



4 – Coordinate Geometry

Student name: _____ Score: _____

1. The co-ordinates of three points are $A(-2, 6)$, $B(6, 2)$ and $C(-2, -2)$.

(a) Find the gradient of AB .

..... [1]

(b) D is the midpoint of AB .

By using gradients show that the straight lines AB and CD are not perpendicular.

[3]

2. P is the point $(-2, 5)$ and Q is the point $(4, 1)$.

(a) Find the co-ordinates of the midpoint of PQ .

(..... ,) [1]

(b) Find the gradient of PQ .

..... [2]

(c) (i) Find the equation of the line perpendicular to PQ which passes through the point $(0, 4)$.

..... [2]

(ii) Find the x co-ordinate of the point where this line cuts the x -axis.

$x =$ [1]

3. A is the point $(2, 8)$ and B is the point $(6, 0)$.

(a) Find the co-ordinates of the midpoint of AB .

(..... ,) [1]

(b) Find the gradient of AB .

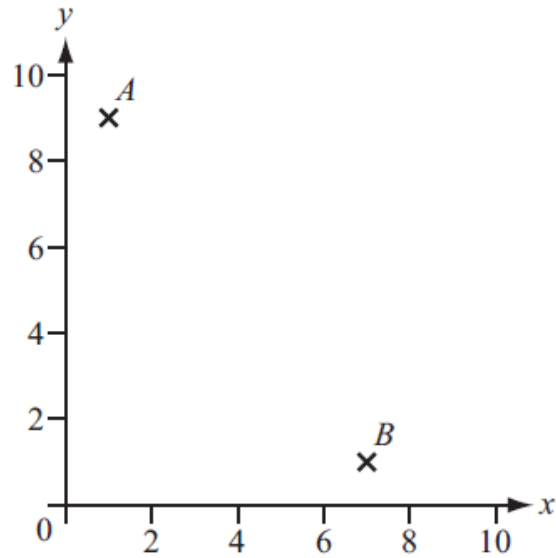
..... [2]

4. The point A has co-ordinates $(2, 8)$ and the point B has co-ordinates $(6, 6)$.

Find the equation of the perpendicular bisector of the line AB .

..... [4]

5. The points $A(1, 9)$ and $B(7, 1)$ are shown on the diagram below.



- (a) Calculate the length AB .
 [2]
- (b) (i) Find the co-ordinates of the midpoint of the line AB .
 (.....,) [1]
- (ii) Find the equation of the perpendicular bisector of the line AB .
 [3]

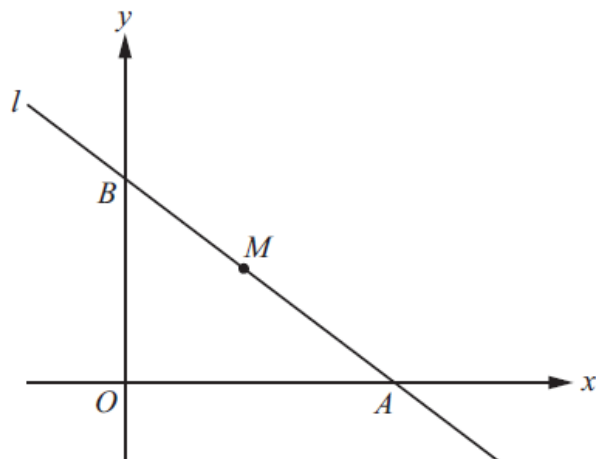
6. The gradient of the line joining the points $(2, 1)$ and $(6, a)$ is $\frac{3}{2}$.
 Find the value of a .
 $a = \dots\dots\dots$ [3]

7. Find the equation of the straight line passing through $(-2, -4)$ and $(2, 0)$.
 [3]

8. A is the point $(-4, 4)$ and B is the point $(4, 10)$.
 Find the equation of the perpendicular bisector of AB .
 [4]



9.



NOT TO SCALE

The equation of the line l is $3x + 4y = 12$.
 The line cuts the x -axis at A and the y -axis at B .
 The midpoint of AB is M .

(a) Find the co-ordinates of

(i) A ,

(..... ,) [1]

(ii) B ,

(..... ,) [1]

(iii) M .

(..... ,) [1]

(b) Find the equation of the line through the origin which is perpendicular to the line l .

..... [3]

10. The gradient of the line joining the points $(2, 1)$ and $(6, a)$ is $\frac{3}{2}$.

Find the value of a .

$a =$ [3]

11. The equation of a line passing through the point $(2, 3)$ is $ax + by = d$, where $a, b, d \in \mathbb{N}$.
 This line is perpendicular to the line $y = 2x + 5$.

Find the values of a, b and d .

$a =$

$b =$

$d =$ [3]

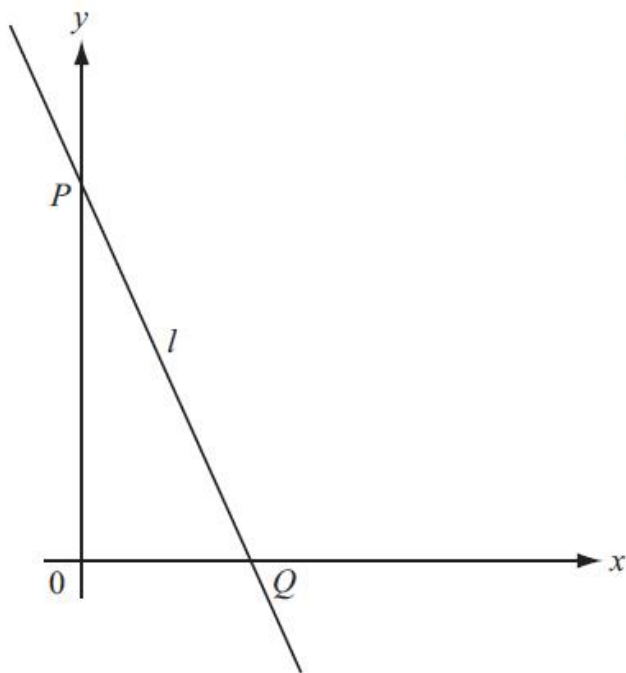


12. The equation of a straight line is $3x + 4y = 12$.

Write the equation in the form $y = mx + c$.

$y = \dots\dots\dots$ [2]

13.



NOT TO SCALE

The diagram shows a line, l , which passes through the points $P(0, 4)$ and $Q(2, 0)$.

(a) Find the equation of the line l .

$\dots\dots\dots$ [2]

(b) Find the equation of the line which is perpendicular to l and passes through the midpoint of PQ .

$\dots\dots\dots$ [4]

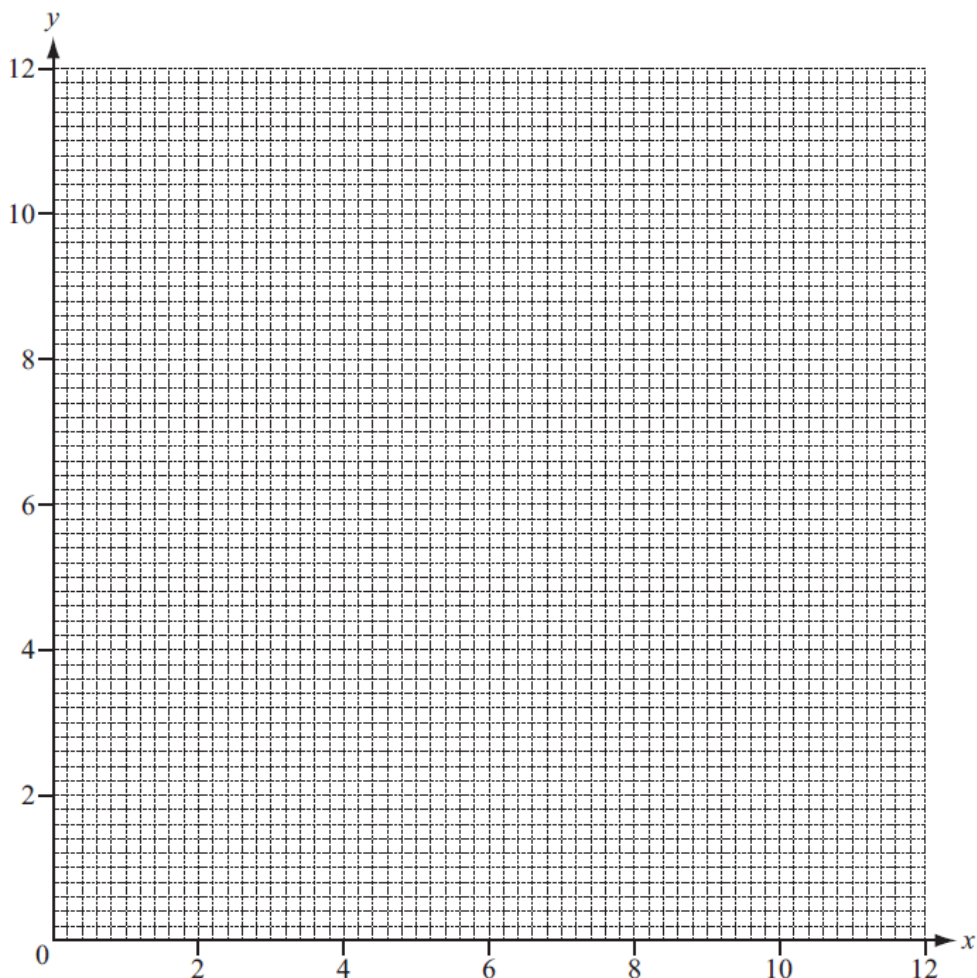
14. A is the point $(3, 11)$ and B is the point $(7, 3)$.

Find the equation of the line AB , giving your answer in the form $y = mx + c$.

$y = \dots\dots\dots$ [3]



15.



(a) On the grid, draw the following lines.

$$\begin{aligned}
 &x = 1 \\
 &y = 12 - 2x \quad \text{for } 0 \leq x \leq 6 \\
 &4y + 3x = 36 \quad \text{for } 0 \leq x \leq 12
 \end{aligned}$$

[5]

(b) On the grid, label the region R containing the points which satisfy these three inequalities.

$$x \geq 1 \qquad y \leq 12 - 2x \qquad 4y + 3x \geq 36$$

[1]

(c) (i) Find the minimum value of $x + y$ in the region R.

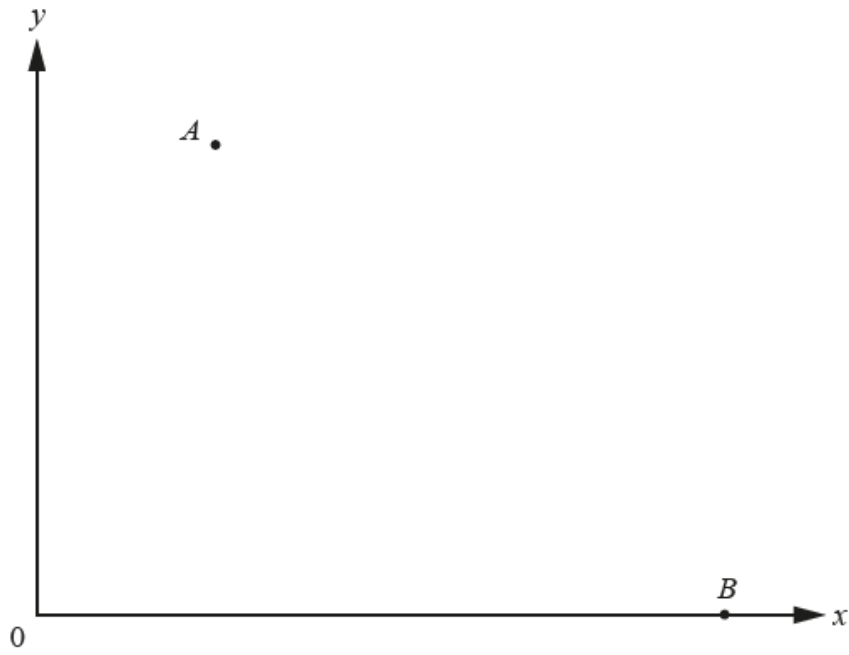
..... [1]

(ii) Find the co-ordinates of the point corresponding to this minimum value.

(..... ,) [1]



16. The points A (3, 8) and B (9, 0) are shown on the diagram below.



NOT TO
SCALE

Find the equation of the perpendicular bisector of the line AB .

..... [5]