Chapter 1

GCSE Revision - Straight Line Equations

1. Finding a gradient

   (a) What is the gradient of the line that goes through the points $(1, 6)$ and $(5, -3)$.

   (b) What is the gradient of the line $x + 2y = 1$?

2. Finding the equation of the line given two points.

   (a) Give the full equation of the line which goes through the points $(3, 5)$ and $(5, 11)$.

   (b) Give the full equation of the line which goes through the points $(5, 1)$ and $(8, -8)$.

   (c) Give the full equation of the line which has the gradient 4 and goes through the point $(0, 3)$.

   (d) Give the equation of the line which has gradient 4 and goes through the point $(3, 7)$.

3. Finding the equation of a line parallel or perpendicular to another.

   (a) Give the equation of the line which is parallel to $y = 4x + 3$ and goes through the point $(4, 5)$.

   (b) Give the equation of the line which is parallel to $y = \frac{1}{3}x - 2$ and goes through the point $(9, 5)$.

   (c) Give the equation of a line which is perpendicular to $y = 2x + 1$.

   (d) Give the equation of the line which is perpendicular to $y = 5x + 6$ and goes through the point $(-15, 2)$.

4. Finding where a line intercepts the x or y axis.

   (a) The y-axis:

   (b) The x-axis:

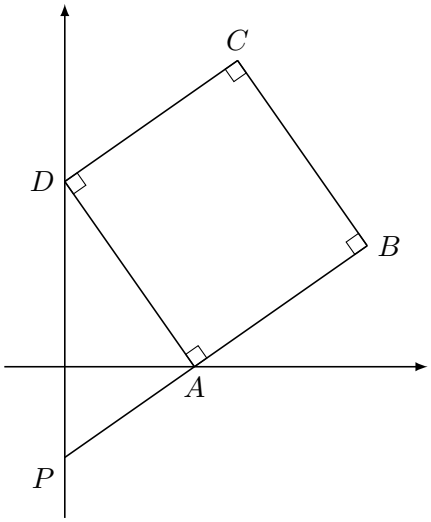
5. At what point does $y = 3x - 2$ intercept:

   (a) The y-axis:

   (b) The x-axis:

6. A and B are straight lines. Line A has equation $2y = 3x + 8$. Line B goes through the points $(-1, 2)$ and $(2, 8)$. Do lines A and B intersect? You must show all your working. **(3)**

7.



$ABCD$ is a square. P and D are points on the y-axis. A is a point on the x-axis. PAB is a straight line.

The equation of the line that passes through the points A and D is $y = -2x + 6$. Find the length of PD. **(4)**

8.

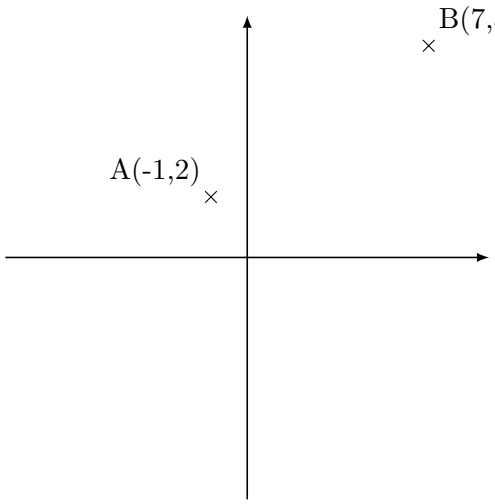


Diagram **NOT** accurately drawn

A is the point $(-1, 2)$. B is the point $(7, 5)$.

(a) Find the coordinates of the midpoint of AB. **(2)**

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

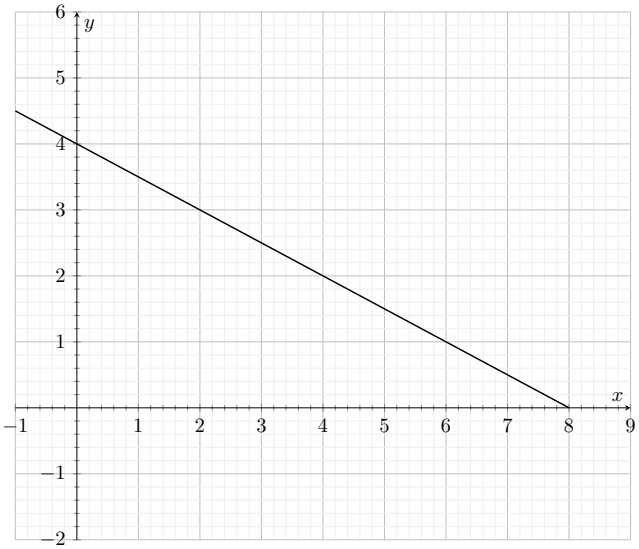
P is the point $(-4, 4)$

Q is the point $(1, -5)$

(b) Find the gradient of PQ. **(2)**

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

9.



The graph of the straight line $x + 2y = 8$ is shown on the grid.

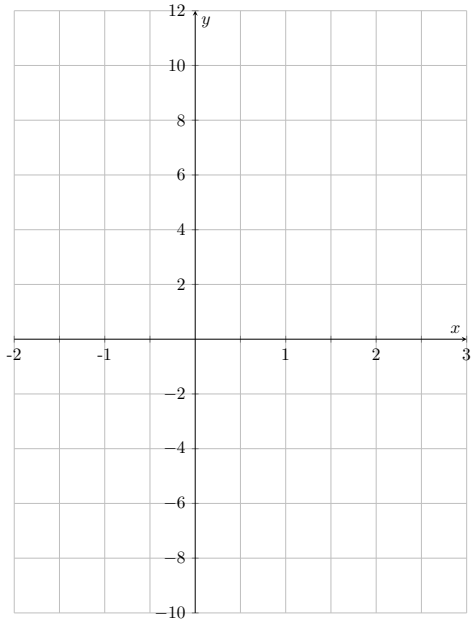
(a) On the grid, draw the graph of $y = x/2 - 1$. **(3)**

(b) Use the graphs to find estimates for the solution of **(1)**

$$x + 2y = 8$$
$$y = \frac{x}{2} - 1$$

x= ----------, y = ----------

10. On the grid, draw the graph of $y = 4x - 2$



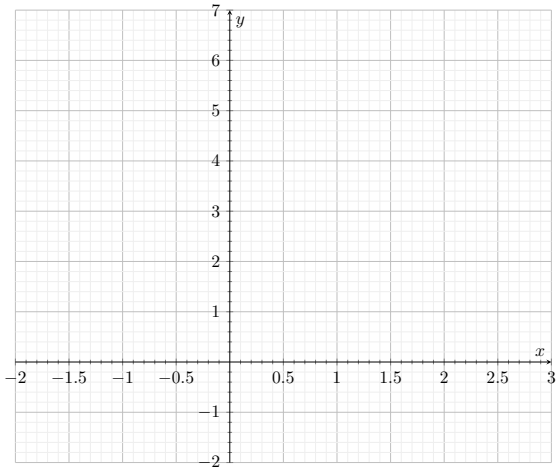
(a) Find the gradient of the straight line with equation $2x - 3y = 12$. **(2)**

(b) Prove that the straight line with equation $2y = 10 - 3x$ is perpendicular to the straight line with equation $2x - 3y = 12$. **(2)**

11. (a) Complete the table of values for $3x + 2y = 6$. **(2)**

x	-2	-1	0	1	2	3
y		4.5	3			-1.5

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



(c) Find the gradient of the graph of $3x + 2y = 6$. **(2)**.

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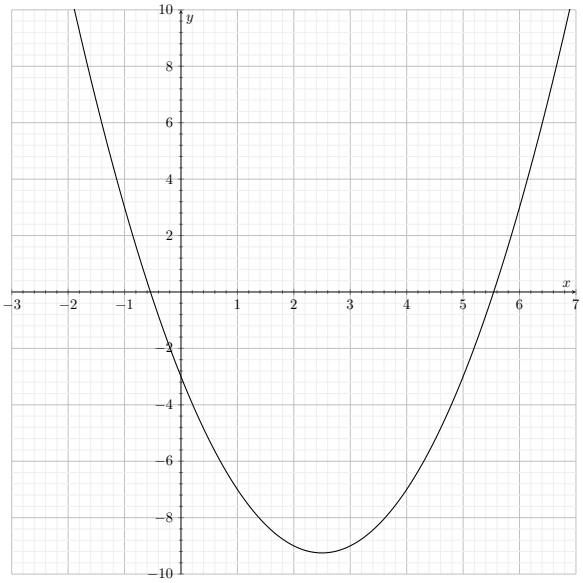
12. The diagram shows the graph of $y = x^2 - 5x - 3$



(a) Use the graph to find estimates for the solutions of **(3)**

i. $x^2 - 5x - 3 = 0$

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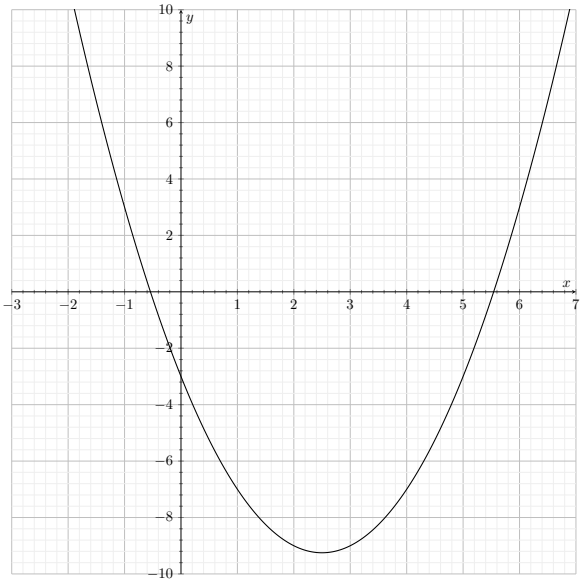
ii. $x^2 - 5x - 3 = 6$

(b) Use the graph to find estimates for the solutions of the simultaneous equations **(3)**

$y = x^2 - 5x - 3$

$y = x - 4$



13.

(a) Use the graph to find estimates for the solutions of **(3)**

i. $x^2 - 5x - 3 = 0$

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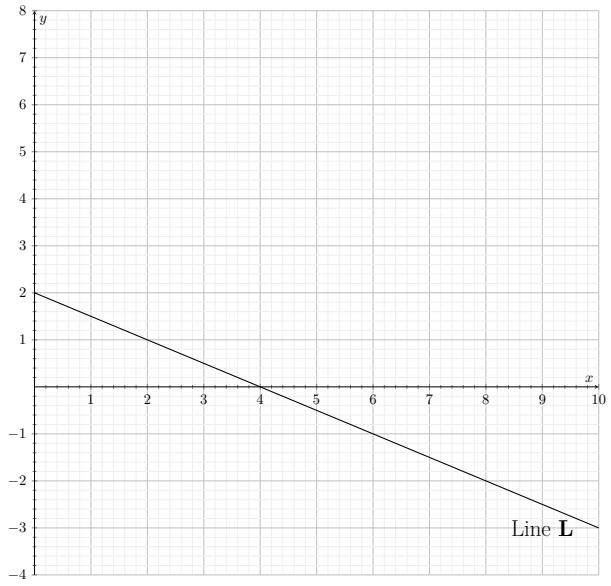
ii. $x^2 - 5x - 3 = 6$

(b) Use the graph to find estimates for the solutions of the simultaneous equations **(3)**

$y = x^2 - 5x - 3$

$y = x - 4$

14.



Line **L** is drawn on the grid.

(a) Work out the gradient of Line **L**. **(2)**

Another line, Line **M**, is parallel to Line **L** and passes through the point $(6, 2)$.

(b) Find an equation for Line **M**. **(2)**

15. A straight line passes through $(0, -2)$ and $(3, 10)$. Find the equation of the straight line.

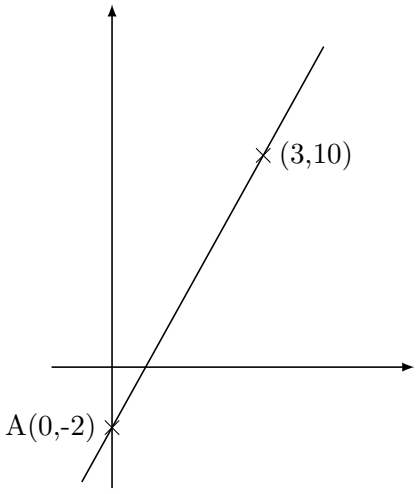


Diagram **NOT** accurately drawn