

21 The line  $y = x + 1$  intersects the curve  $y = x^2 + x - 3$  at two points.

Find the coordinates of the two points.

( ..... , ..... )

( ..... , ..... ) [4]

18 Solve the simultaneous equations.

You must show all your working.

$$y = x^2 - 9x + 21$$

$$y = 2x - 3$$

$x = \dots\dots\dots y = \dots\dots\dots$

$x = \dots\dots\dots y = \dots\dots\dots$  [5]

27 The line  $y = x + 1$  intersects the graph of  $y = x^2 - 3x - 11$  at the points  $A$  and  $B$ .

Find the coordinates of  $A$  and the coordinates of  $B$ .

You must show all your working.

$A$  ( ..... , ..... )

$B$  ( ..... , ..... ) [4]

(b)  $y = 2 - x$   
 $y = x^2 + 2x + 2$

$x = \dots\dots\dots y = \dots\dots\dots$

$x = \dots\dots\dots y = \dots\dots\dots$  [4]

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- 22 Solve the simultaneous equations.  
You must show all your working.

$$y = x^2 - 3x - 13$$

$$y = x - 1$$

$$x = \dots\dots\dots, y = \dots\dots\dots$$

$$x = \dots\dots\dots, y = \dots\dots\dots [5]$$

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24 The line  $y = 7x + 3$  intersects the curve  $y = x^2 + 5x - 12$  at the points  $A$  and  $B$ .

Find the coordinates of  $A$  and  $B$ .

$A$  ( ..... , ..... )

$B$  ( ..... , ..... )

[5]

(b) The graphs of  $y + 5x = 8$  and  $y = 2x^2 + 6x - 13$  intersect at the points  $P$  and  $Q$ .

Find the coordinates of  $P$  and the coordinates of  $Q$ .  
Show all your working.

$P$  ( ..... , ..... )

$Q$  ( ..... , ..... ) [6]

24 The straight line  $y = 2x + 1$  intersects the curve  $y = x^2 + 3x - 4$  at the points  $A$  and  $B$ .

Find the coordinates of  $A$  and  $B$ .

Give your answers correct to 2 decimal places.

$A$  ( ..... , ..... )

$B$  ( ..... , ..... )

[6]

22 The line  $y = 4x + 12$  intersects the curve  $y = 2x^2 - x - 3$  at point  $P$  and point  $Q$ .

Find the coordinates of  $P$  and  $Q$ .

You must show all your working and give your answers correct to 2 decimal places.

(.....,.....)

(.....,.....)

[6]

19 Find the values of  $x$  when  $6x + y = 10$  and  $y = x^2 - 3x + 10$ .

$x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [3]

19 Solve the simultaneous equations.  
You must show all your working.

$$\begin{aligned}x - y &= 7 \\x^2 + y &= 149\end{aligned}$$

$x = \dots\dots\dots$   $y = \dots\dots\dots$

$x = \dots\dots\dots$   $y = \dots\dots\dots$  [5]

- 20 Solve the simultaneous equations.  
You must show all your working.

$$3x + y = 11$$

$$x^2 - 2y = 18$$

$x = \dots\dots\dots y = \dots\dots\dots$

$x = \dots\dots\dots y = \dots\dots\dots$  [5]

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- (d) Solve the simultaneous equations.  
You must show all your working.

$$x + 2y = 12$$

$$5x + y^2 = 39$$

$$x = \dots\dots\dots y = \dots\dots\dots$$

$$x = \dots\dots\dots y = \dots\dots\dots [5]$$

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- (b) Solve the simultaneous equations.  
You must show all your working.

$$\begin{aligned}x^2 + 4y &= 37 \\ 5x + y &= -8\end{aligned}$$

$x = \dots\dots\dots, y = \dots\dots\dots$

$x = \dots\dots\dots, y = \dots\dots\dots$  [5]

- 22 Find the coordinates of the point where the line  $4x + y = 9$  intersects the curve  $y + x^2 = 5$ .  
You must show all your working.

$(\dots\dots\dots, \dots\dots\dots)$  [5]

(ii) The graphs of  $y = (x-1)^2$  and  $y = \frac{1}{2}x + 1$  intersect at  $A$  and  $B$ .

Find the length of  $AB$ .

$AB = \dots\dots\dots$  [7]

20 The curve  $y = x^2 - 2x + 1$  is drawn on a grid.  
A line is drawn on the same grid.  
The points of intersection of the line and the curve are used to solve the equation  $x^2 - 7x + 5 = 0$ .

Find the equation of the line in the form  $y = mx + c$ .

$y = \dots\dots\dots$  [1]

- (c) Solve the simultaneous equations.  
You must show all your working and give your answers correct to 2 decimal places.

$$2x + y = 7$$

$$y = 5x^2 + 2x - 13$$

$$x = \dots\dots\dots, y = \dots\dots\dots$$

$$x = \dots\dots\dots, y = \dots\dots\dots \quad [6]$$

- 16 Solve the simultaneous equations.  
You must show all your working.

$$x = 7 - 3y$$
$$x^2 - y^2 = 39$$

$x = \dots\dots\dots y = \dots\dots\dots$

$x = \dots\dots\dots y = \dots\dots\dots$  [6]

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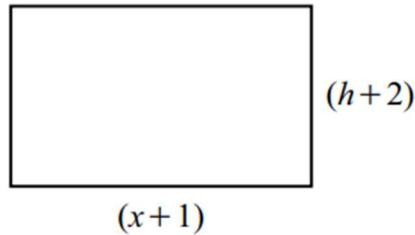
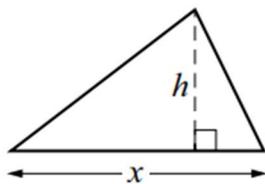
- (c) Solve the simultaneous equations.  
You must show all your working.

$$y = 4 - x$$
$$x^2 + 2y^2 = 67$$

$x = \dots\dots\dots, y = \dots\dots\dots$

$x = \dots\dots\dots, y = \dots\dots\dots$  [6]

21 In this question, all measurements are in centimetres.



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The height of the triangle is  $h$  and the height of the rectangle is  $(h + 2)$ .  
The length of the base of the triangle is  $x$  and the length of the rectangle is  $(x + 1)$ .  
The area of the triangle is  $11 \text{ cm}^2$  and the area of the rectangle is  $39 \text{ cm}^2$ .

(a) Write down an expression, in terms of  $x$ , for the height of the rectangle.

..... [1]

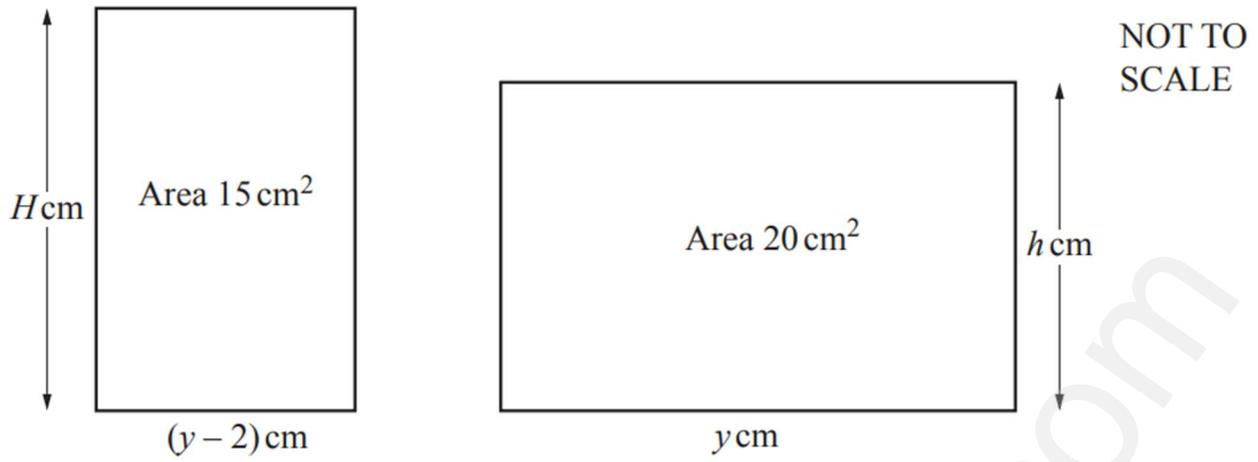
(b) Show that  $2x^2 - 15x + 22 = 0$ .

[3]

(c) By factorising and solving  $2x^2 - 15x + 22 = 0$ , find the two possible heights of the triangle.

$h = \dots\dots\dots$  or  $h = \dots\dots\dots$  [5]

(b)



The diagram shows two rectangles where  $H - h = 1$ .

By forming a quadratic equation and factorising, find the value of  $y$ .

$y = \dots\dots\dots$  [7]