



4.1 – 4.6 – 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 .

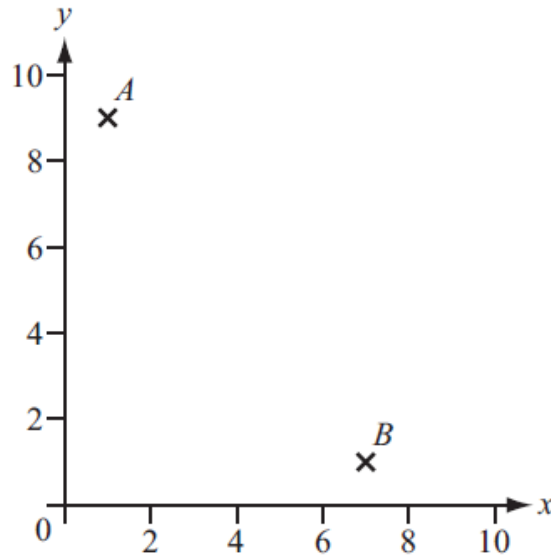
..... [2]

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 .

$a =$ [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 .

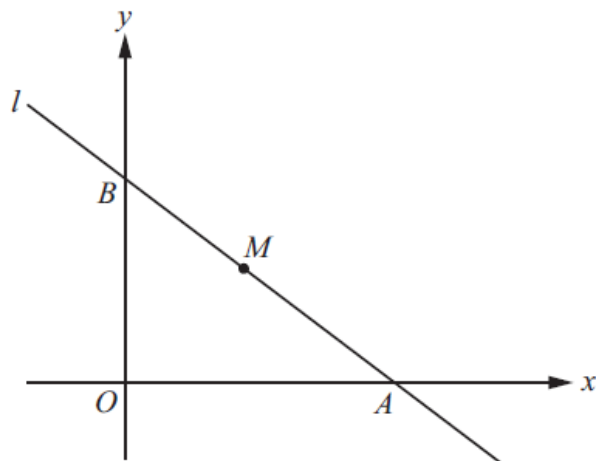
..... [4]

9. The point A has co-ordinates $(1, 3)$ and the point B has co-ordinates $(4, 1)$.
 B is the midpoint of the line AC .

Find the co-ordinates of the point C .

(.....,) [2]

10.



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]

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

Find the value of a .

$a =$ [3]

12. 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 .

$a =$

$b =$

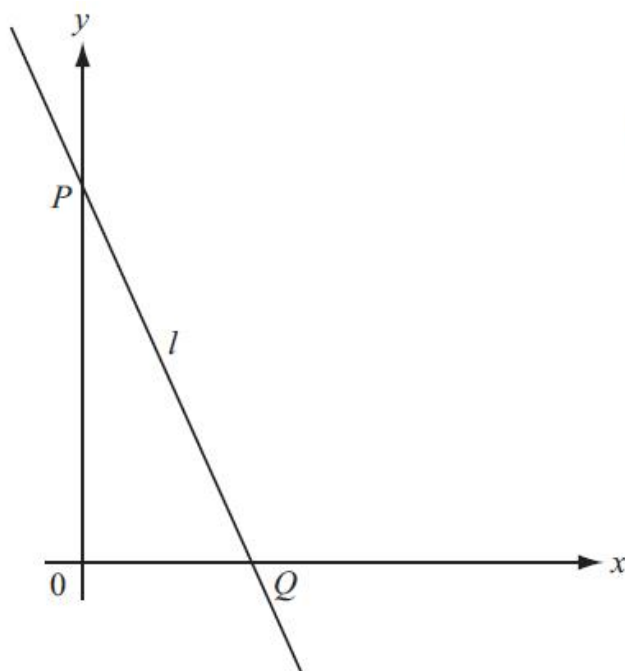
$d =$ [3]

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

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

$y =$ [2]

14.



NOT TO
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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 .

..... [2]

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

..... [4]

15. 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 $y = mx + c$.

$y =$ [3]

16. The point A has co-ordinates $(3, 8)$.
The point B has co-ordinates $(7, 0)$.

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

(.....,) [1]

(b) Find the equation of the perpendicular bisector of AB .
Write your answer in the form $y = mx + c$.

$y =$ [3]

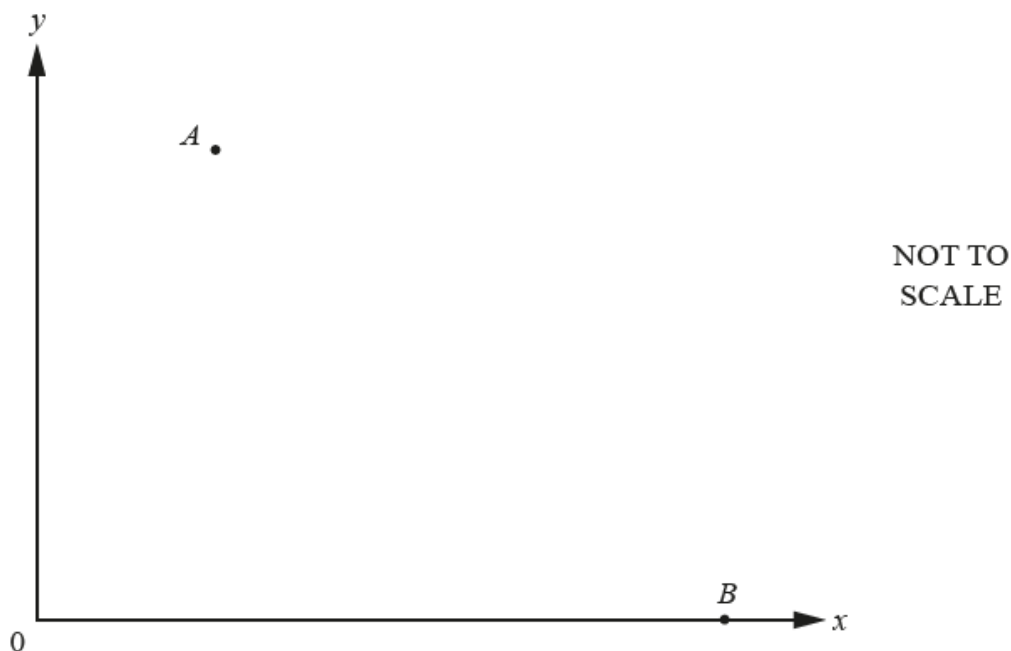
17. A is the point $(1, 8)$ and B is the point $(5, 0)$.

Find the equation of the perpendicular bisector of AB in the form $y = mx + c$.

$y =$ [4]



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



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

..... [5]

19. Point A has co-ordinates (2, 12). Point B has co-ordinates (4, 2).

Find the co-ordinates of the midpoint of AB .

(..... ,) [2]

20. Point A has co-ordinates (2, 3). Point B has co-ordinates (4, 11).

Find the equation of the line AB .

Give your answer in the form $y = mx + c$.

$y =$ [3]

21. A is the point (1, 7) and B is the point (4, 13).

Find the equation of the perpendicular bisector of AB in the form $y = mx + c$.

$y =$ [5]

22. Find the equation of the line parallel to the line $y = 3 - x$ that passes through the point (0, 7).

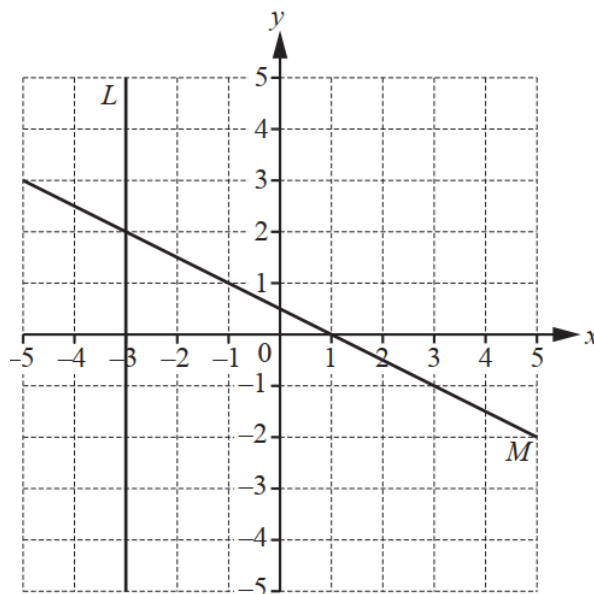
..... [2]

23. A is the point (-1, 13) and B is the point (3, 1).

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

$y =$ [3]

24.



(a) Write down the equation of line L .

..... [1]

(b) Write down the co-ordinates of the point of intersection of line L and line M .

(.....,) [1]

(c) Find the gradient of line M .

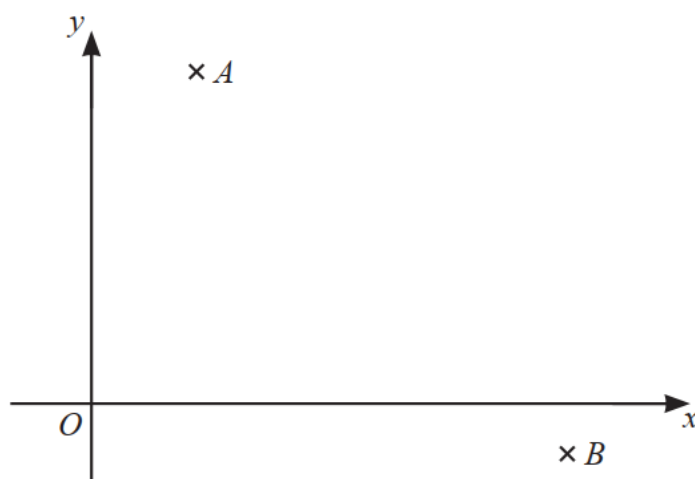
..... [2]

25. A is the point $(-2, 4)$ and B is the point $(7, 1)$.

Find the length of AB giving your answer in its simplest surd form.

..... [4]

26.



NOT TO
SCALE

The points $A(2, 8)$ and $B(6, -2)$ are shown on the diagram.

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

Give your answer in the form $y = mx + c$.

$y =$ [5]



27. A is the point $(-5, 7)$ and C is the point $(1, -2)$.

(a) B is the mid-point of AC .

Find the coordinates of B .

(.....,) [2]

(b) The line CD is perpendicular to the line AC .

Find the equation of line CD .

..... [4]

28. A is the point $(3, 6)$ and B is the point $(-5, 10)$.

(a) Work out the co-ordinates of the midpoint of AB .

(.....,) [2]

(b) Find the length of AB , giving your answer in the form $a\sqrt{5}$.

..... [3]

29. The point A has co-ordinates $(1, 9)$. The point B has co-ordinates $(4, 5)$.

Find the length of AB .

..... [2]

30. Find the equation of the straight line perpendicular to the line $y = 2x + 1$ that passes through the point $(2, 5)$.

Give your answer in the form $y = mx + c$.

$y =$ [3]

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

The line L passes through B and is perpendicular to AB .

Find the equation of L .

..... [4]

32. The point A has co-ordinates $(1, -5)$ and the point B has co-ordinates $(9, 1)$.

Find the equation of the perpendicular bisector of AB in the form $y = mx + c$.

$y =$ [5]

33. The equation of the line L is $y = 3x - 2$.

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

(.....,) [1]

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

(.....,) [1]

(c) The line M passes through the point A and is perpendicular to the line L .

Find the equation of the line M .

..... [2]

34. A is the point $(1, 7)$ and B is the point $(4, 1)$.

Find the equation of the perpendicular bisector of AB in the form $y = mx + c$.

$y = \dots\dots\dots$ [5]

35. A is the point $(3, 7)$ and B is the point $(9, -1)$.

Calculate the length AB .

$AB = \dots\dots\dots$ [3]

36. A is the point $(1, 11)$ and B is the point $(4, 5)$.

Find the equation of the perpendicular bisector of AB .

Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$ [5]