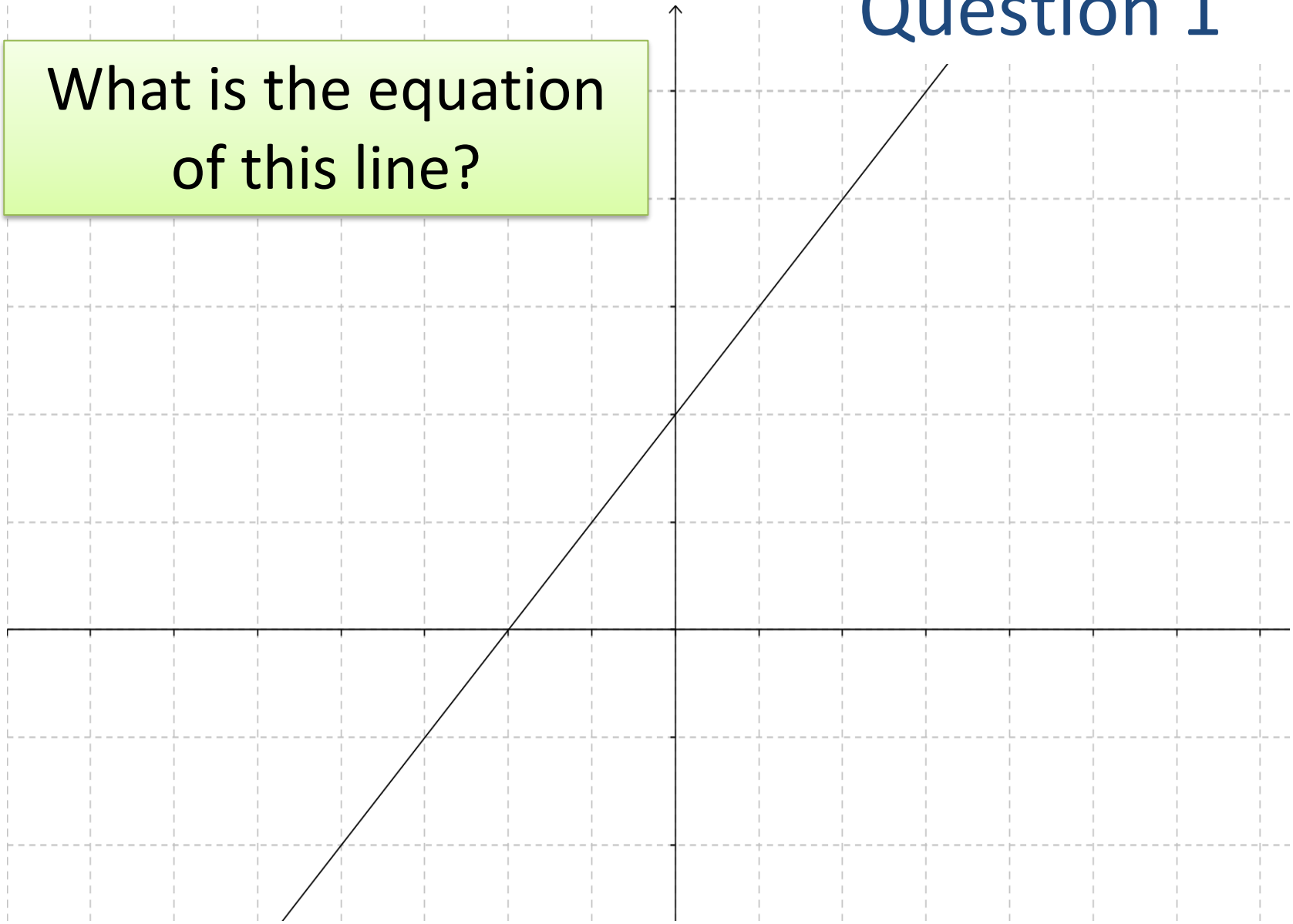
# Foundation Tier Problems

You will be presented with a series of diagrams taken from an exam paper.

Your task is to make up a possible question using the diagram and then answer it.

# Question 1

What is the equation of this line?



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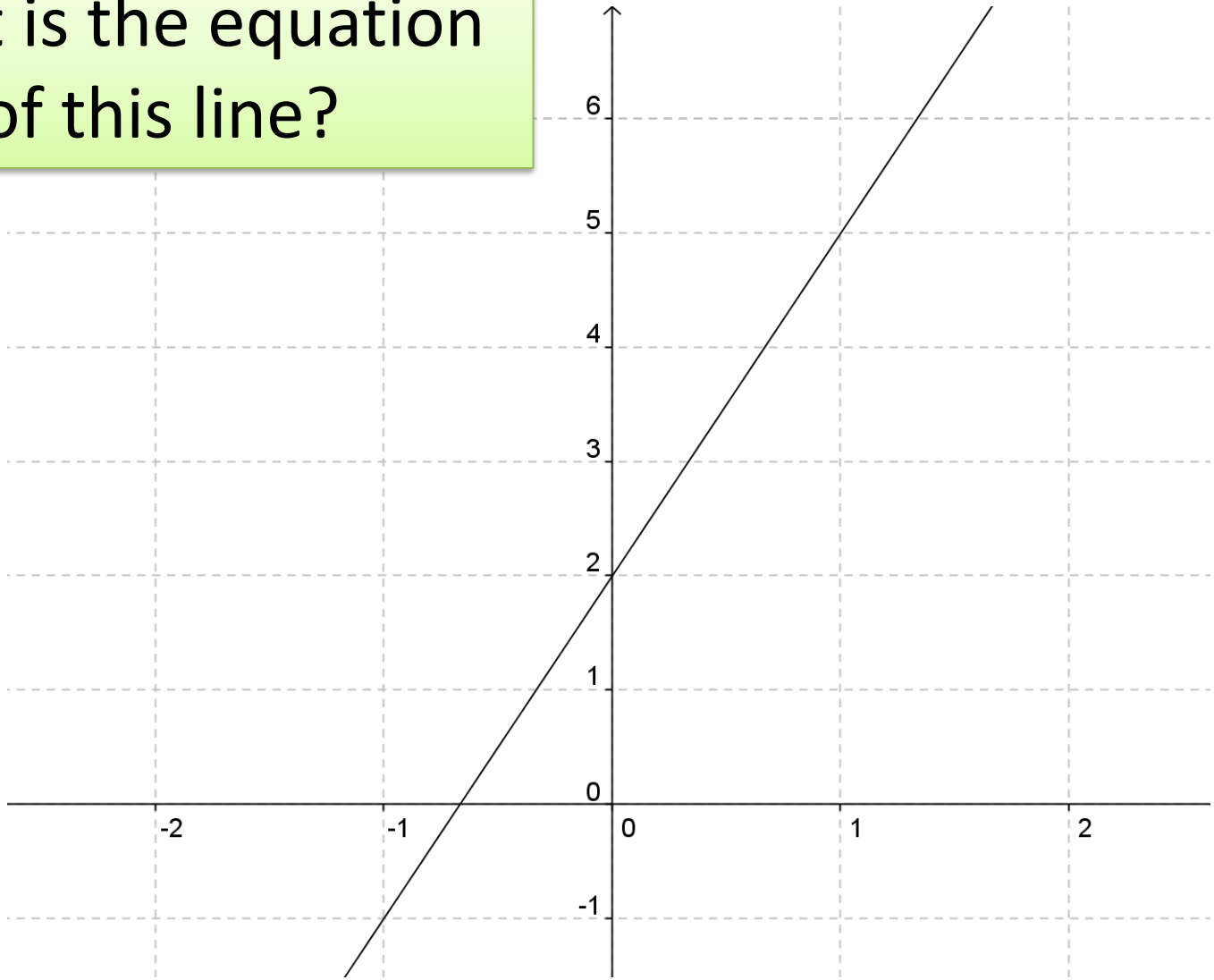
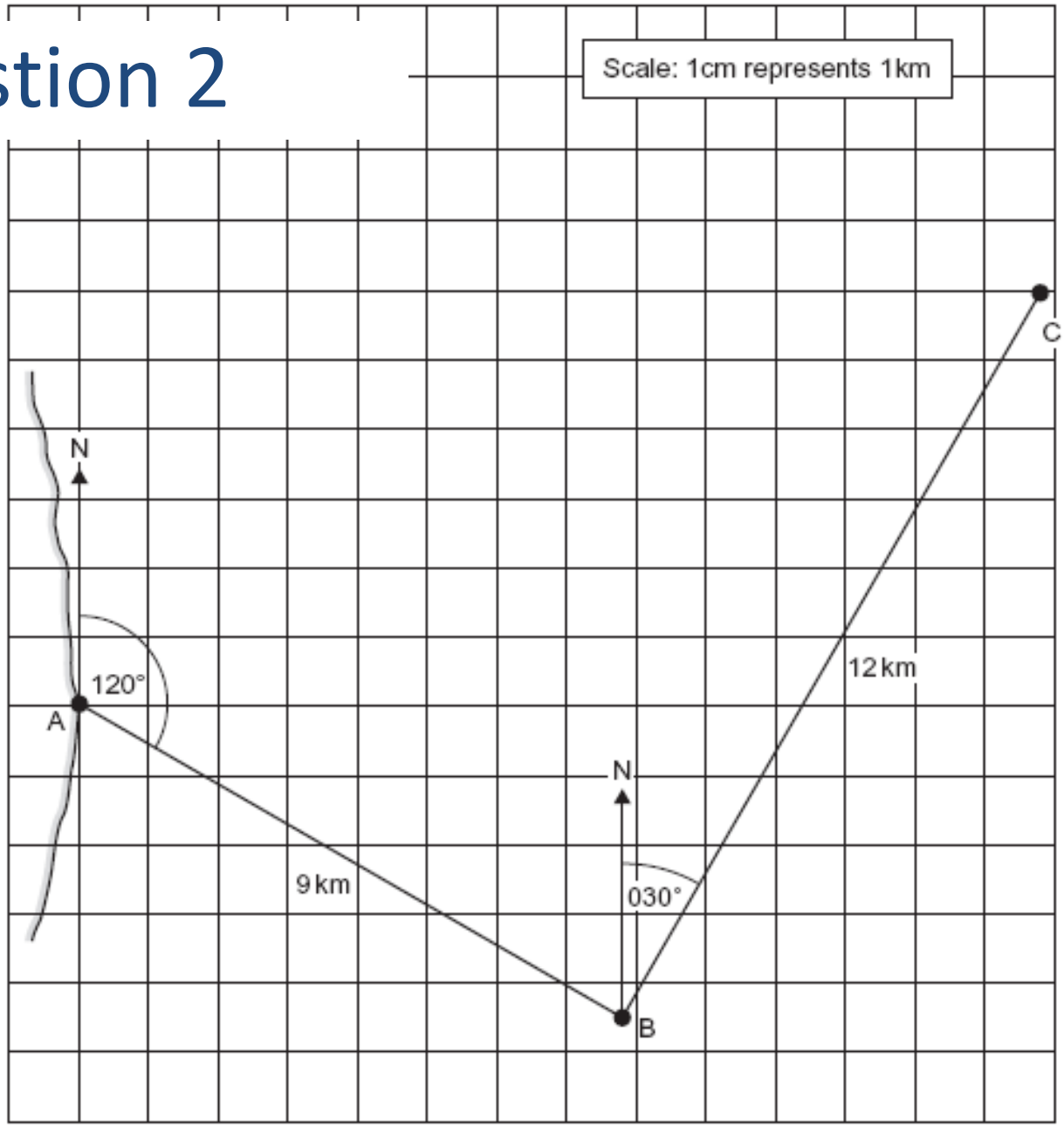


# Question 2

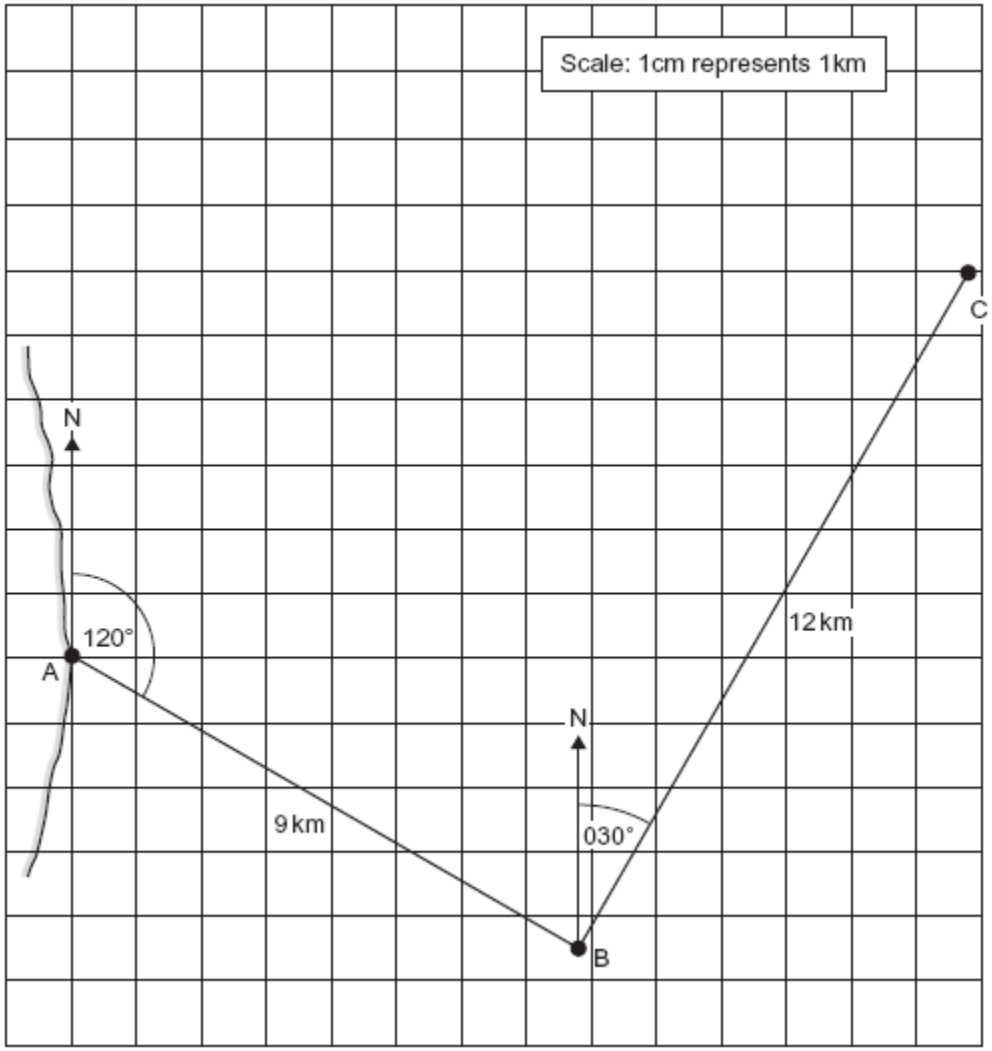


# Question 2

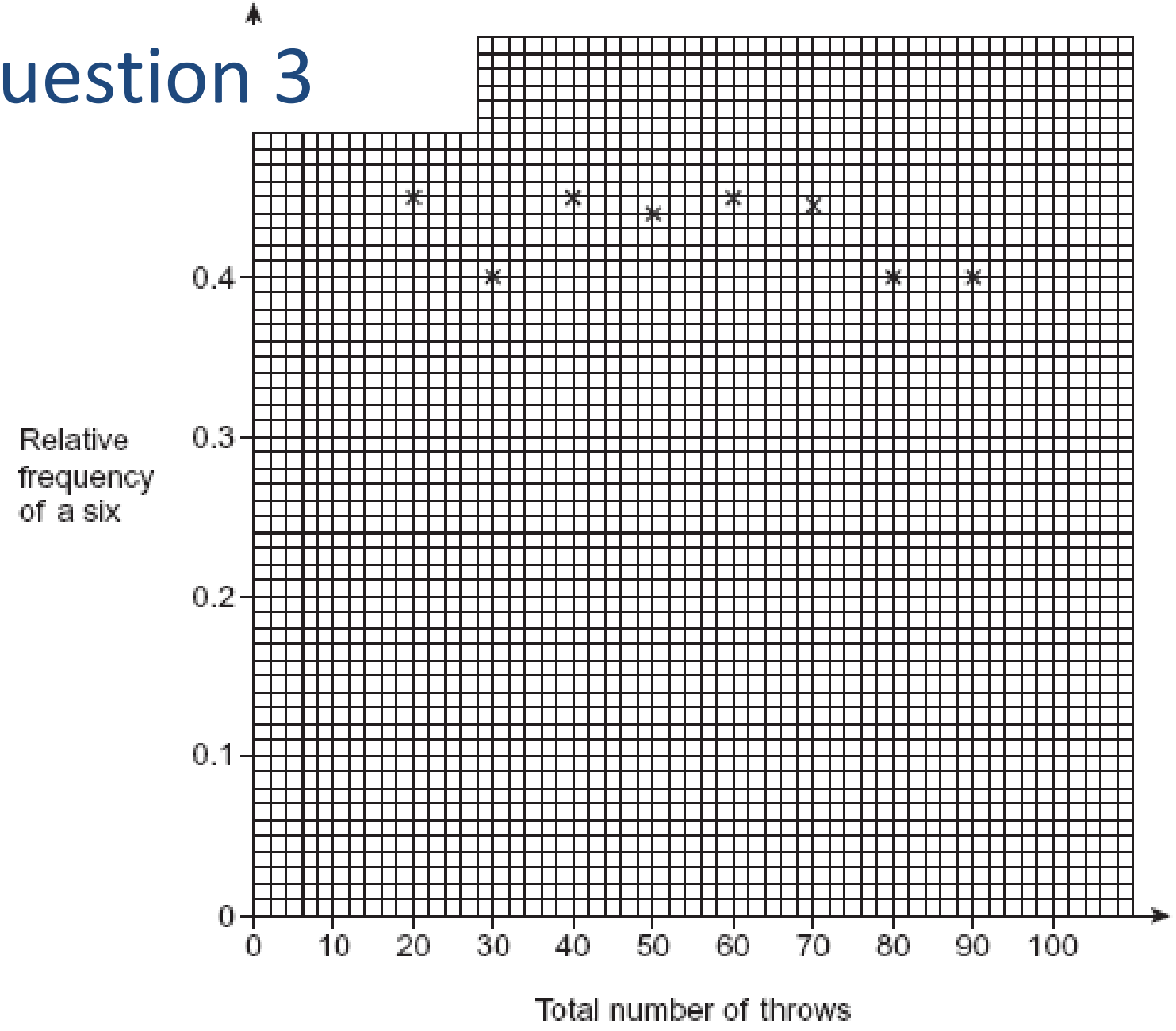
A ship leaves port A and travels 9 km on a bearing of 120° to point B. The ship then turns and travels 12 km on a bearing of 030° to point C. This journey is shown on the scale drawing below.

The ship then turns and travels directly back from C to A.

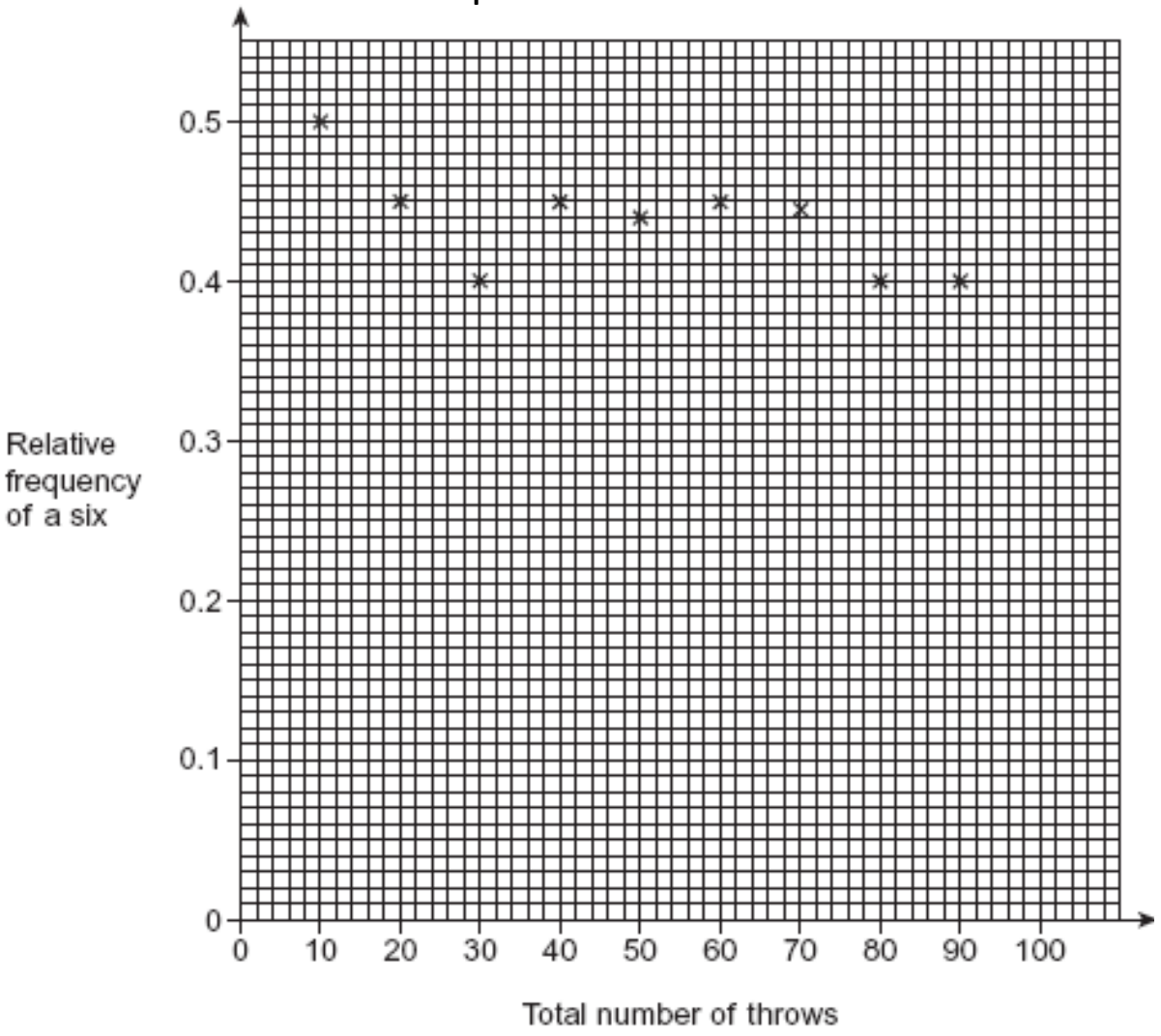
Use a ruler and protractor to work out the distance and bearing of the journey from C to A



# Question 3


Relative frequency of a six
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
60
70
80
90
100
Total number of throws

Mia makes a six-sided dice.
To test the dice she throws it 100 times.
After each 10 throws she records the number of sixes thrown.
The relative frequencies for the first 90 throws are shown on the graph.



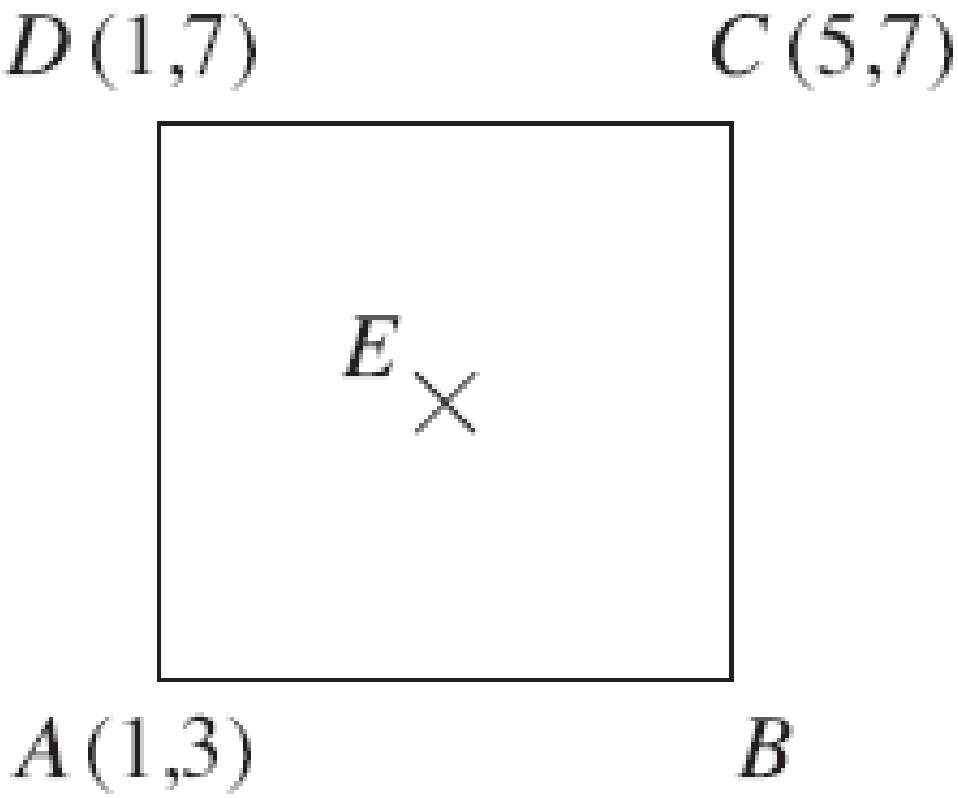

How many sixes were there in the first 10 throws?

After 100 throws there were 42 sixes.
Calculate and plot the relative frequency of a six after 100 throws.

How many sixes would you expect to get after 100 throws of a **fair** dice?

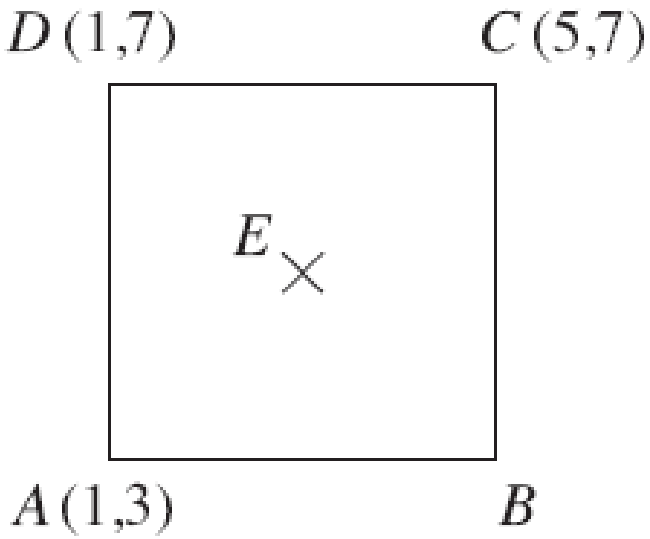
# Question 3

# Question 4



# Question 4

ABCD is a square with the line AB parallel to the x-axis



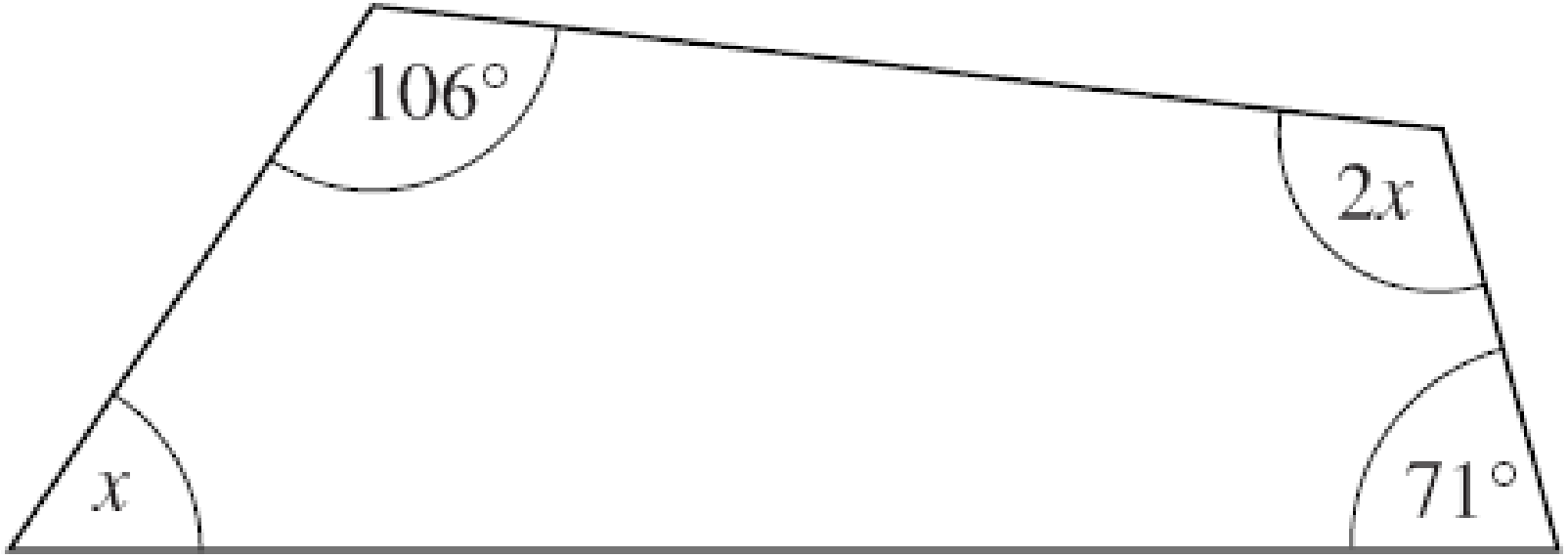

What are the coordinates of B

Work out the length of AD

What is the area of the square

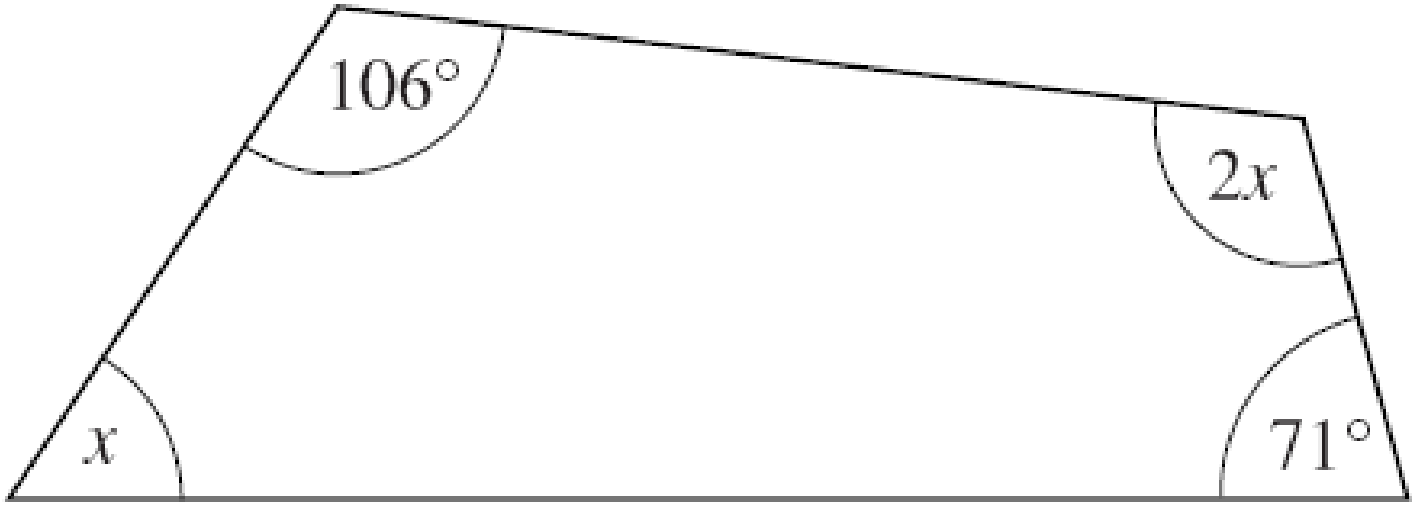
The centre of the square is E, what are the coordinates of E

# Question 5



# Question 5

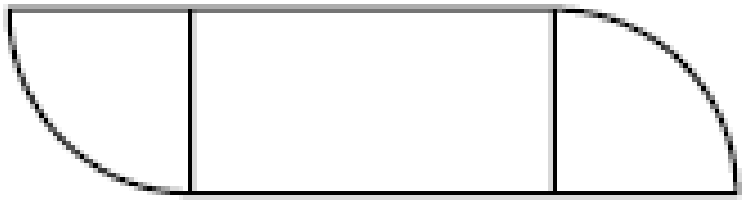
A quadrilateral has angles of $x°$, 71°, $2x°$ and 106




Calculate the value of $x$.

# Question 6

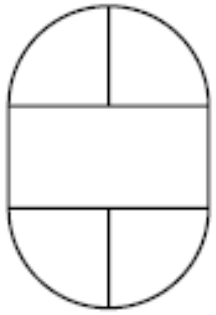
This shape



Has an area of $2Q + R$ $cm^2$

# Question 6

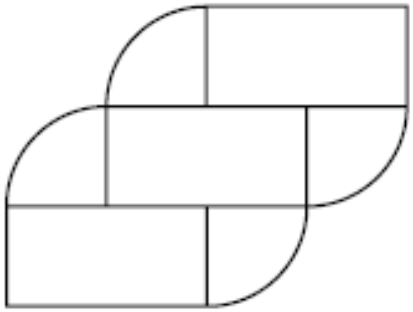
Shapes are made from quarter circles and rectangles.
For example



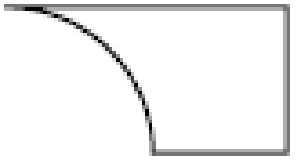
The area of a quarter circle is Q cm$^2$.
The area of a rectangle is R cm$^2$.

This shape  has an area of $2Q + R$ cm$^2$.

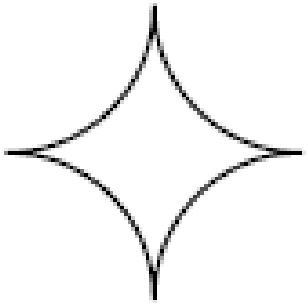
(a) Write down the area of this shape in terms of Q and R.



# Question 6

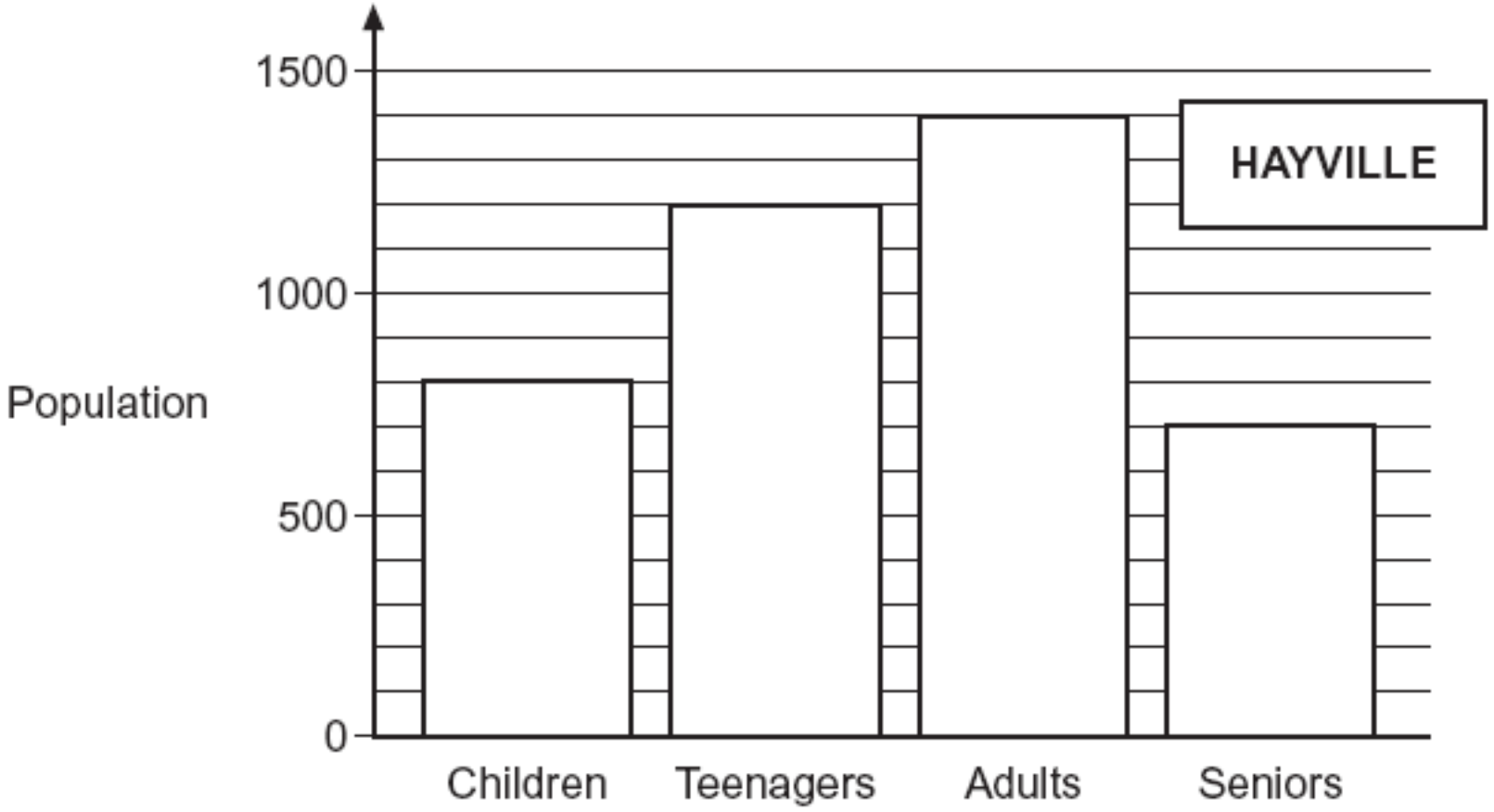
This shape  has an area of $R - Q\,cm^2$.

Write down the area of this shape in terms of Q and R.



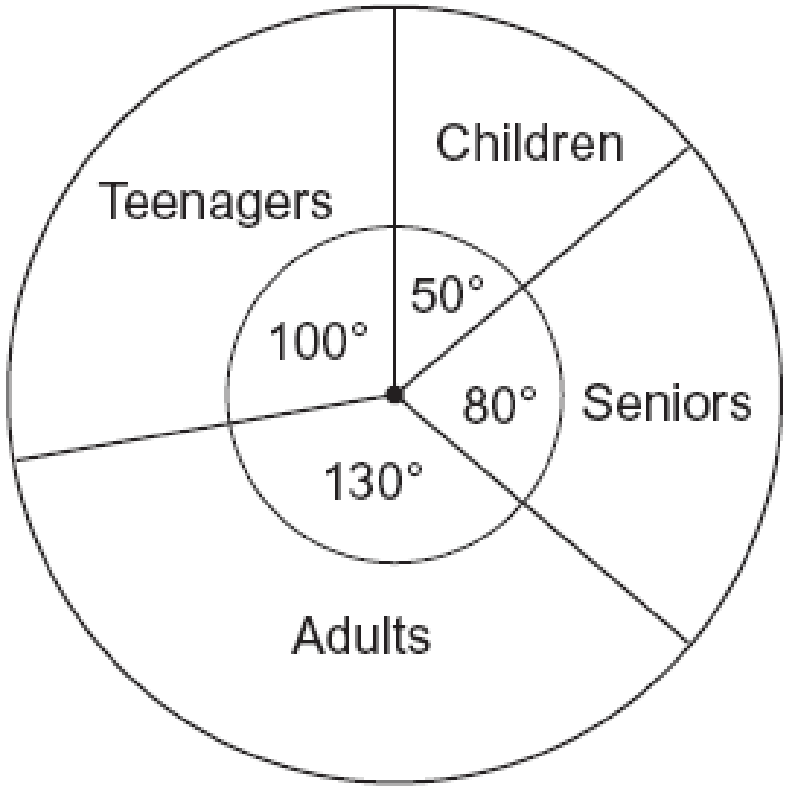
# Question 7

The bar chart shows a breakdown of the population of Hayville.



# Question 7

**DEETOWN**



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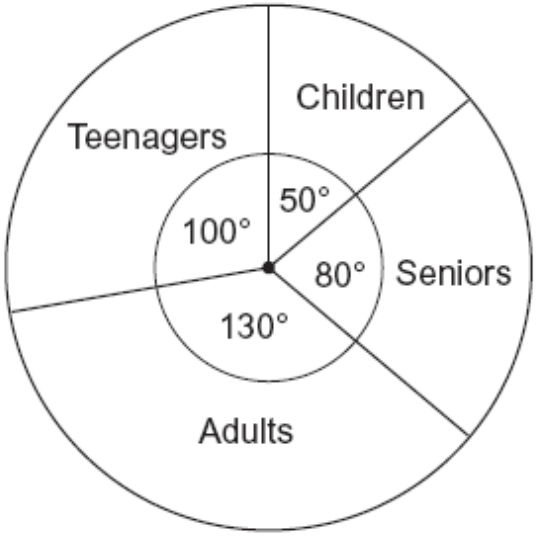


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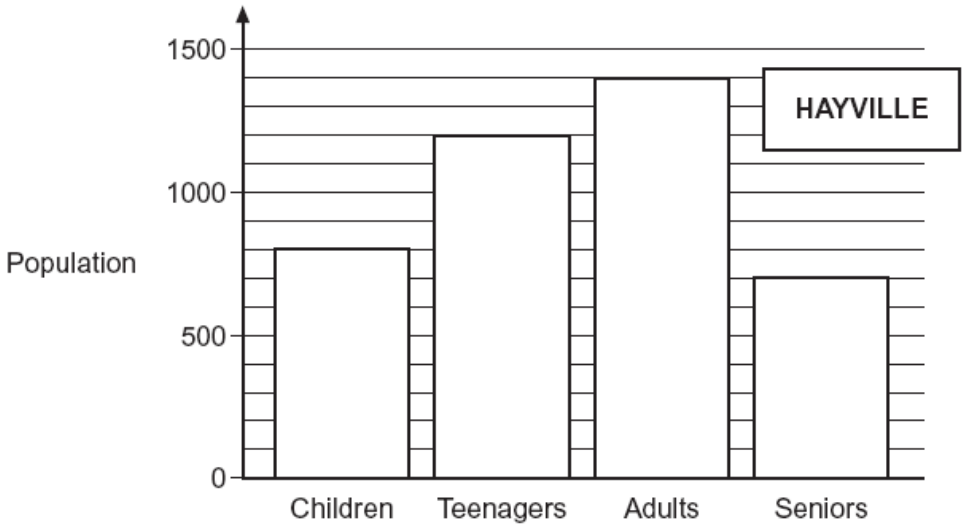
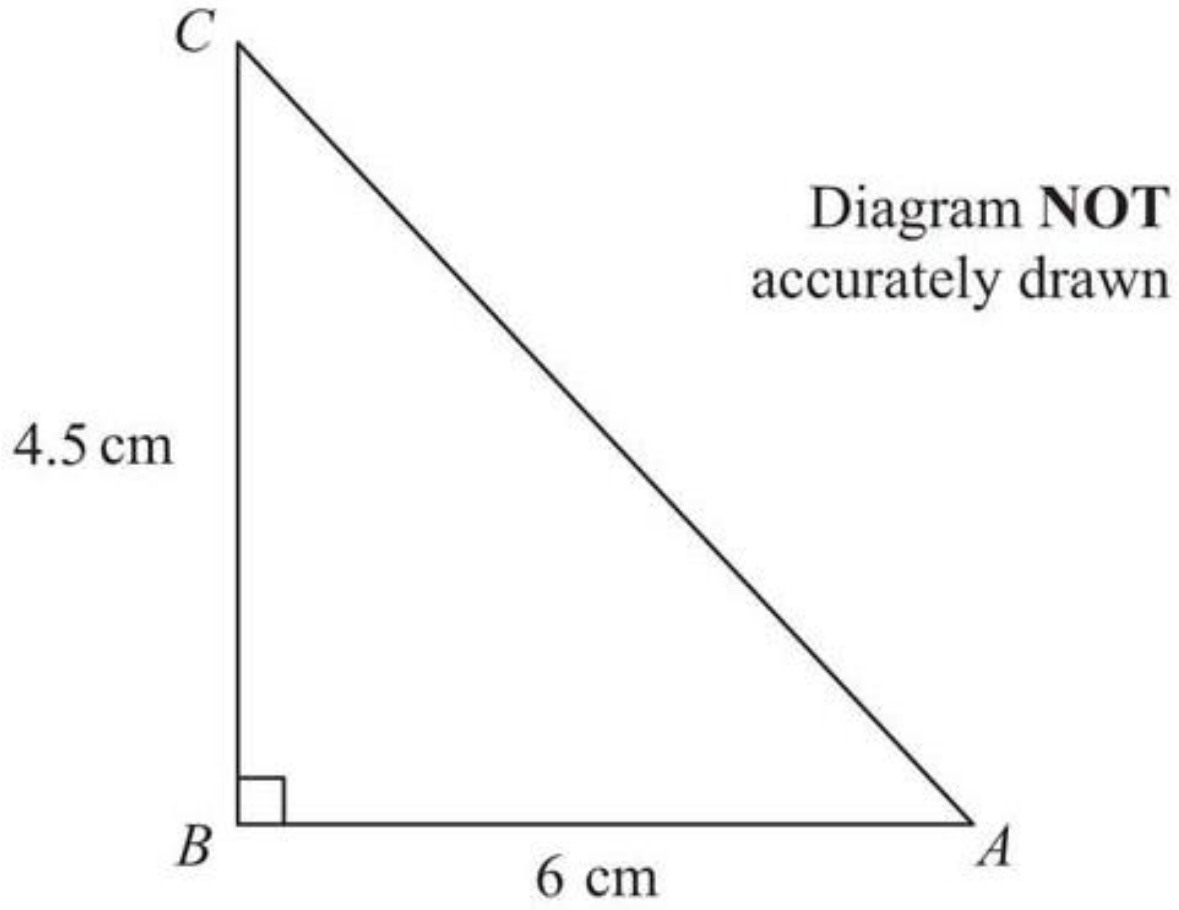


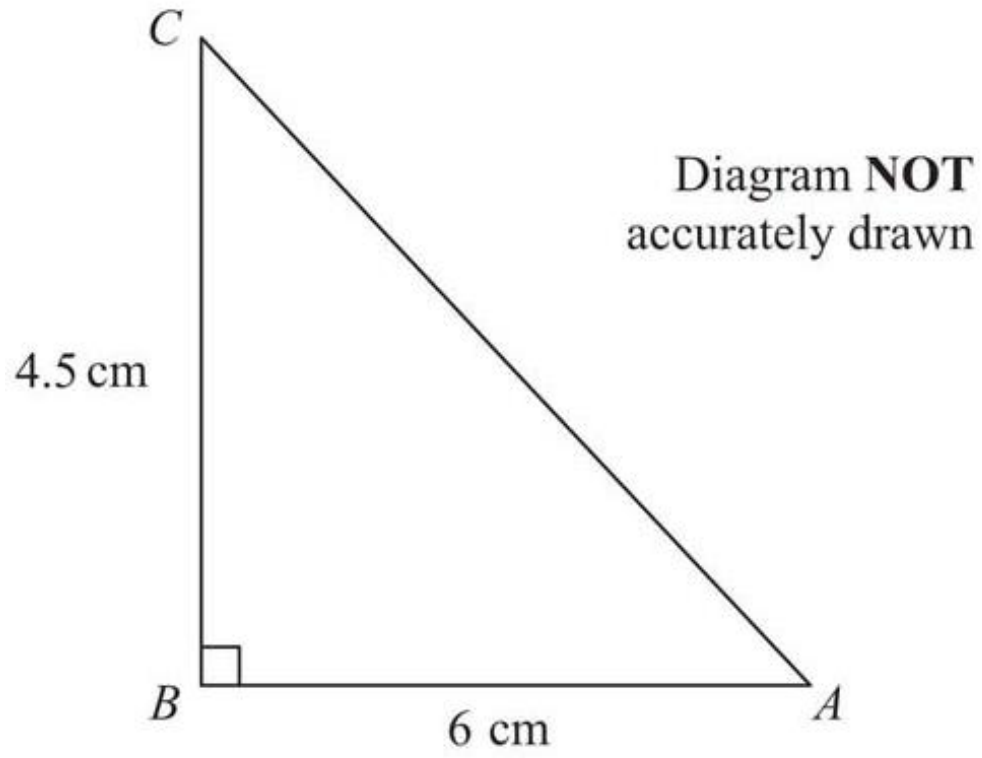

There are twice as many people in Deetown as there are in Hayville

Work out how many adults there are in Deetown

# Question 8



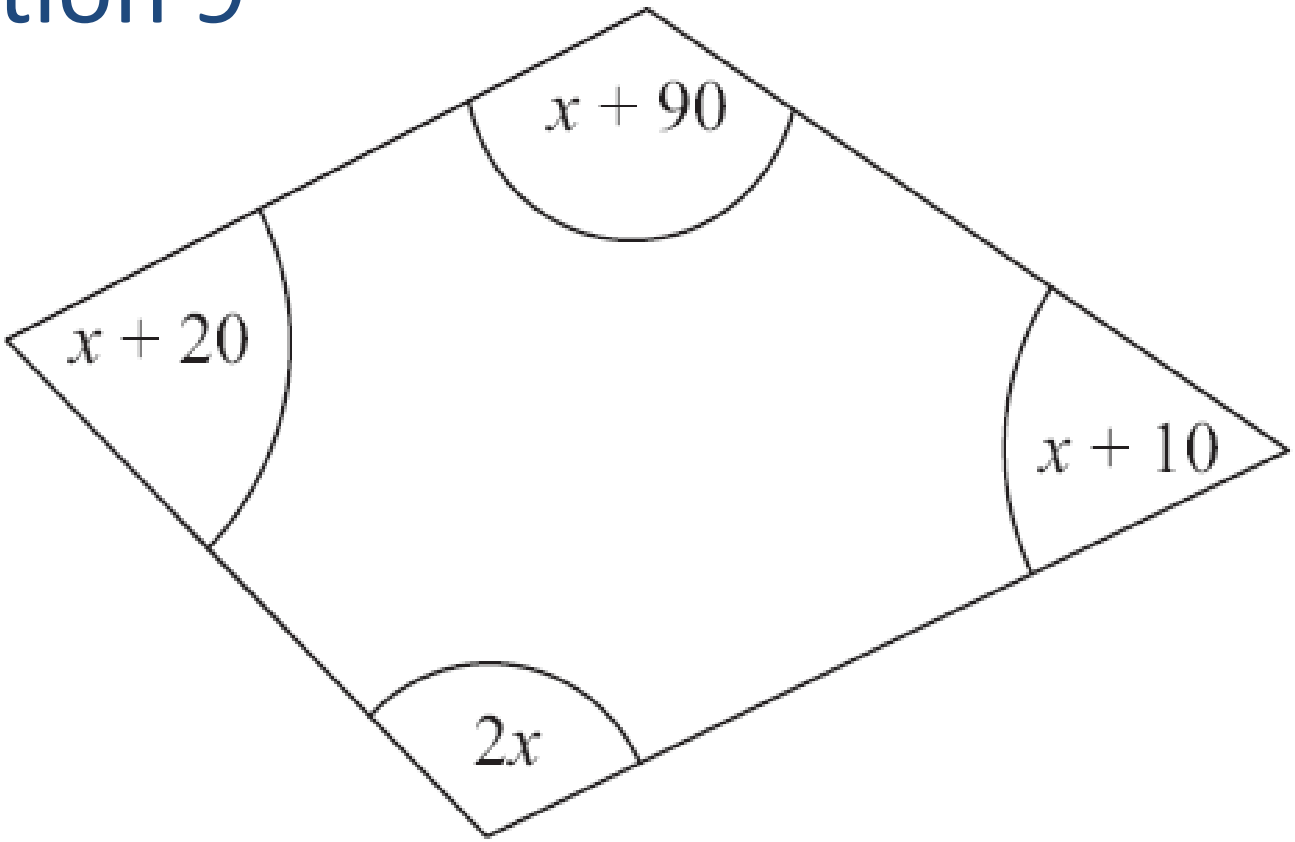
# Question 8




The sides $AB$ and $BC$ are each measured, correct to the nearest millimetre.

(i) Write down the **least** possible length of the side $AB$.

# Question 9



# Question 9

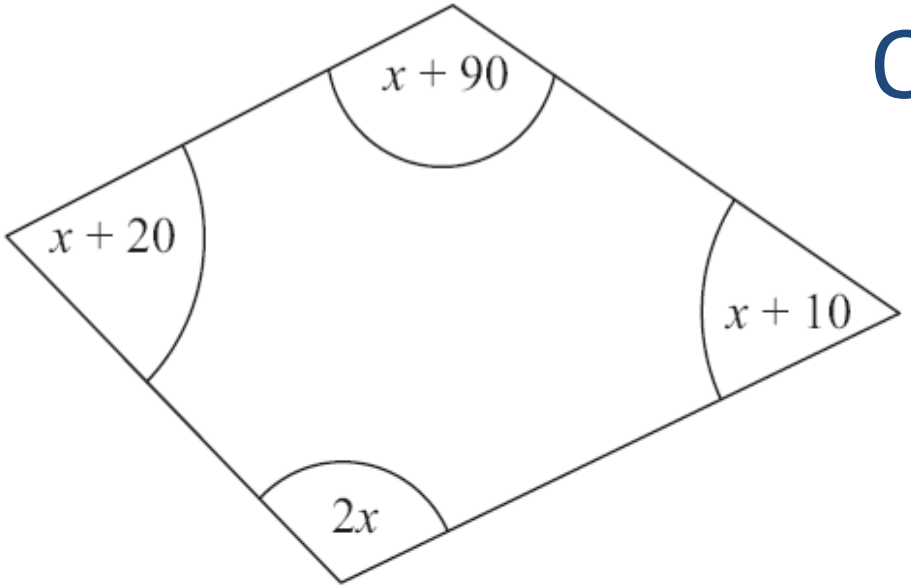



Diagram **NOT** accurately drawn

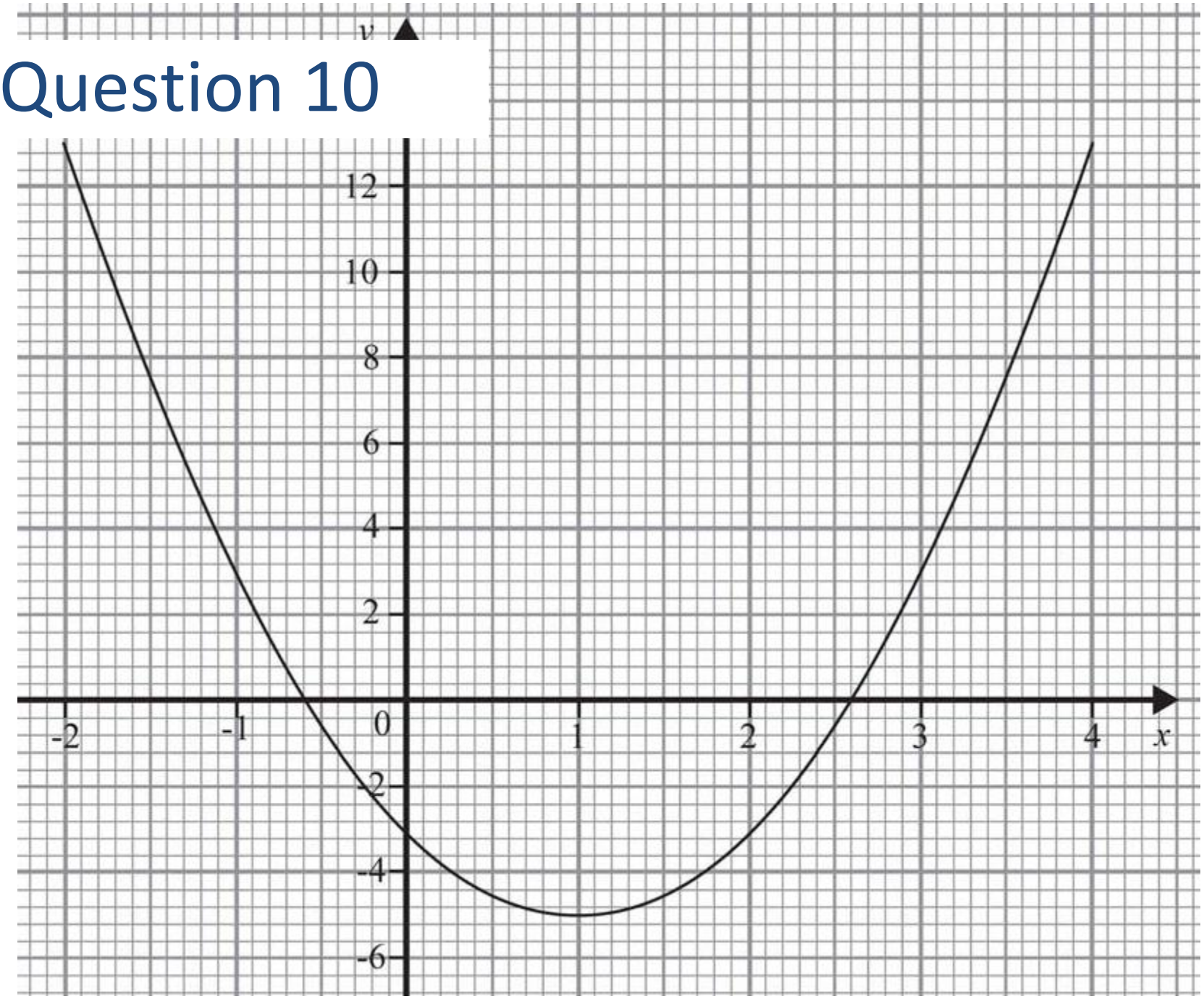
The sizes of the angles, in degrees, of the quadrilateral are

$x + 10$
$2x$
$x + 90$
$x + 20$

(a) Use this information to write down an equation in terms of $x$.

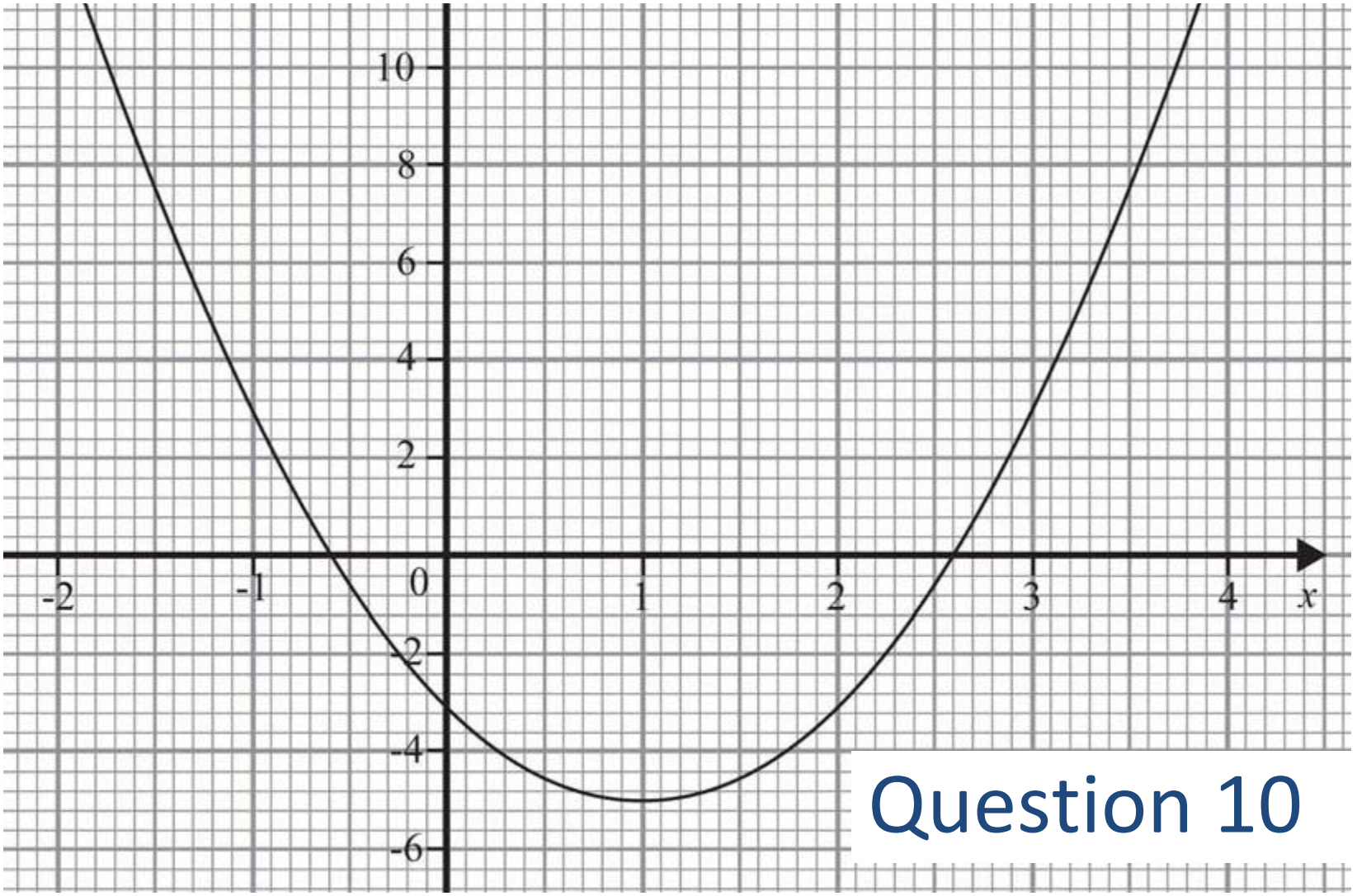
(b) Use your answer to part (a) to work out the size of the smallest angle of the quadrilateral.

# Question 10



The diagram shows the graph of the equation $y = 2x^2 - 4x - 3$

Use the graph to find the approximate values of $x$ when $2x^2 - 4x - 3 = 0$




# Question 10