



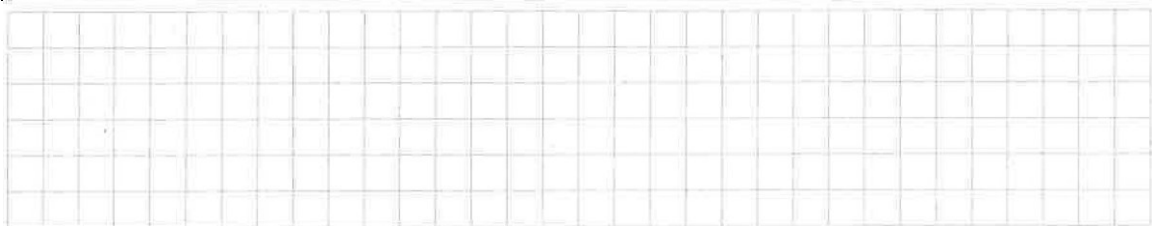
Question 1

The equations of six lines are given:

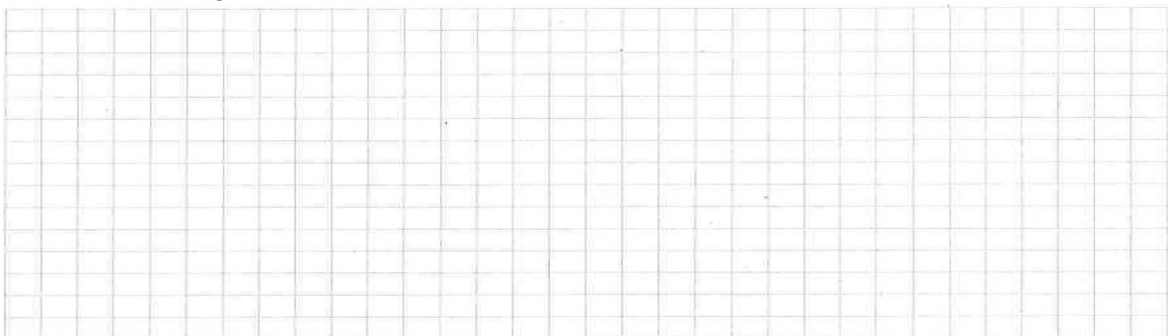
Line	Equation
h	$x = 3 - y$
i	$2x - 4y = 3$
k	$y = -\frac{1}{4}(2x - 7)$
l	$4x - 2y - 5 = 0$
m	$x + \sqrt{3}y - 10 = 0$
n	$\sqrt{3}x + y - 10 = 0$

- (a) Complete the table below by matching each description given to one or more of the lines.

Description	Line(s)
A line with a slope of 2.	
A line which intersects the y-axis at $(0, -2\frac{1}{2})$.	
A line which makes equal intercepts on the axes.	
A line which makes an angle of 150° with the positive sense of the x-axis.	
Two lines which are perpendicular to each other.	



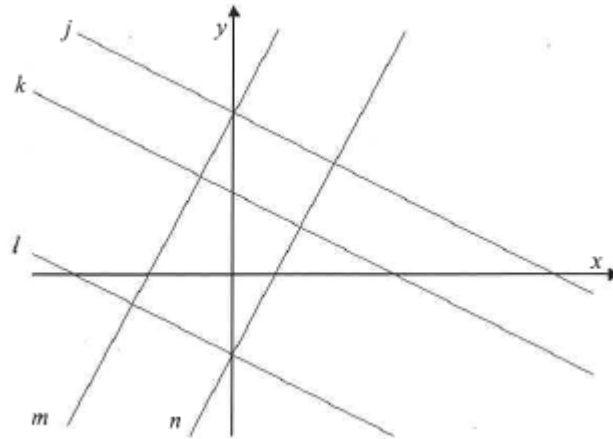
- (b) Find the acute angle between the lines m and n.





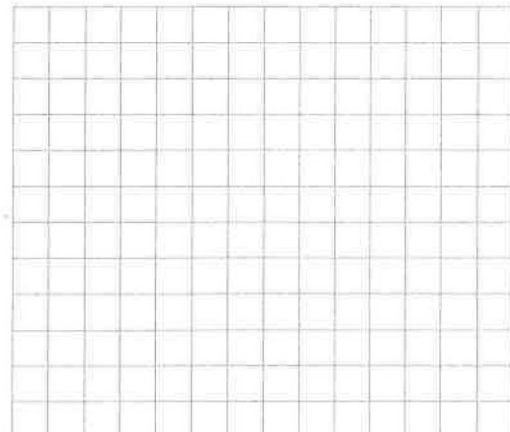
Question 2

In the co-ordinate diagram shown, the lines j , k , and l are parallel, and so are the lines m and n . The equations of four of the five lines are given in the table below.

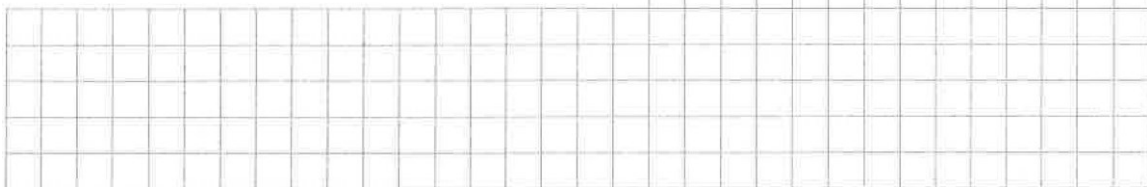


(a)

Equation	Line
$x + 2y = -4$	
$2x - y = -4$	
$x + 2y = 8$	
$2x - y = 2$	

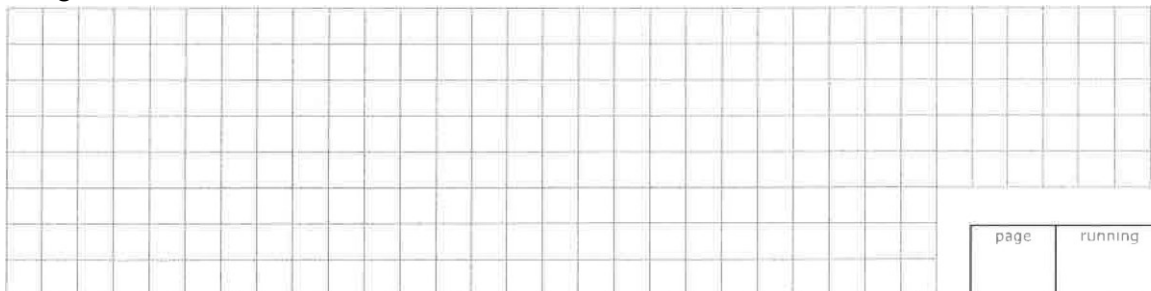


Complete the table, by matching four of the lines to their equations.



(b) Hence, insert scales on the x-axis and y-axis.

(c) Hence, find the equation of the remaining line, given that its x-intercept and y-intercept are both integers.



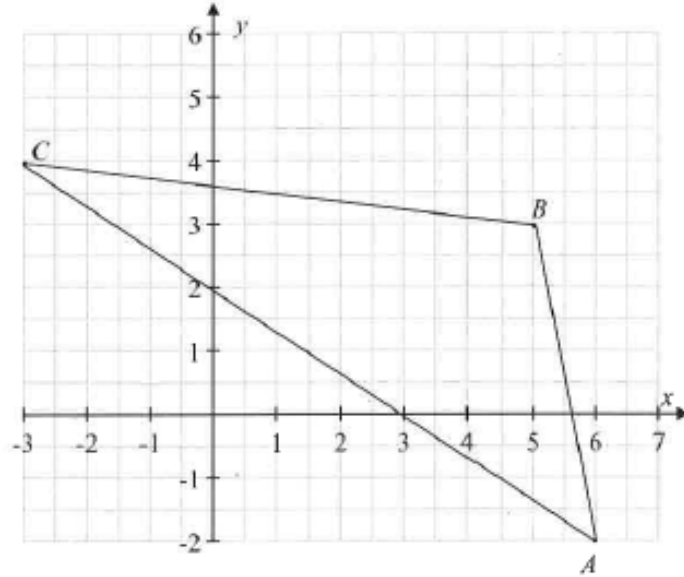
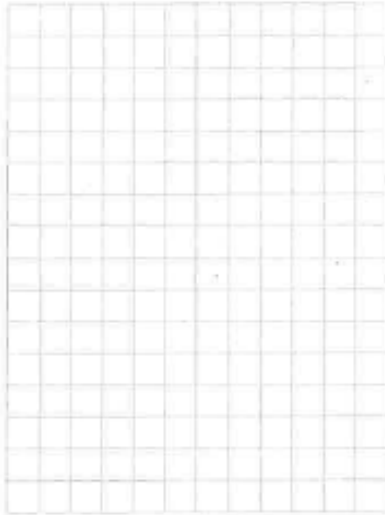


Question 3

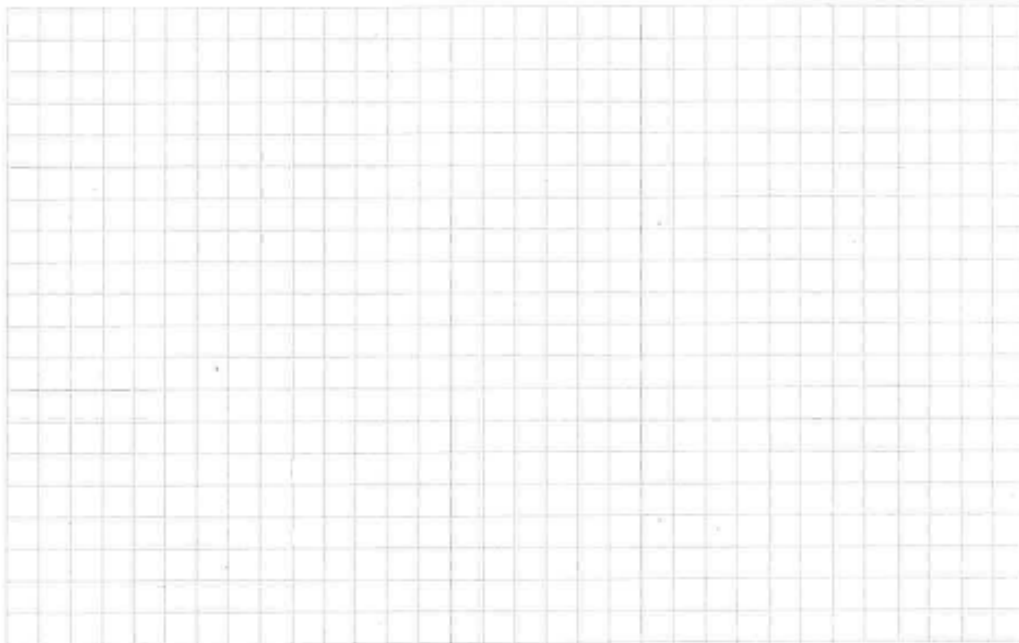
The points $A(6, -2)$, $B(5, 3)$ and $C(-3, 4)$ are shown on the diagram. (a)

The points $A(6, -2)$, $B(5, 3)$ and $C(-3, 4)$ are shown on the diagram.

- (a) Find the equation of the line through B which is perpendicular to AC .



- (b) Use your answer to part (a) above to find the co-ordinates of the orthocentre of the triangle ABC .

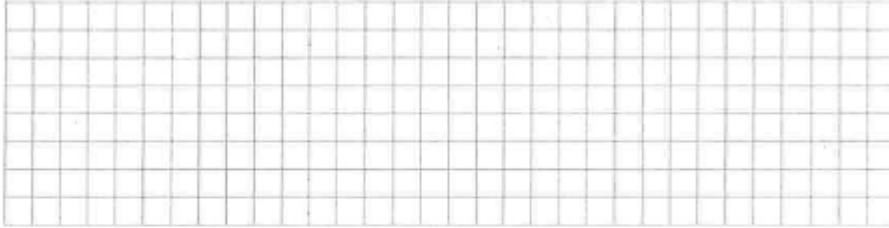




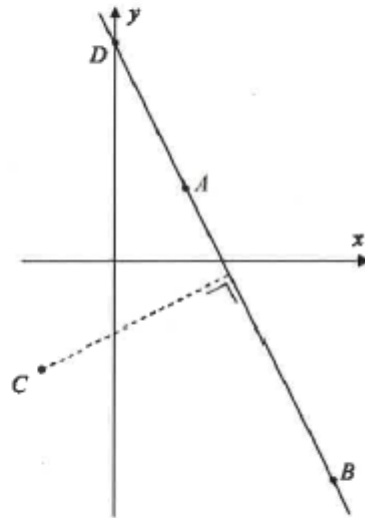
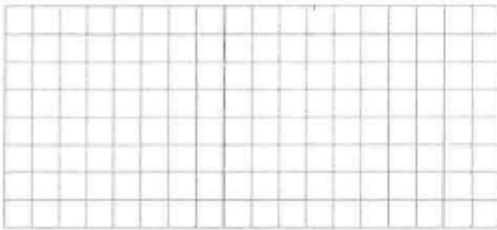
Question 4

The co-ordinates of three points A , B , and C are: $A(2, 2)$, $B(6, -6)$, $C(-2, -3)$.
(See diagram on facing page.)

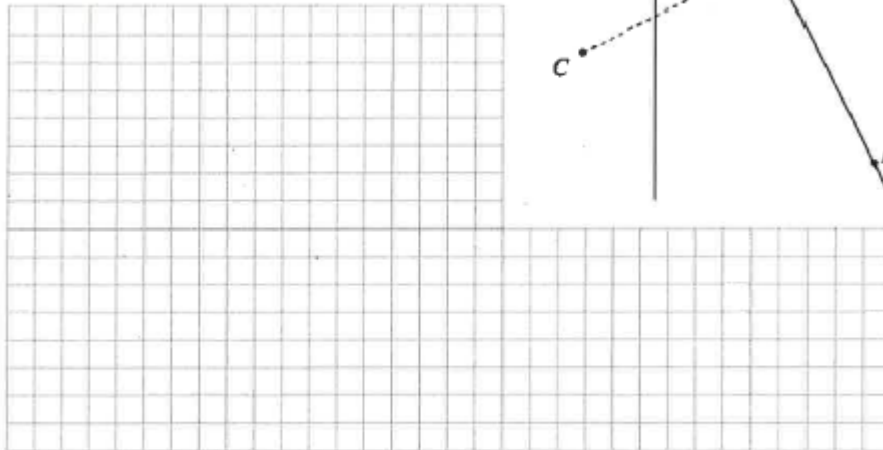
- (a) Find the equation of AB .



- (b) The line AB intersects the y -axis at D .
Find the coordinates of D .



- (c) Find the perpendicular distance from C to AB .



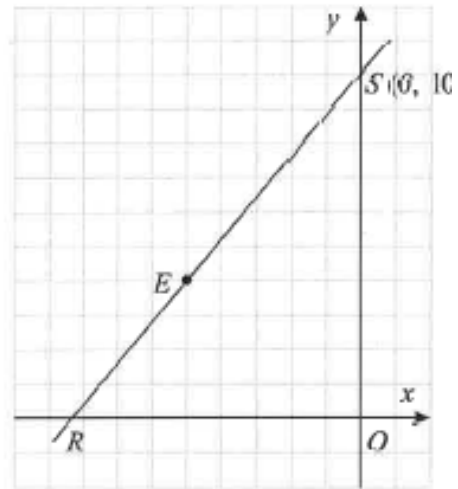
- (d) Hence, find the area of the triangle ADC .





Question 5

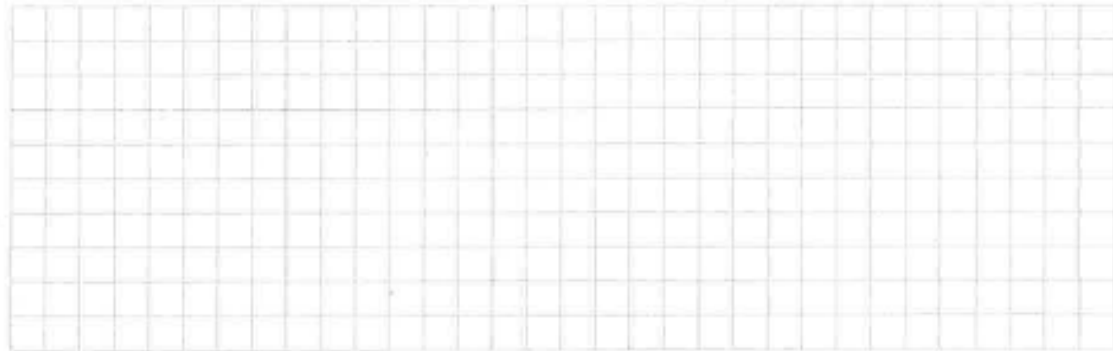
The line RS cuts the x -axis at the point R and the y -axis at the point $S(0, 10)$, as shown. The area of the triangle ROS , where O is the origin, is $\frac{125}{3}$.



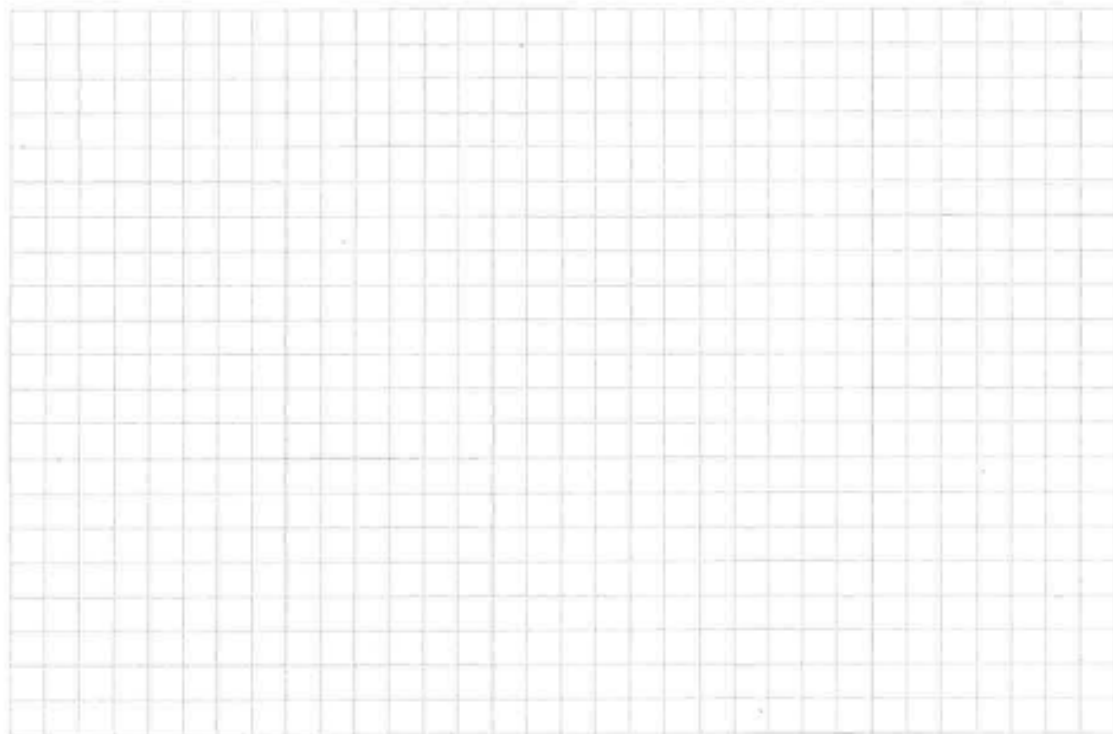
- (a) Find the co-ordinates of R .



- (b) Show that the point $E(-5, 4)$ is on the line RS .



- (c) A second line $y = mx + c$, where m and c are positive constants, passes through the point E and again makes a triangle of area $\frac{125}{3}$ with the axes. Find the value of m and the value of c .





Question 6

- (a) The co-ordinates of two points are $A(4, -1)$ and $B(7, t)$.

The line $l_1 : 3x - 4y - 12 = 0$ is perpendicular to AB . Find the value of t .

- (b) Find, in terms of k , the distance between the point $P(10, k)$ and l_1 .

- (c) $P(10, k)$ is on a bisector of the angles between the lines l_1 and $l_2 : 5x + 12y - 20 = 0$.

(i) Find the possible values of k .

(ii) If $k > 0$, find the distance from P to l_1 .