

# GCSE MATHEMATICS

Topic tests - Higher tier – Problem solving

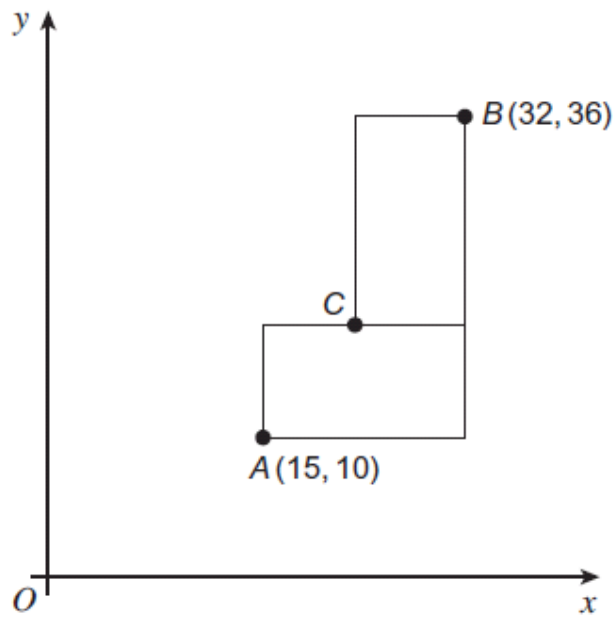
Name \_\_\_\_\_



1 The diagram shows two **identical** rectangles.

The rectangles have their sides parallel to the axes.

Not drawn accurately



Work out the coordinates of point C.

[4 marks]

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Answer ( \_\_\_\_\_, \_\_\_\_\_ )



3 Given that  $\frac{2^{3x}}{2^{(x-5)}} = 2^{17}$

Work out the value of  $x$ .

[3 marks]

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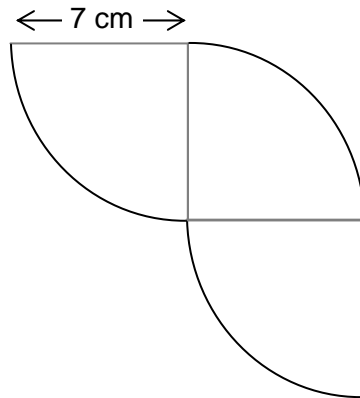
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$x =$  \_\_\_\_\_

4 This shape is made from identical quarter circles.



Not drawn accurately

Work out the perimeter of the shape.

**[4 marks]**

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Answer \_\_\_\_\_ cm

5

$n$  is a positive integer.

$n \times 10^n$  is a square number.

What is the lowest possible value of  $n$ ?

You **must** show your working.

[2 marks]

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$n =$  \_\_\_\_\_

6  $n$  is an integer.

Show that  $\frac{n(n-1)}{2} + \frac{n(n+1)}{2}$  is a square number.

[3 marks]

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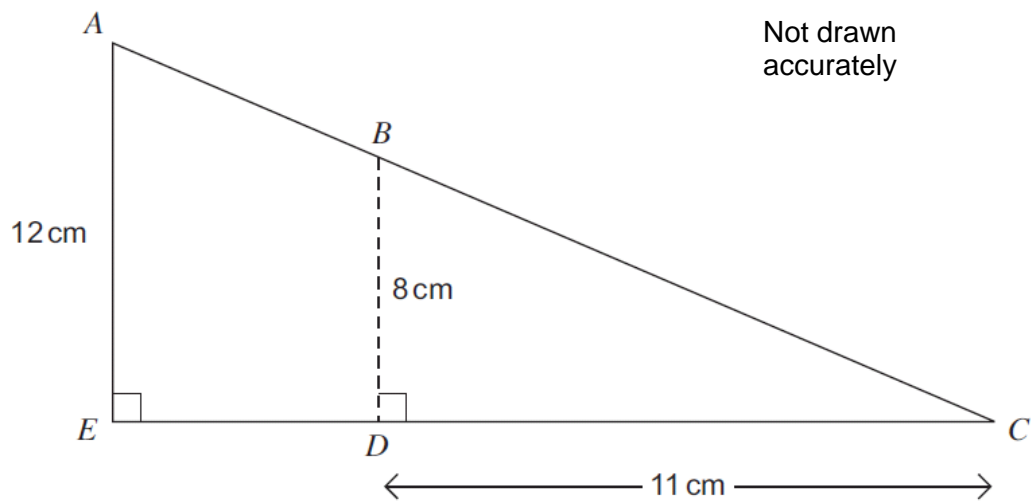
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7 The diagram shows a triangle cut into a smaller triangle and trapezium.



Work out the area of the trapezium *ABDE*.

[5 marks]

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Answer \_\_\_\_\_  $\text{cm}^2$

**END OF QUESTIONS**