Straight line graphs

1. Determine the coordinates of the points where the following lines cross (a) the y-axis and (b) the x-axis.

   a) $y = -3x - 6$

   b) $y = 2x$

   c) $x + 2y = 4$

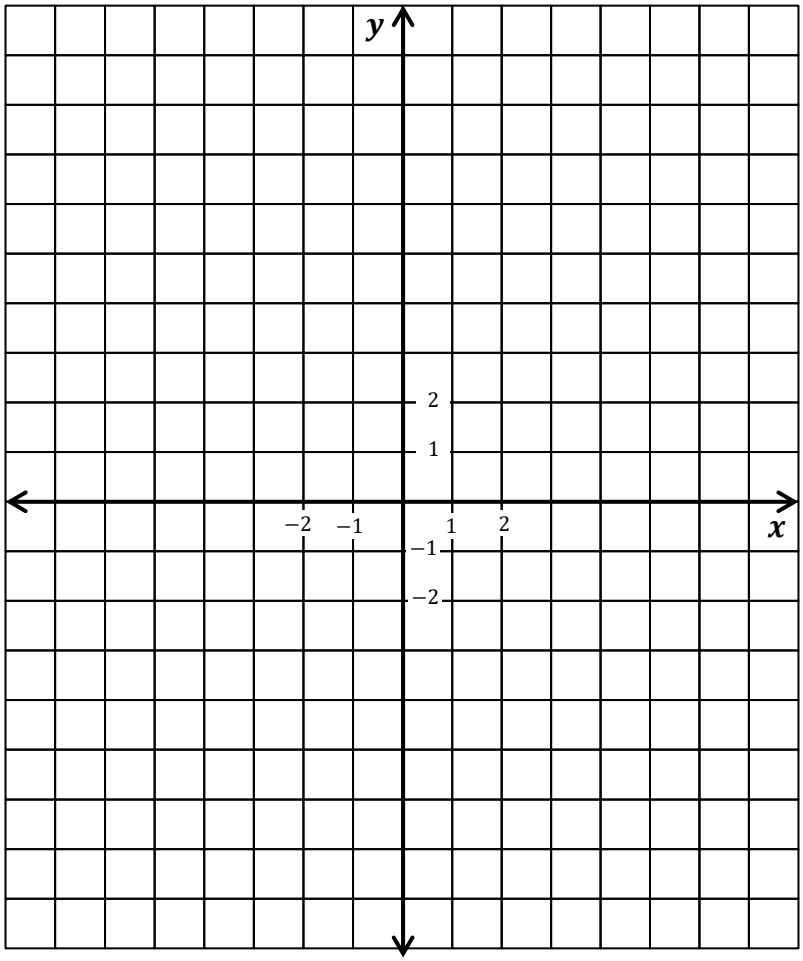
   d) $3x - 2y = 4$

   e) $y = -4$

2. On the gird below, sketch the straight line graph described by the following equations:

   a) $x - y = 1$

   b) $2y + x = 4$



3. Find the equation of the straight line which passes through the points with coordinates $A(4,0)$ and $B(0,3)$.

4. The point with coordinates $\left(b, \frac{1}{2}a\right)$ lies on the straight line $y + 2x = 6$. Given that $a = 4b$, find the values of a and b.

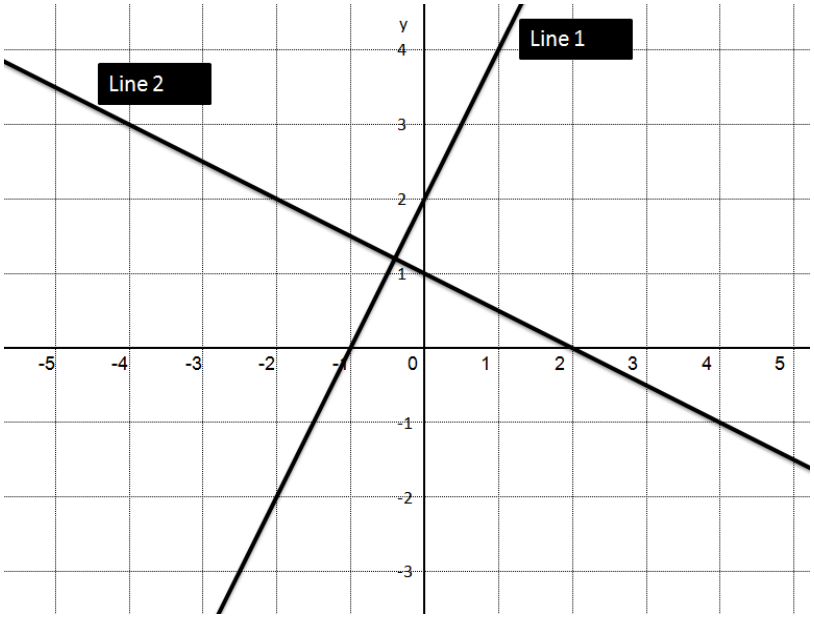
5. The point with coordinates $(-1, a)$ lies on the straight line with equation $x - 2y = -5$. Find the values of a. Show all your working.

6. a) Find the gradient of the straight line L_1 which passes through the points with coordinates $(2, -3)$ and $(-1, -5)$. Show all your working.

b) Straight line L_2 is parallel to L_1 and passes through the point $(3, -1)$. Find the equation of L_2. Give your answer in the form $y = mx + c$.

7. Straight line L_1 with equation $y - ax - 2 = 0$ is perpendicular to straight line L_2. The $y - intercept$ of straight line L_2 is $c = 10$. Straight line L_2 also passes through the point with coordinates $(a, 3a)$. Find the value of a.

8. The straight line $Line\ 1$ below is perpendicular to the straight line $Line\ 2$. Find the equations of $Line\ 1$ and $Line\ 2$ in the form $y = mx + c$. Show all your working.



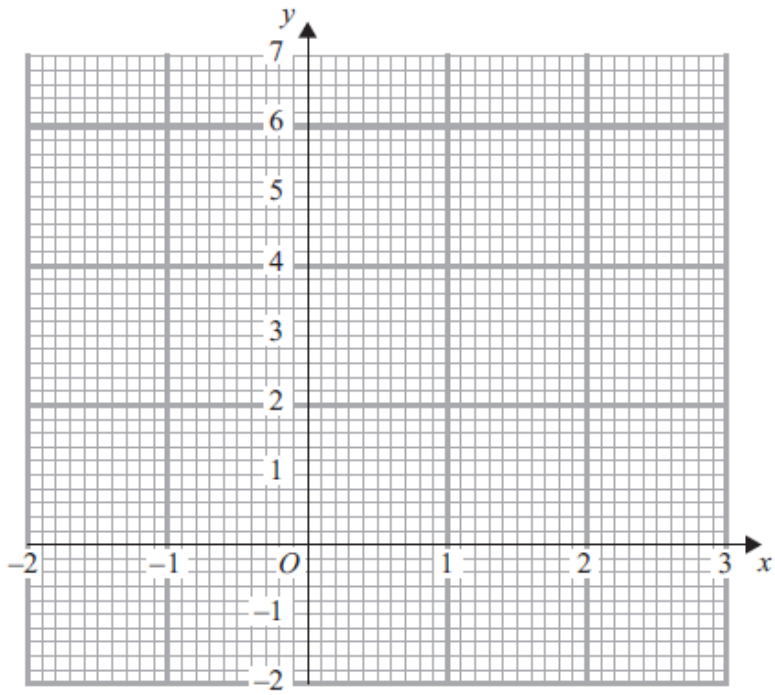
$Line\ 1$: _____

$Line\ 2$: _____

9. Complete the table of values for $3x + 2y = 6$

x	–2	–1	0	1	2	3
y		4.5	3			–1.5

(b) On the grid, draw the graph of $3x + 2y = 6$



10. Put a ✓ to determine whether each of the following points are on the line with the given equation.

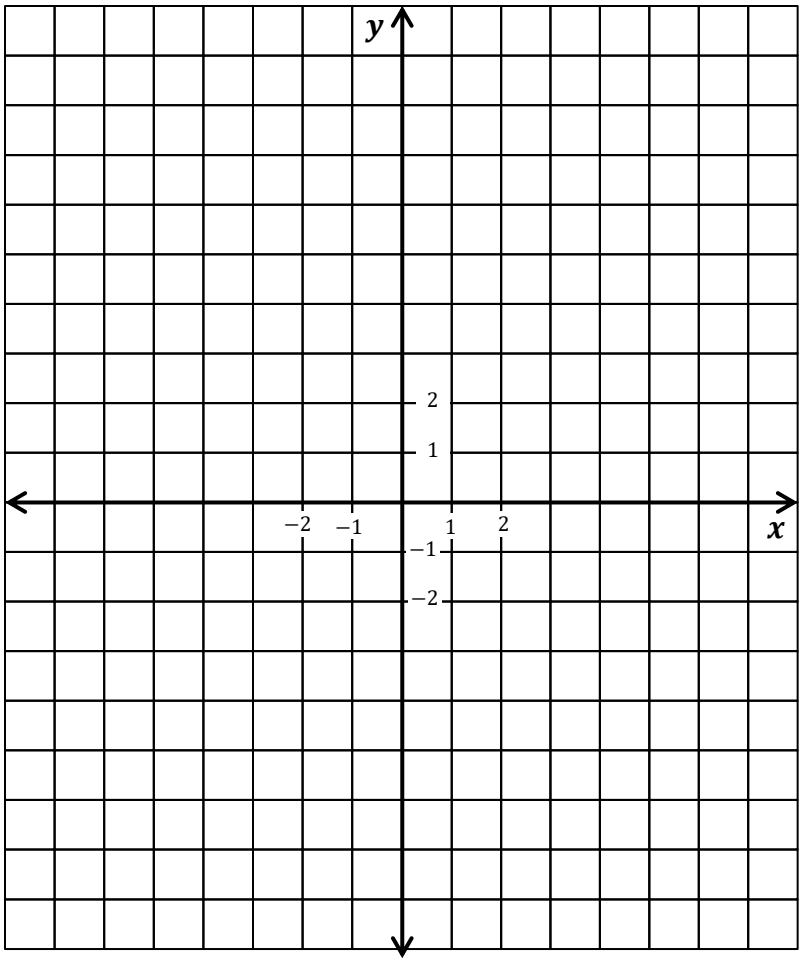
	$y = 1 - x$	$x + 2y = 3$
$(3, -2)$		
$(1,2)$		
$\left(2, \frac{1}{2}\right)$		
$(-1,2)$		

11. Put a ✓ in the empty boxes below to indicate whether the point is above the line, on the line or below the line.

Line	Point	Below the line	On the line	Above the line
$y = 3x + 4$	$(3,11)$			
$x + y = 5$	$(7,-2)$			
$y = 3 - 2x$	$(-3,10)$			
$2x + 3y = 4$	$\left(\frac{3}{4}, \frac{4}{5}\right)$			

12. a) The equation of a straight line is $ax + by = c$. If the x value of some point on the line is d, what is the full coordinate of the point, in terms of a, b, c ?

b) What is the area of the region enclosed between the line with equation $2x + 7y = 3$ the x axis and the y axis?



13. In the triangle ABC the equations of the two sides are

$$L_1\colon\ 2y = x + 2 \text{ and } L_2\colon\ y = 2x - 2$$

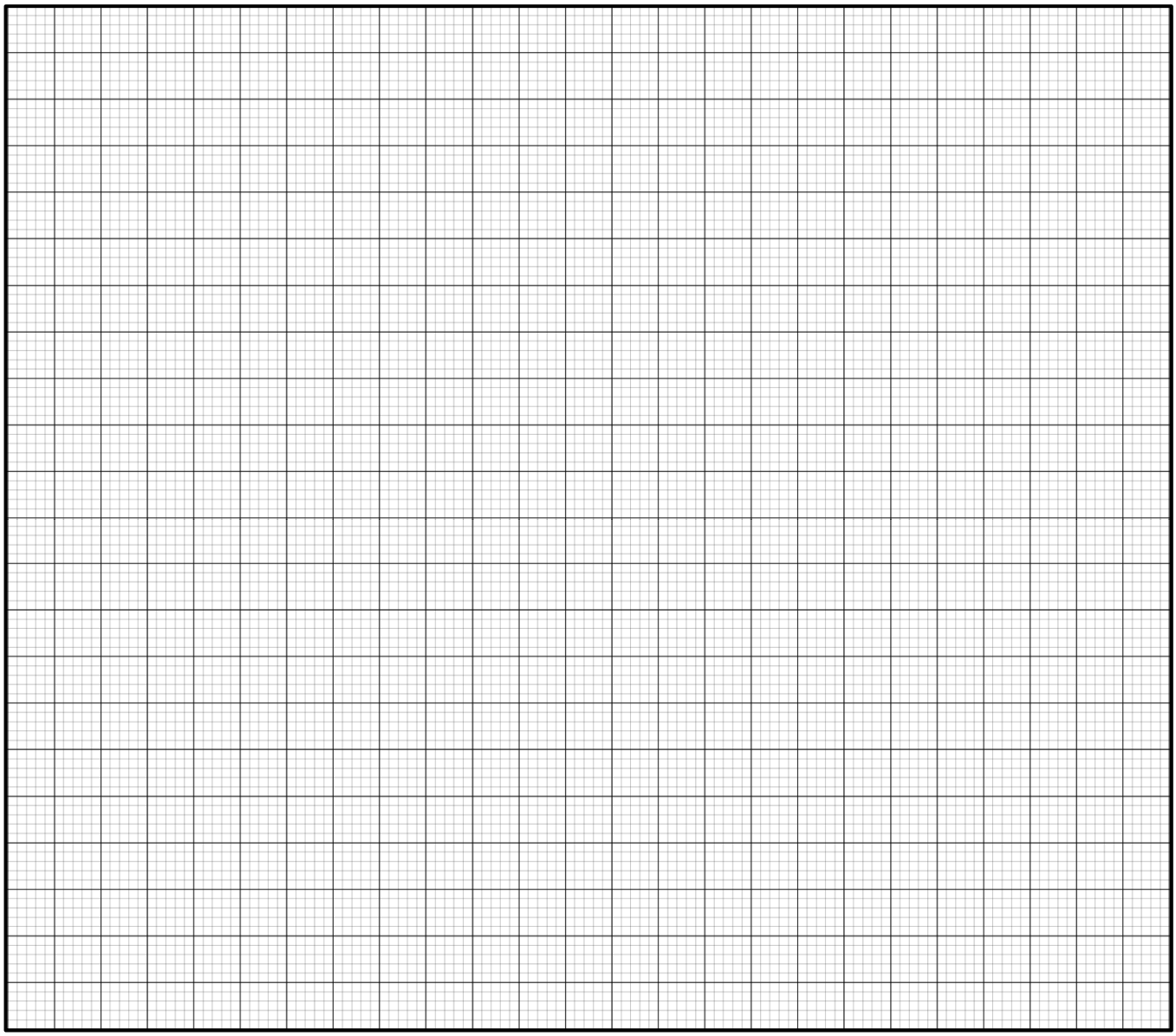
Given that point A has coordinates $A(4,3)$ and that angle $A\hat{B}C$ is $90°$

i) Find the distance between the x intercept of line L_1 and the y intercept of line L_2.

ii) Draw the triangle on a grid, indicating all the relevant line-graph and points A, B and C

ii) Find the equation of the third line forming the triangle

***www.undergroundmathematics, R 5661**



14. P is the point of intersection of the lines $x + y = 1$ and $3y + 2x = 1$. Find the co-ordinates of the point half-way between P and the line $y = 2x + 8$.

***www.undergroundmathematics.com, R9273**