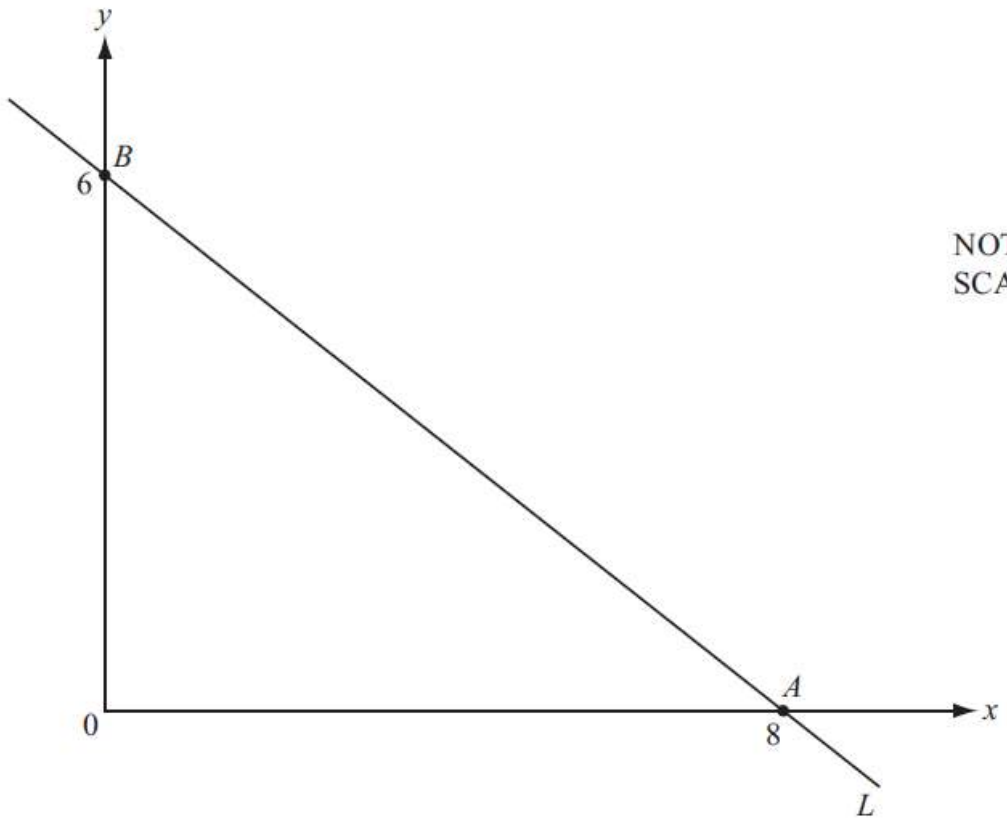
7 – Coordinate geometry

Student name: _____ Score: _____

1.



The diagram shows the line, L, which passes through the points A (8, 0) and B (0, 6).

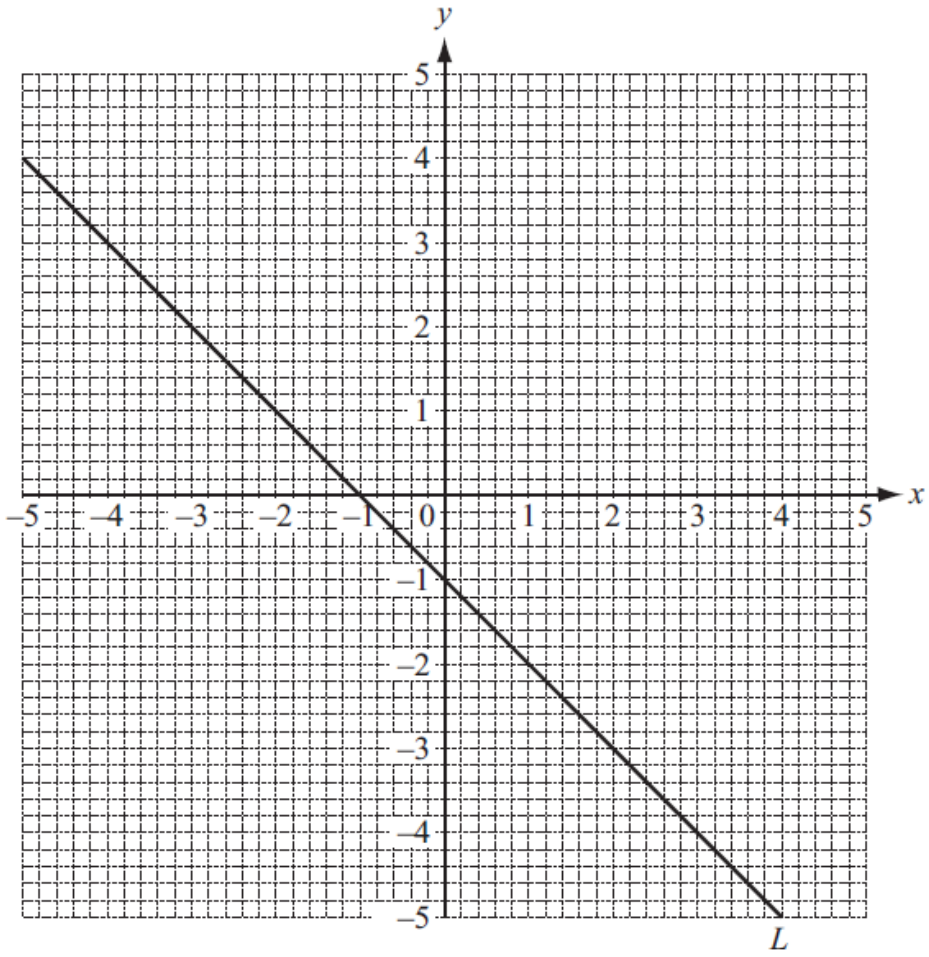
(a) The line L also passes through the point $(h, 9)$.
Find the value of h.

Answer(a) $h =$ ..... [2]

(b) Find the equation of the line which is perpendicular to L and which passes through the mid-point of the line AB.

Answer(b) ..... [4]

2.



(a) Find the equation of the line L.

Answer(a) ..... [2]

(b) **(i)** On the grid, draw the line $y = 2x + 4$. [2]

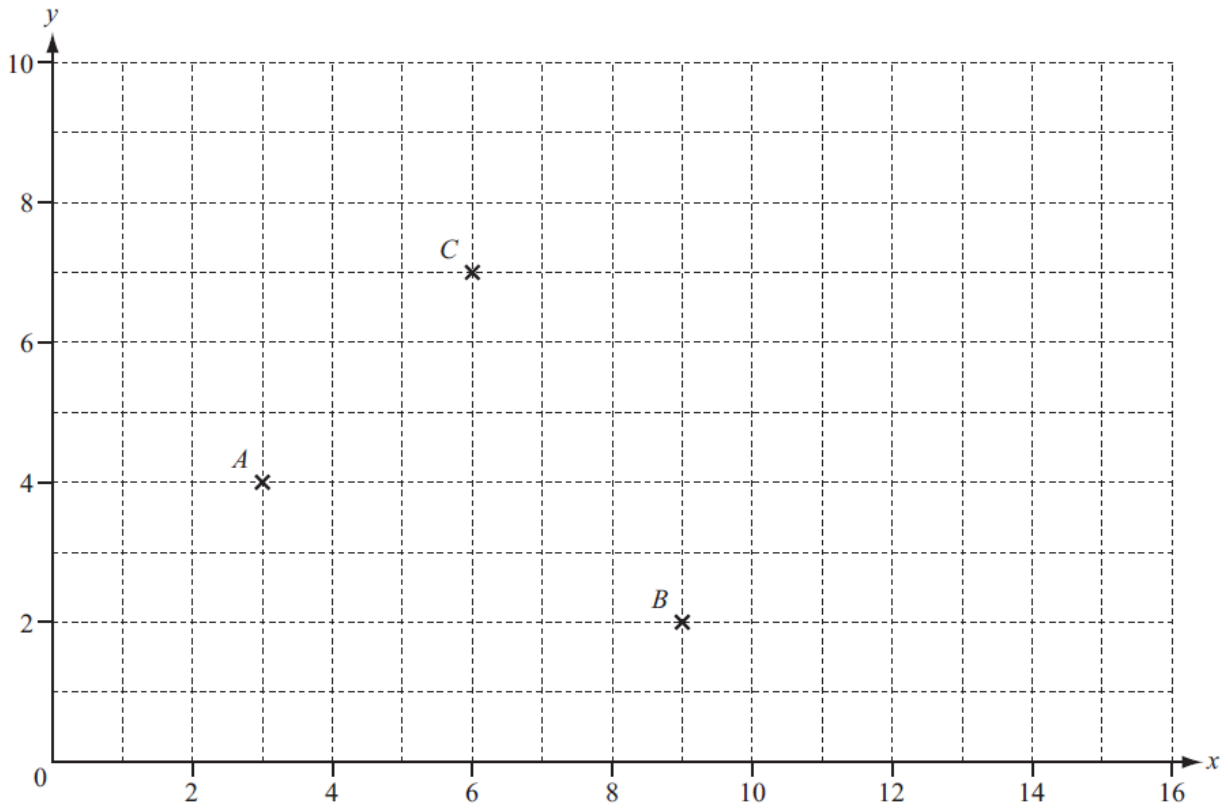
(ii) On the grid, shade the region where $y \geqslant 0$ and $y \geqslant 2x + 4$. [2]

(c) P is the point $(1, -4)$ and Q is the point $(3, 2)$.

Find the equation of the line passing through P and Q.

Answer(c) ..... [3]

3. The points $A(3, 4)$, $B(9, 2)$ and $C(6, 7)$ are shown on the diagram below.



(a) Write $\overrightarrow{AB}$ as a column vector.

Answer(a) $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) Find the gradient of the line AB.

Answer(b) ..... [1]

(c) Find the equation of the line AB.
Give your answer in the form $y = mx + c$.

Answer(c) $y =$ ..... [2]

(d) C is the midpoint of AM.

Find the co-ordinates of M.

Answer(d) (..... , ...) [2]

(e) The point N is such that $ABNM$ is a parallelogram.

Find the co-ordinates of N.

Answer(e) (..... , ...) [2]

(f) Find the length BM.

Answer(f) ..... [1]

4. The equation of the straight line L is $5y + 2x + 20 = 0$.

(a) Find the gradient of the line L.

Answer(a) ..... [1]

(b) Find the co-ordinates of the point where the line L crosses the y-axis.

Answer(b) (..... , ...) [1]

(c) Find the equation of the line, perpendicular to L, which passes through the point (2, 3).
Give your answer in the form $y = mx + c$.

Answer(c) $y =$ ..... [3]

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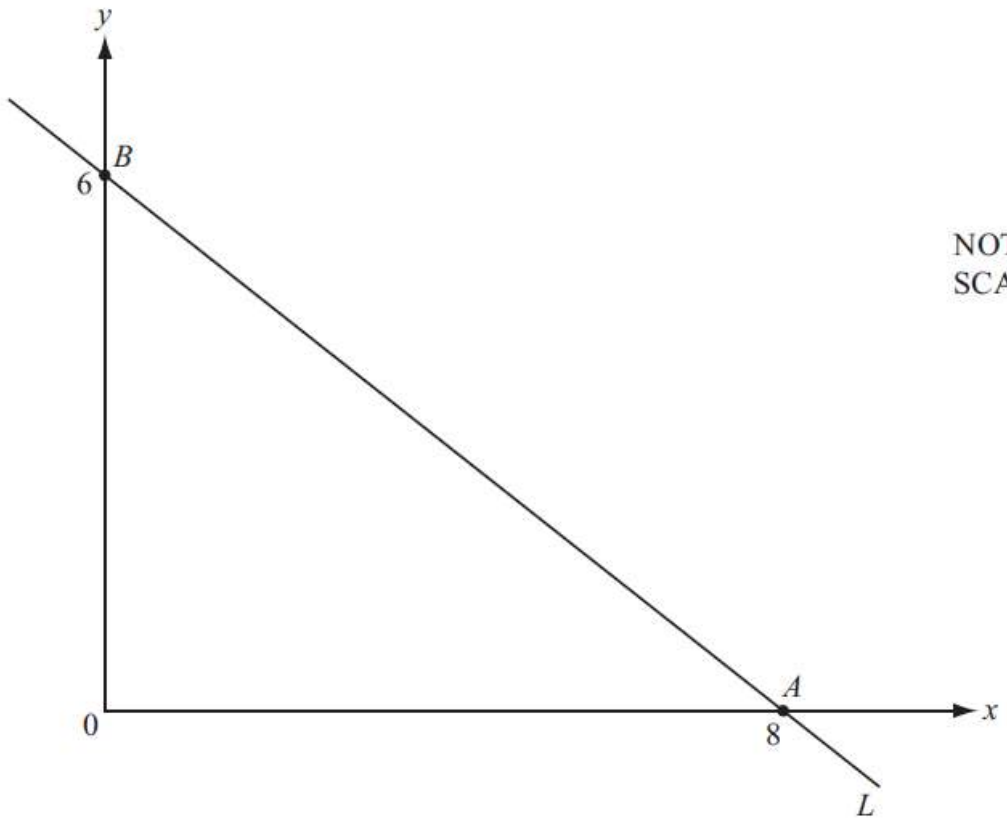
1.



The diagram shows the line, L, which passes through the points A (8, 0) and B (0, 6).

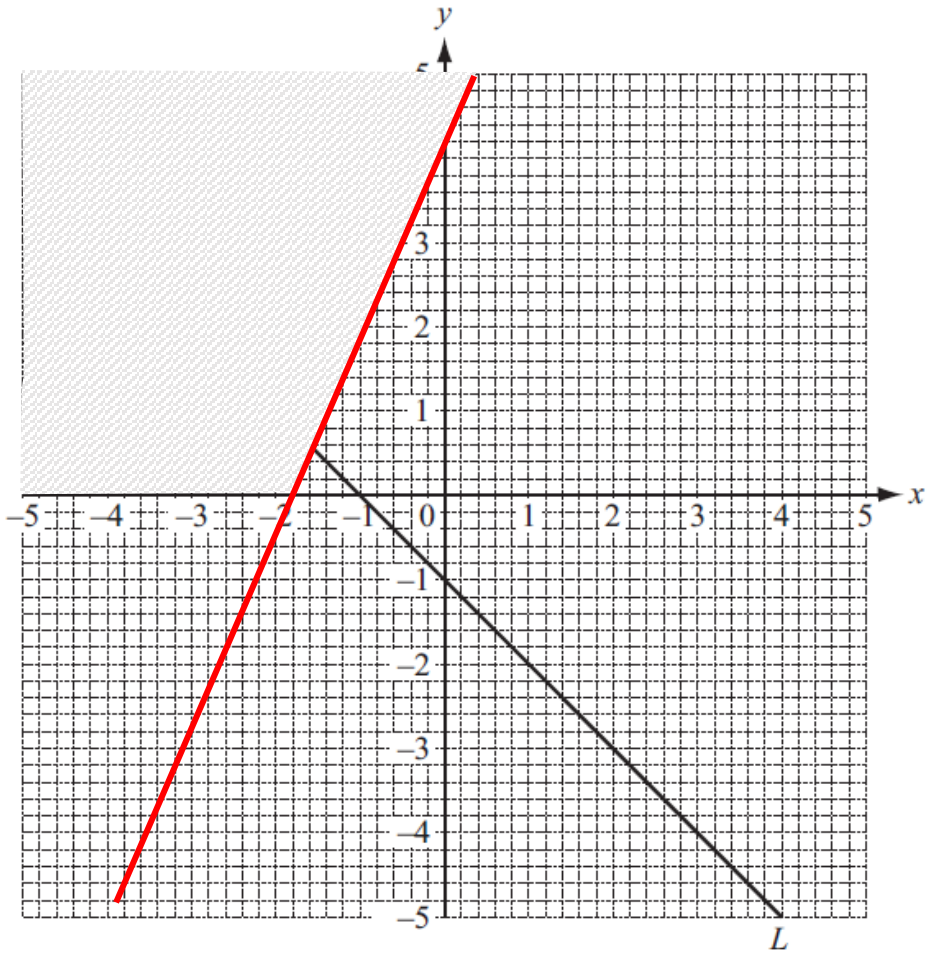
(a) The line L also passes through the point $(h, 9)$.
Find the value of h.

Answer(a) $h =$ -4 [2]

(b) Find the equation of the line which is perpendicular to L and which passes through the mid-point of the line AB.

Answer(b) $y = \frac{4}{3}x - \frac{7}{3}$ [4]

2.



(a) Find the equation of the line L.

Answer(a) $y = -x - 1$ [2]

(b) **(i)** On the grid, draw the line $y = 2x + 4$. [2]

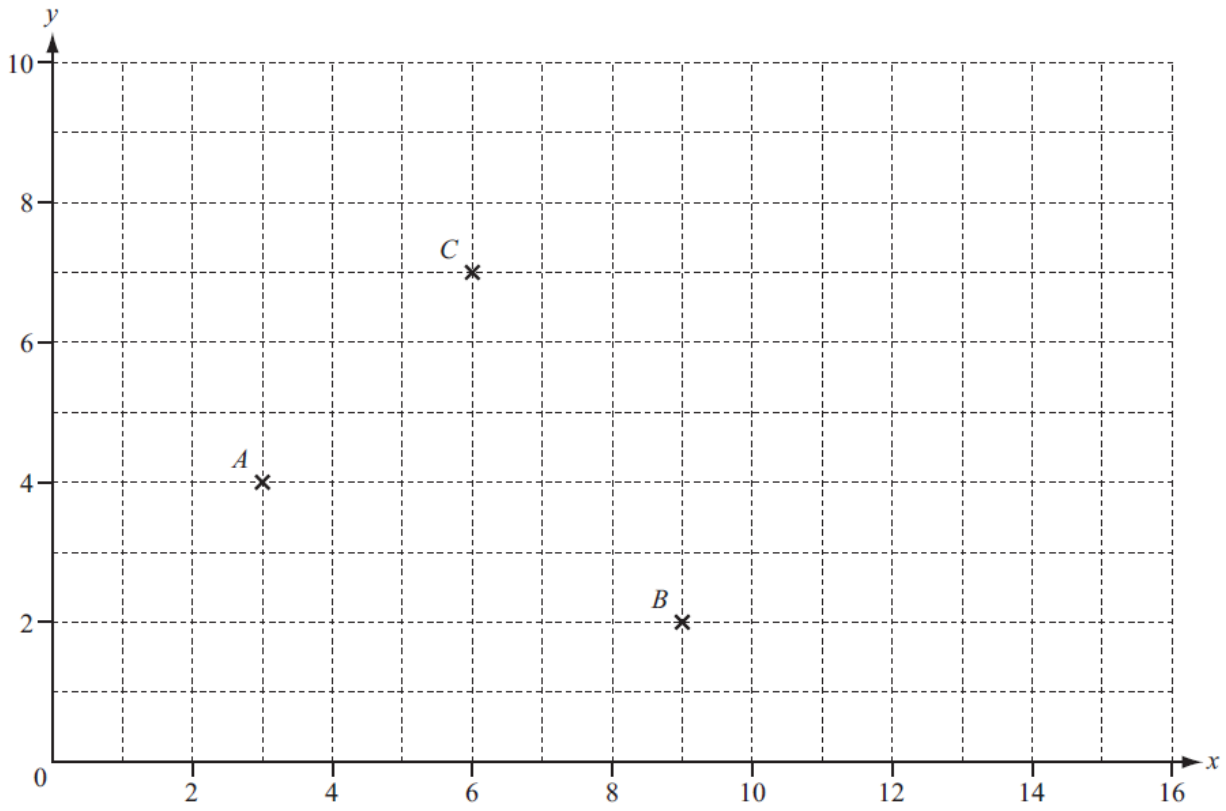
(ii) On the grid, shade the region where $y \geqslant 0$ and $y \geqslant 2x + 4$. [2]

(c) P is the point $(1, -4)$ and Q is the point $(3, 2)$.

Find the equation of the line passing through P and Q.

Answer(c) $y = 3x - 7$ [3]

3. The points $A(3, 4)$, $B(9, 2)$ and $C(6, 7)$ are shown on the diagram below.



(a) Write $\overrightarrow{AB}$ as a column vector.

Answer(a) $\begin{pmatrix} 6 \\ -2 \end{pmatrix}$ [1]

(b) Find the gradient of the line AB.

Answer(b) $-\frac{1}{3}$ [1]

(c) Find the equation of the line AB.
Give your answer in the form $y = mx + c$.

Answer(c) $y =$ $\frac{1}{3}x + 5$ [2]

(d) C is the midpoint of AM.

Find the co-ordinates of M.

Answer(d) (9 , 10) [2]

(e) The point N is such that $ABNM$ is a parallelogram.

Find the co-ordinates of N.

Answer(e) (15 , 8) [2]

(f) Find the length BM.

Answer(f) 8 [1]

4. The equation of the straight line L is $5y + 2x + 20 = 0$.

(a) Find the gradient of the line L.

Answer(a) ..... -0.4 ..... [1]

(b) Find the co-ordinates of the point where the line L crosses the y-axis.

Answer(b) (..... 0 ..... , ... -4 .....) [1]

(c) Find the equation of the line, perpendicular to L, which passes through the point (2, 3).
Give your answer in the form $y = mx + c$.

Answer(c) $y =$ ..... $2.5x - 2$ ..... [3]