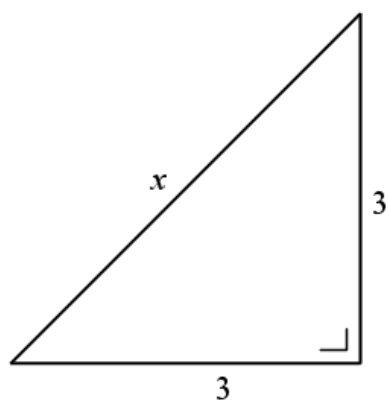
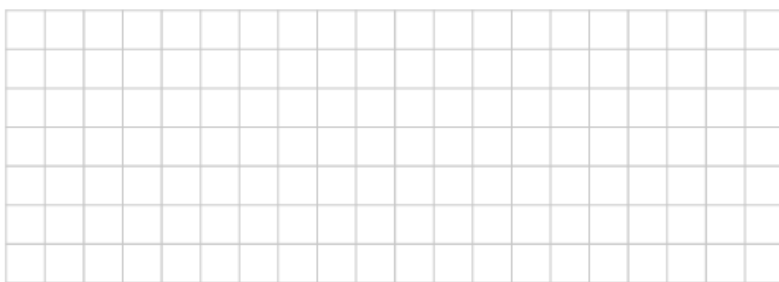
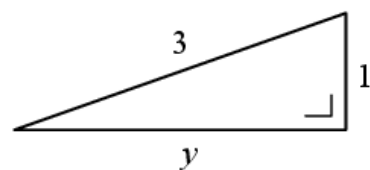
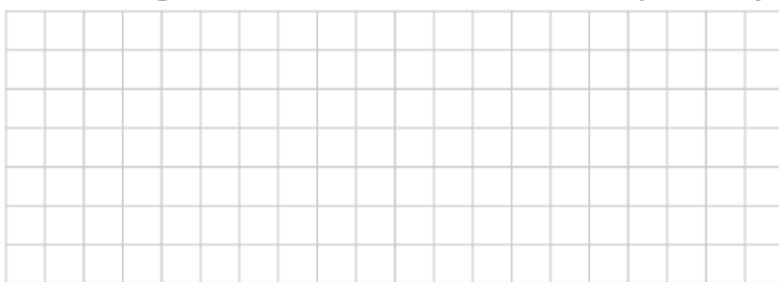


### Question 1

- (i) Use the diagram on the right to calculate the value of  $x$ .  
Give your answer in surd form.

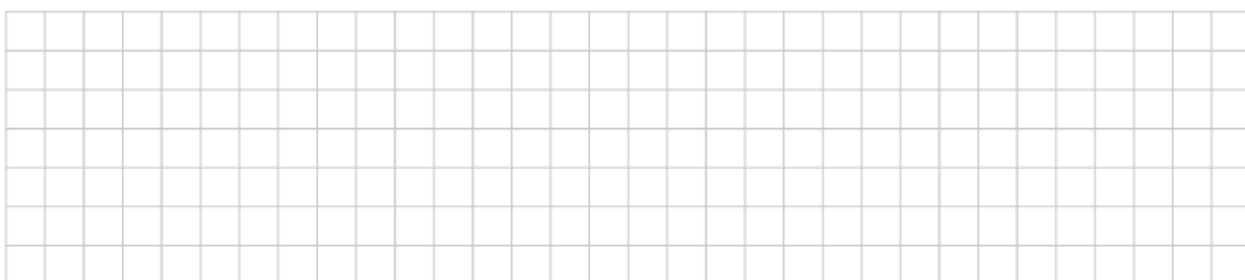
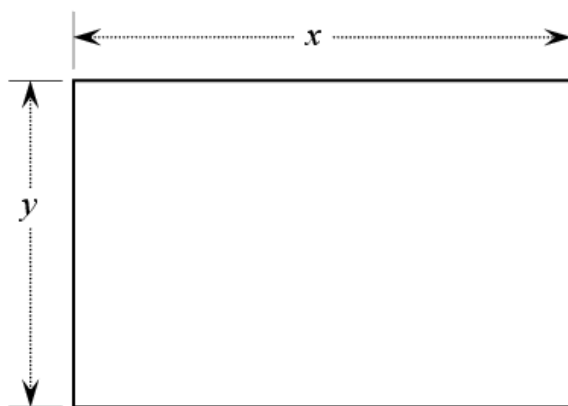


- (ii) Use the diagram below to calculate the value of  $y$ . Give your answer in surd form.



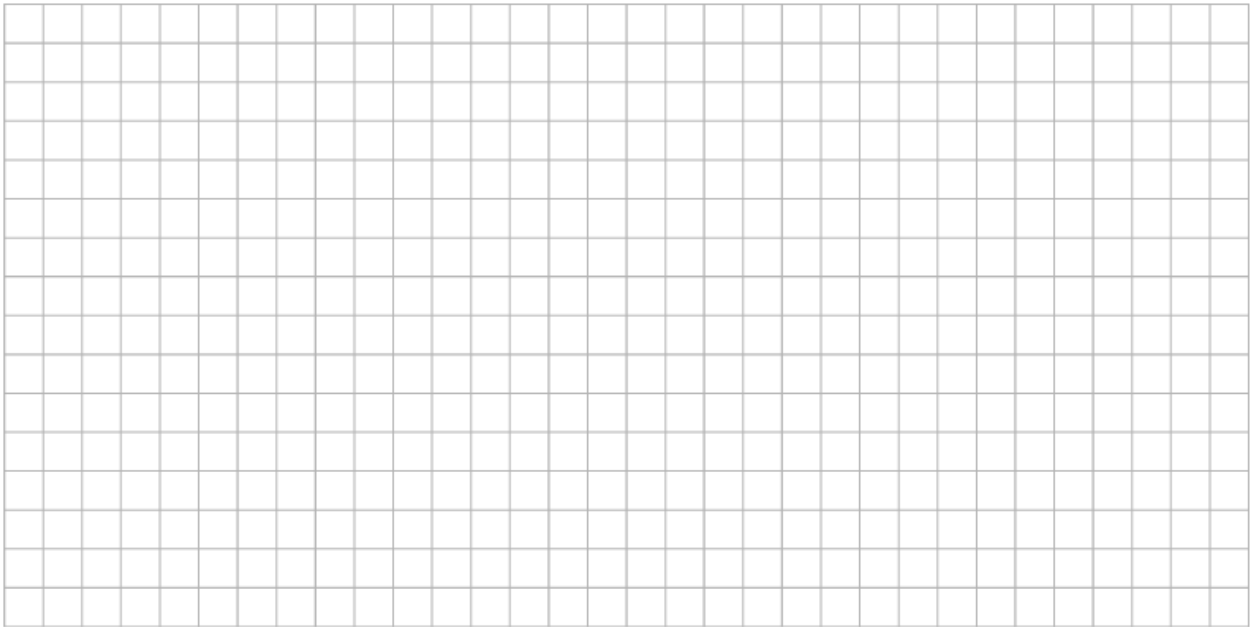
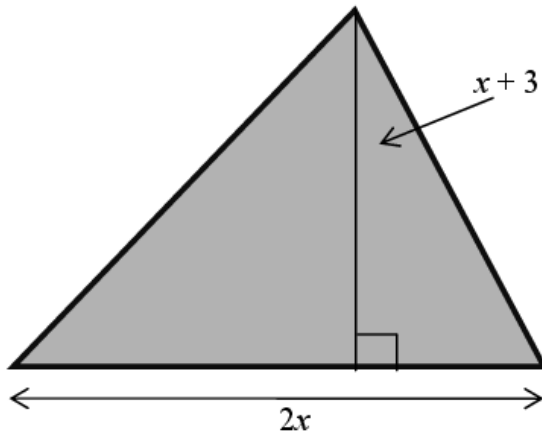
- (iii) A rectangle with sides of length  $x$  and  $y$  is drawn using the values of  $x$  and  $y$  from parts (i) and (ii), as shown below.

Write the **perimeter** of this rectangle in the form  $a\sqrt{2}$ , where  $a \in \mathbb{N}$ .



## Question 2

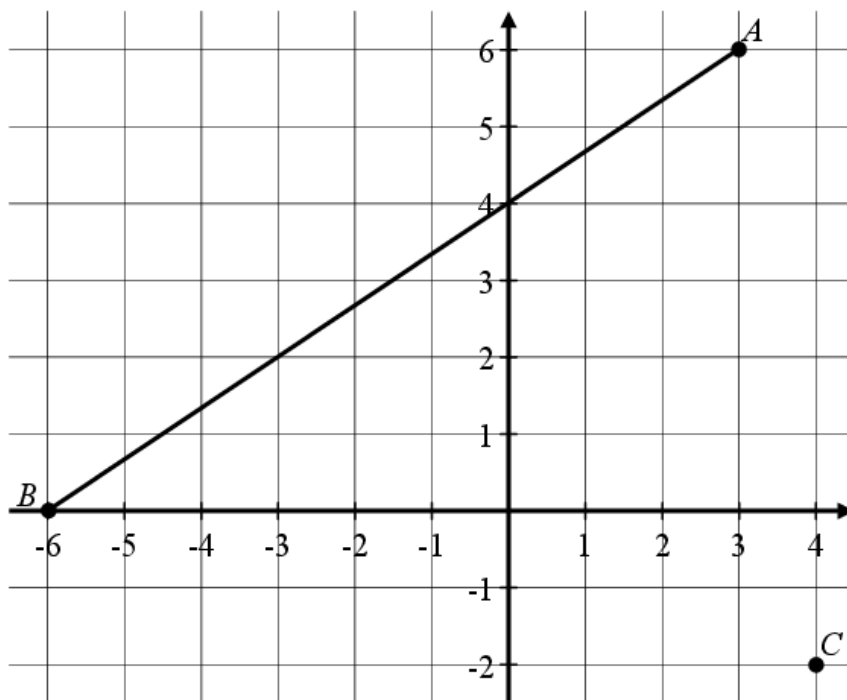
A triangle has a base length of  $2x$  cm and a perpendicular height of  $(x + 3)$  cm. The area of the triangle is  $10 \text{ cm}^2$ . Find the distance  $x$ .







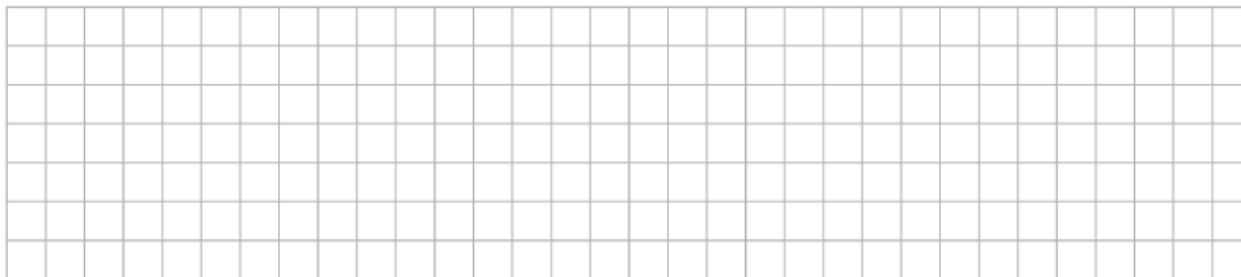
Question 4



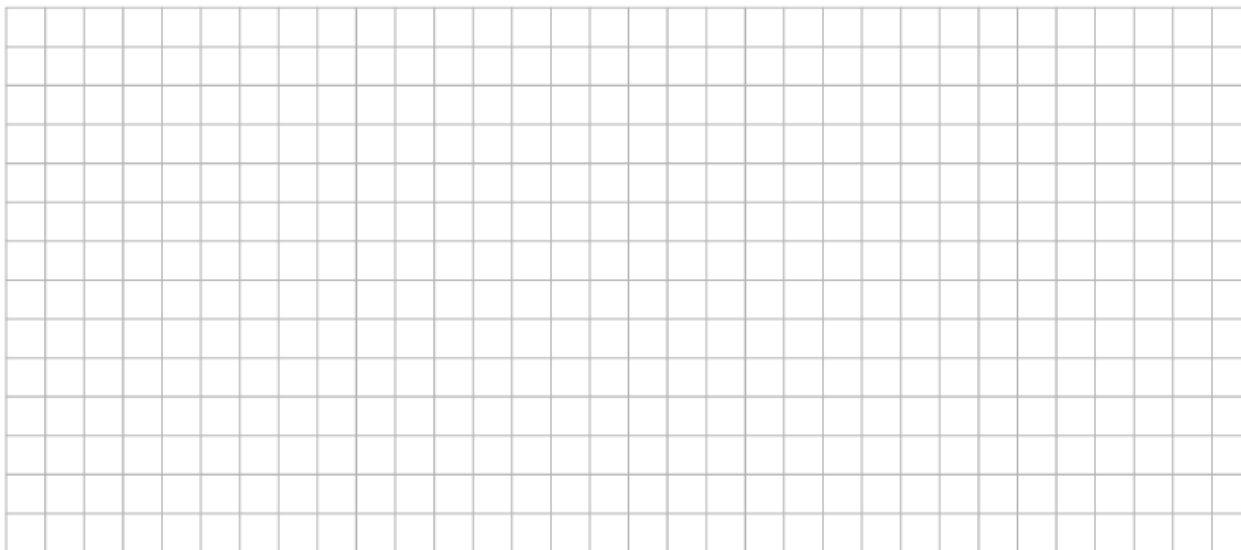
**(a)** Write the coordinates of  $A$ ,  $B$  and  $C$ .

$A ( \quad , \quad ) \quad B ( \quad , \quad ) \quad C ( \quad , \quad )$

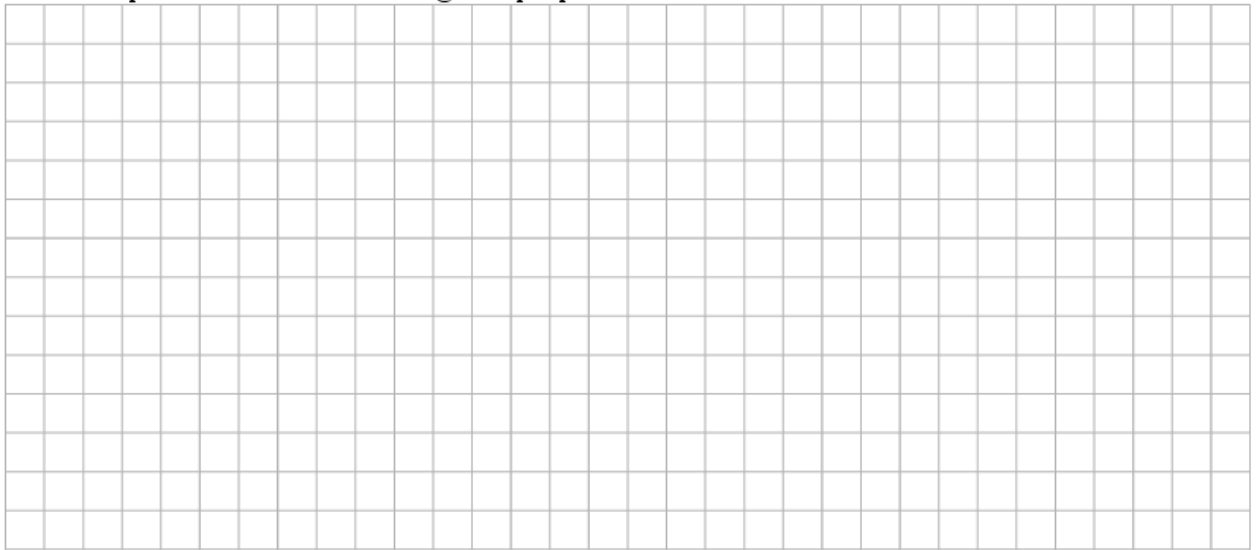
**(b)** Find the co-ordinates of  $D$ , the mid-point of  $[AB]$ .



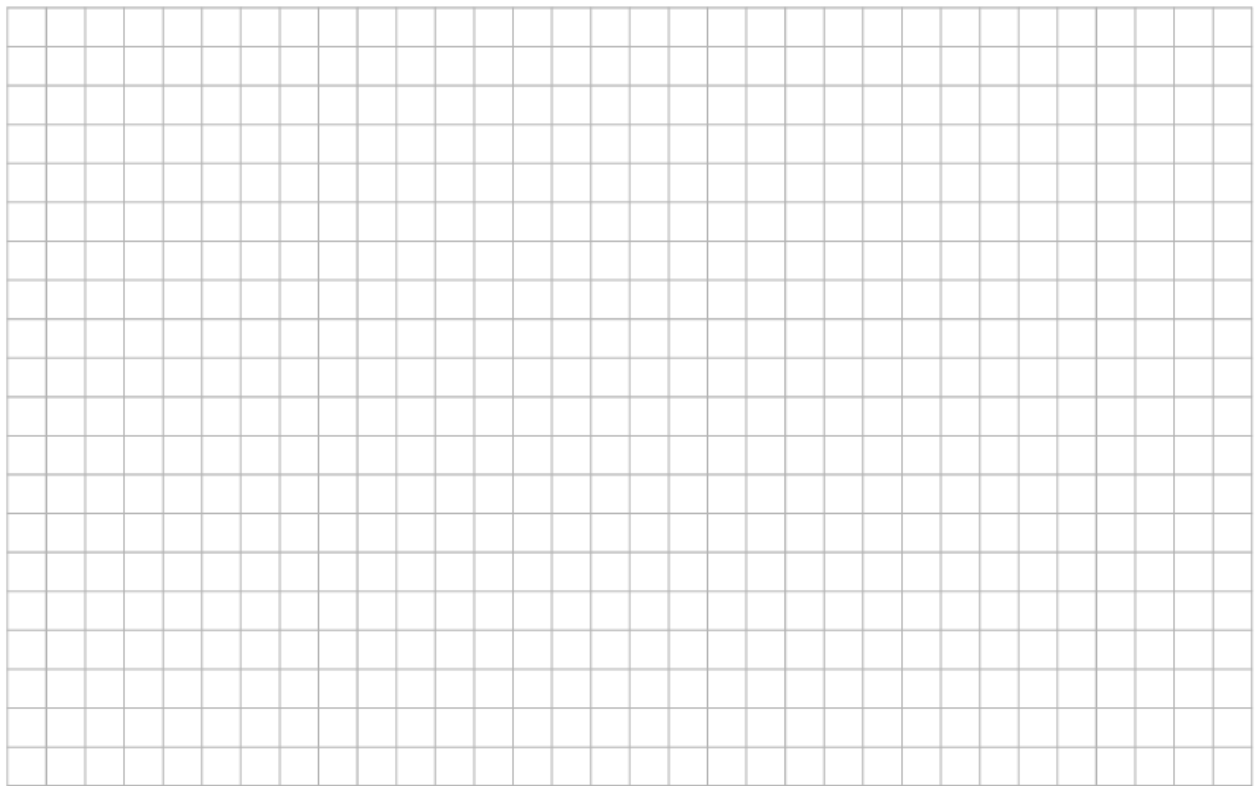
**(c)** Find the equation of the line  $AB$ .



(d) Find the equation of the line through  $C$ , perpendicular to  $AB$ .



(e) Let  $E$  be the point where this perpendicular line through  $C$  intersects  $AB$ . Calculate the coordinates of the point  $E$ .



(f) Which is the shorter distance,  $|CD|$  or  $|CE|$ ? Find this distance.









## Question 6

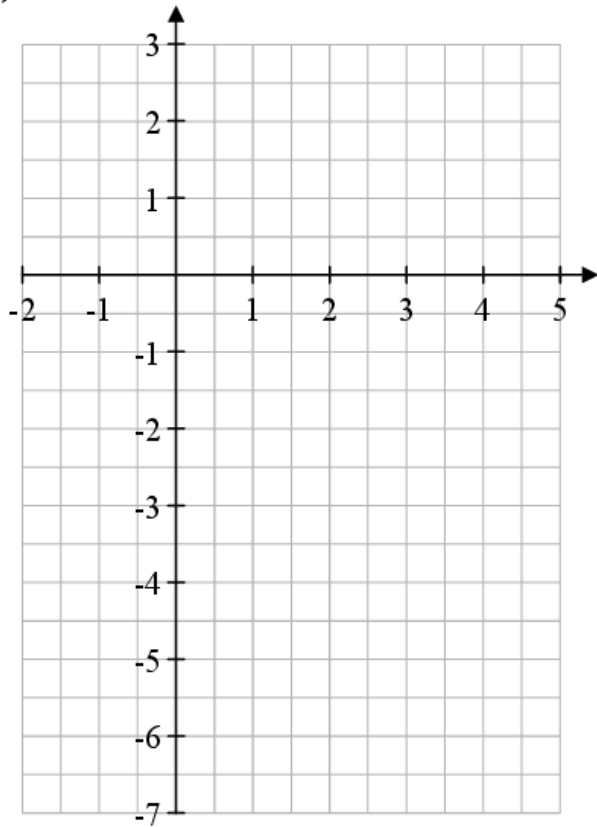
The table below gives the equations of six lines.

Line 1	$y = 3x - 6$
Line 2	$y = 3x + 12$
Line 3	$y = 5x + 20$
Line 4	$y = x - 7$
Line 5	$y = -2x + 4$
Line 6	$y = 4x - 16$

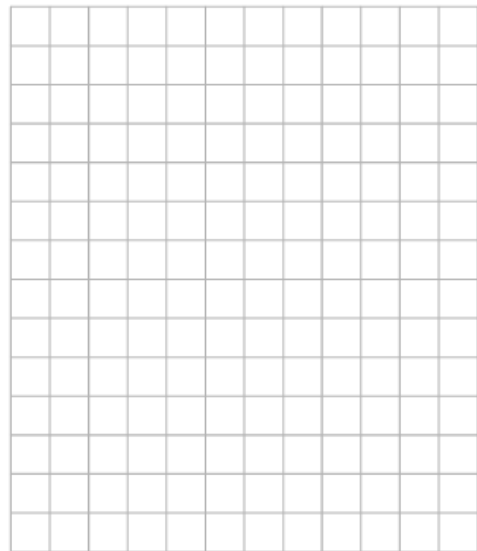
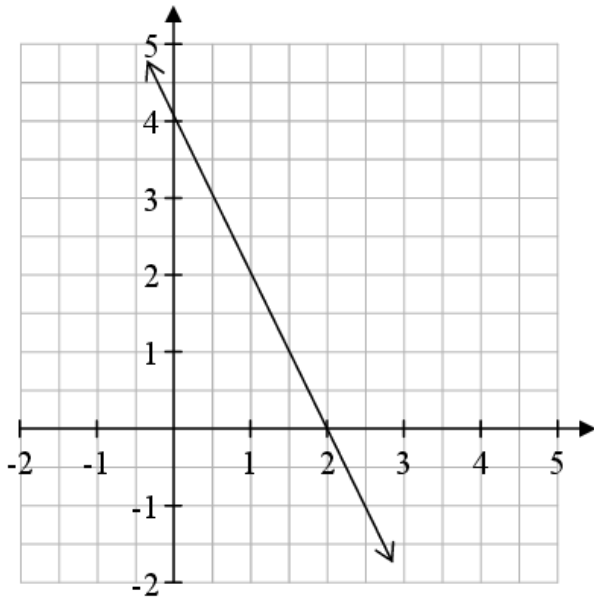
- (a) Which line has the greatest slope? Give a reason for your answer.

- (b) Which lines are parallel? Give a reason for your answer.

(c) Draw a sketch of Line 1 on the axes shown.



(d) The diagram below represents one of the given lines. Which line does it represent?



Answer = Line \_\_\_\_\_

- (e) The table shows some values of  $x$  and  $y$  for the equation of one of the lines. Which equation do they satisfy?

$x$	$y$
7	12
9	20
10	24

Answer = Line \_\_\_\_\_

- (f) There is one value of  $x$  which will give the same value of  $y$  for Line 4 as it will for Line 6. Find, using algebra, this value of  $x$  and the corresponding value of  $y$ .

- (g) Verify your answer to (f) above.

## Question 7

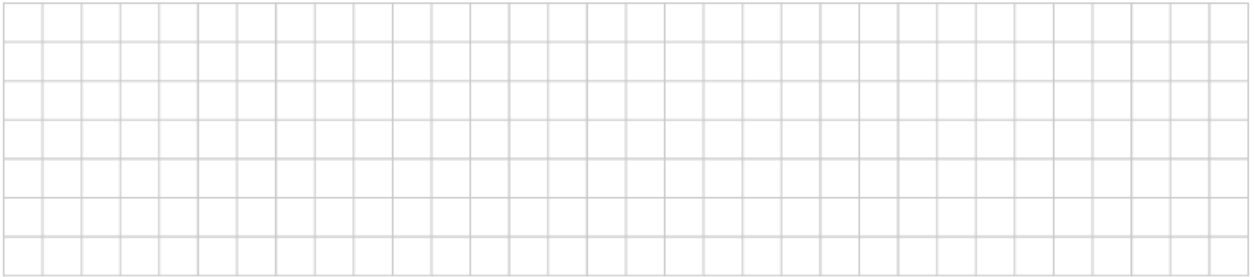
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The equation of the line  $l$  is  $x - 3y - 6 = 0$ .

- (i) Find the slope of the line  $l$ .



- (ii) Show that the point  $(1, -2)$  is **not** on the line  $l$ .



- (iii) The line  $k$  passes through  $(1, -2)$  and is parallel to the line  $l$ .  
Find the equation of the line  $k$ .

