectangle $ABCD$.



- (b) Find the equation of the line BC .
Give your answer in the form $ax + by + c = 0$, where a, b , and $c \in \mathbb{Z}$.



- (c) Use trigonometry to find the measure of the angle ABD .
Give your answer correct to the nearest degree.



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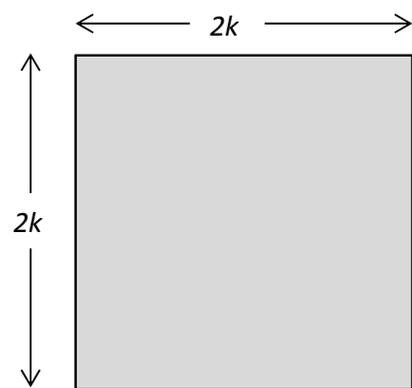
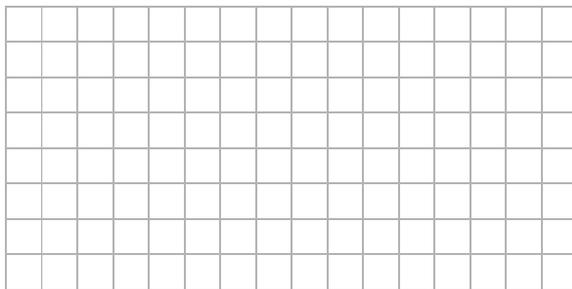
Question 4

(25 marks)

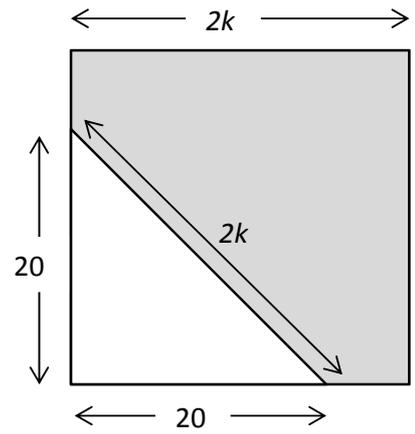
(a) Construct the triangle ABC , where $|AB| = 8$ cm, $|AC| = 5$ cm, and $|BC| = 7$ cm.

(b) The diagram shows a square of side length $2k$ cm.

(i) Write down, in terms of k , an expression for the area of the square.



- (ii) An isosceles triangle with side lengths of 20 cm and hypotenuse of length $2k$ cm is removed from the square, as shown.
Find the value of k (correct to 2 decimal places) **and** the area of the remaining (shaded) section.



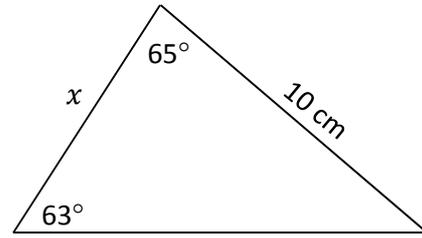
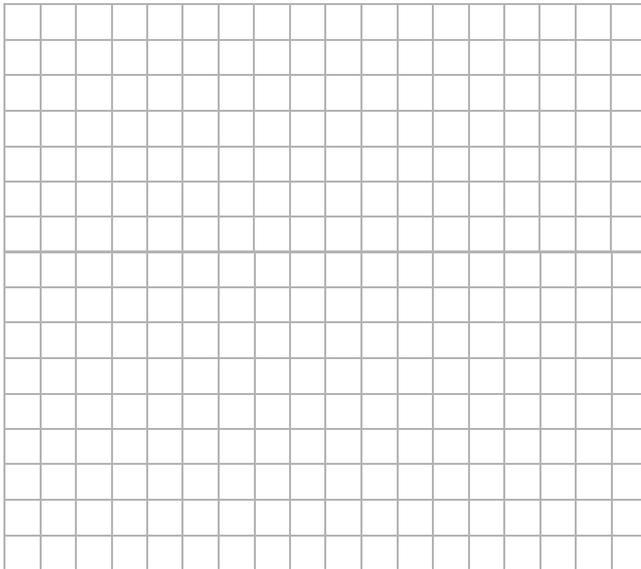
k :	Area of shaded section:

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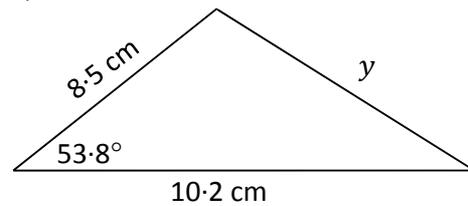
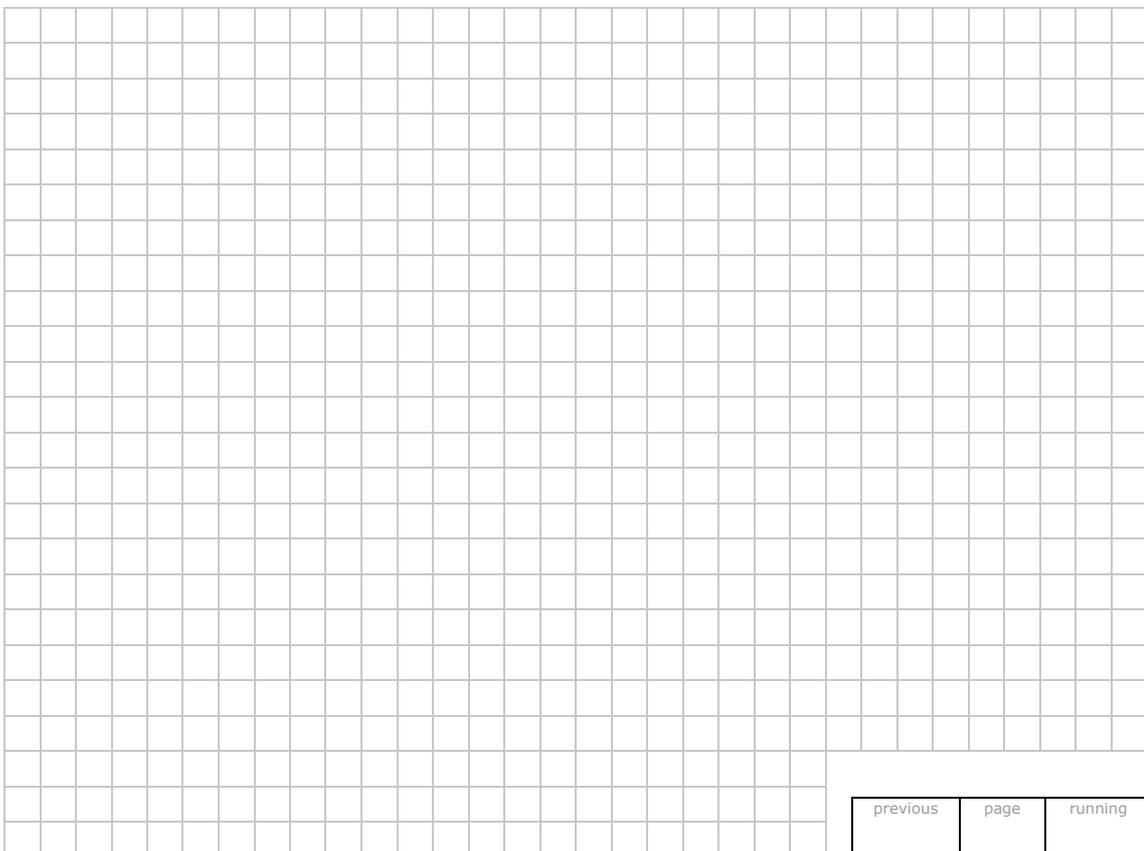
Question 6

(25 marks)

- (a) Find the distance x in the diagram below (not to scale).
Give your answer correct to 2 decimal places.

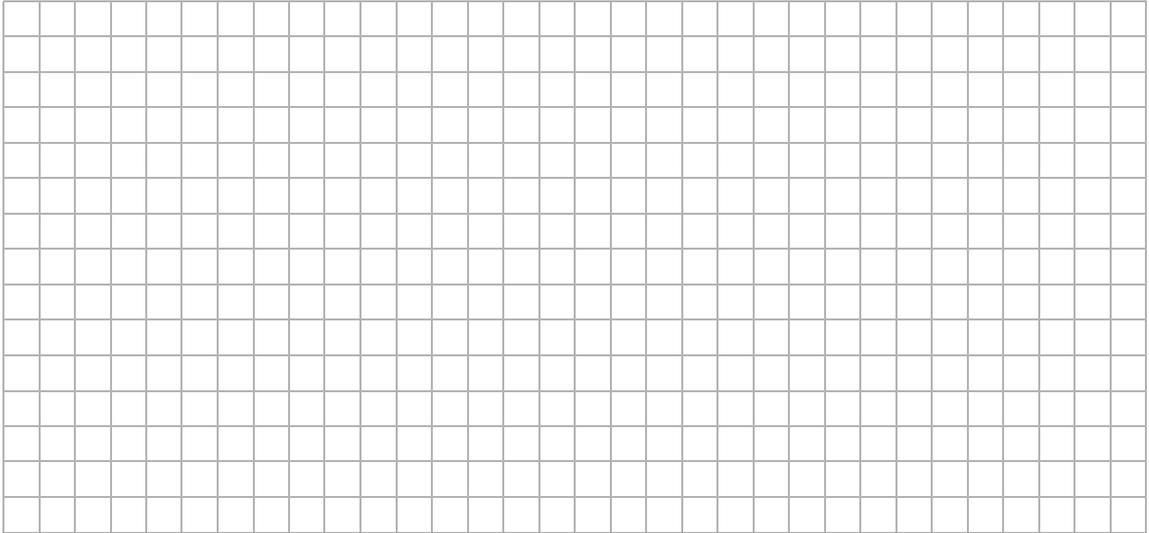


- (b) Find the distance y in the diagram below (not to scale).
Give your answer correct to 2 decimal places.

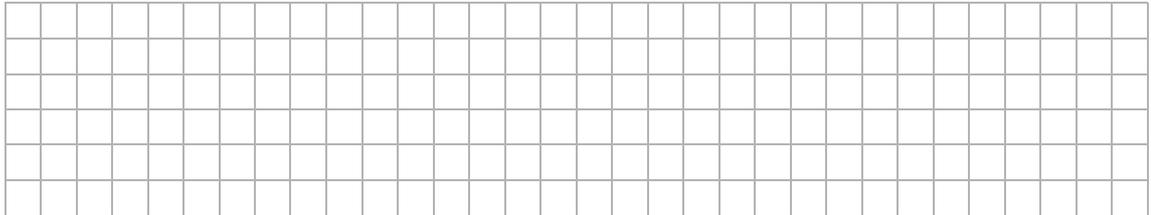


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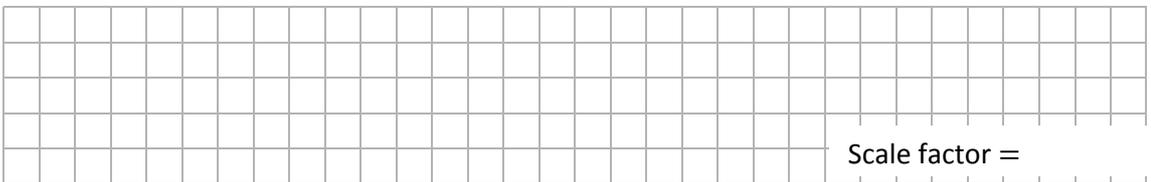
- (c) (i) Show that the area of the triangle CBA is 4 square units.



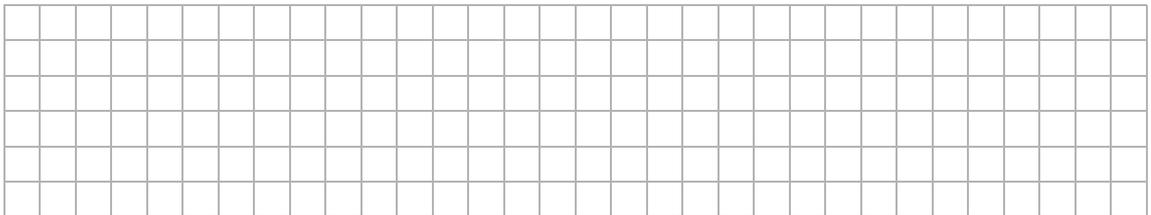
- (ii) Find $|AB|$, the distance from A to B .



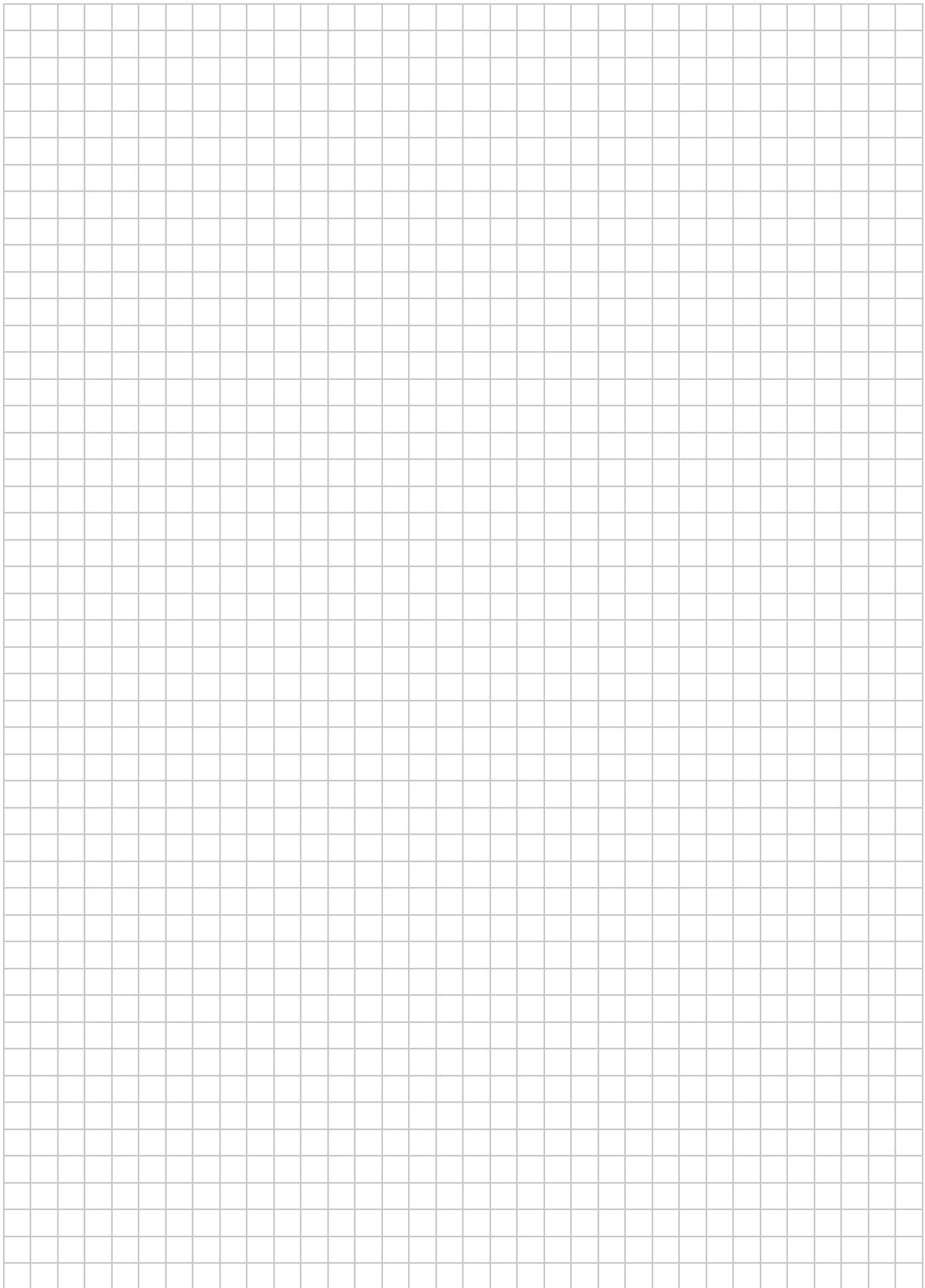
- (iii) The triangle CDE is an enlargement of the triangle CBA .
Given that $|DE| = 15$ units, find the scale factor of the enlargement.



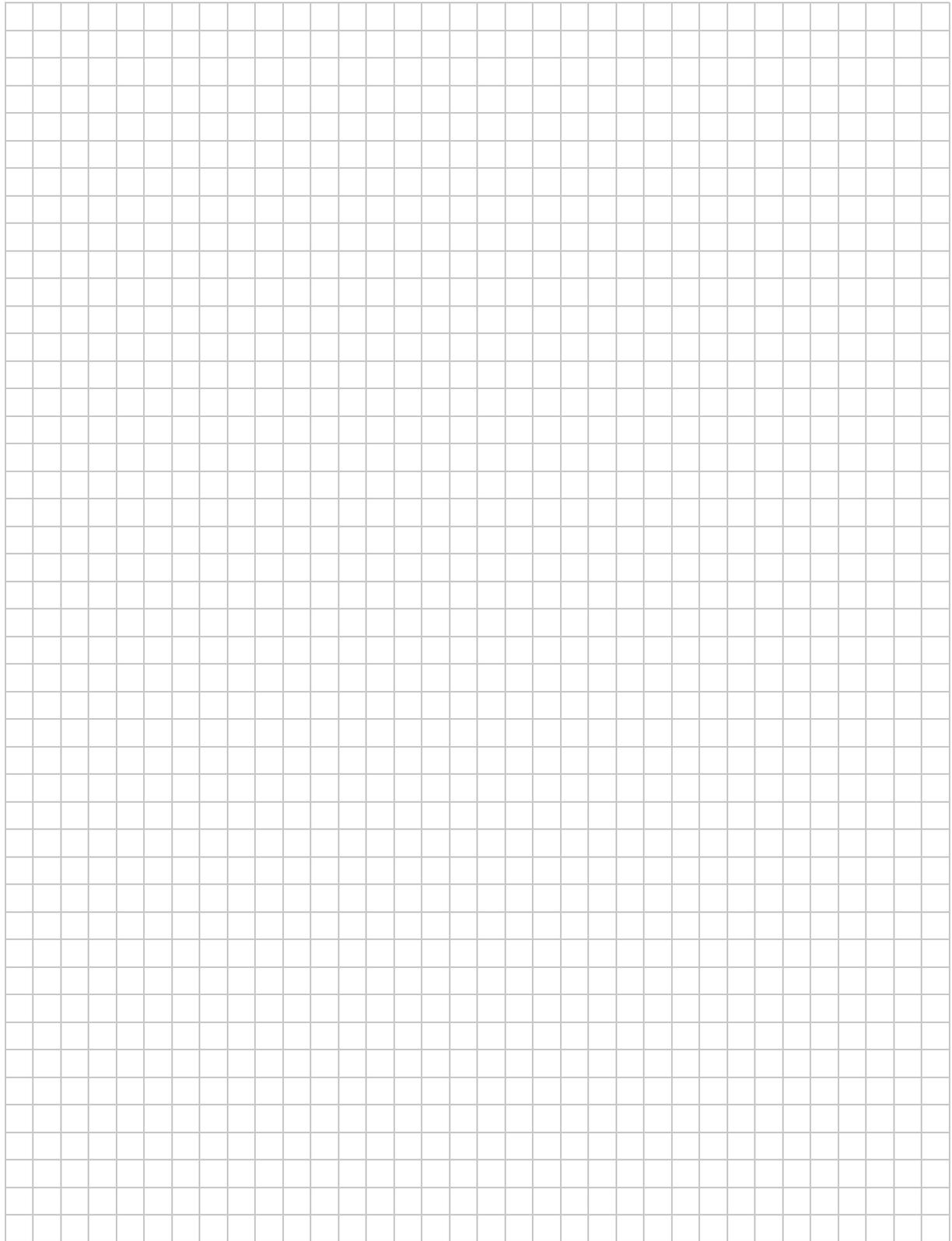
- (iv) Use this scale factor to find the area of the triangle CDE .



You may use this page for extra work.



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