Coordinate Geometry

Sunday, 16 January 2022 7:20 PM

20 The coordinates of P and M are $(-3, 10)$ and $(0, 4)$.

(a) Find the gradient of the line PM.

Answer ..... [1]

(b) Find the equation of the line PM.

Answer ..... [1]

(c) M is the midpoint of PQ.

Find the coordinates of Q.

14 The coordinates of the midpoint of the line AB are $(1, 2)$.
The length of the line AB is 10 units.

(a) If the gradient of AB is 0, find the coordinates of A and B.

Answer $A = (\ldots\ldots, \ldots\ldots)$

$B = (\ldots\ldots, \ldots\ldots)$ [1]

(b) If the gradient of AB is $\frac{3}{4}$, find the coordinates of A and B.

11 P is the point $(3, -3)$ and Q is the point $(1, 5)$.

(a) Calculate the length of PQ.

..... [2]

(b) Find the equation of the perpendicular bisector of PQ.

..... [5]

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22 P is the point $(1, -3)$ and Q is the point $(7, 2)$.

(a) Find the coordinates of the midpoint of PQ.

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

(b) Find the gradient of the line PQ.

Answer ..... [1]

(c) The line, L, with equation $2x - 5y = k$, passes through the point Q.

(i) Find the value of k.

Answer $k =$ ..... [1]

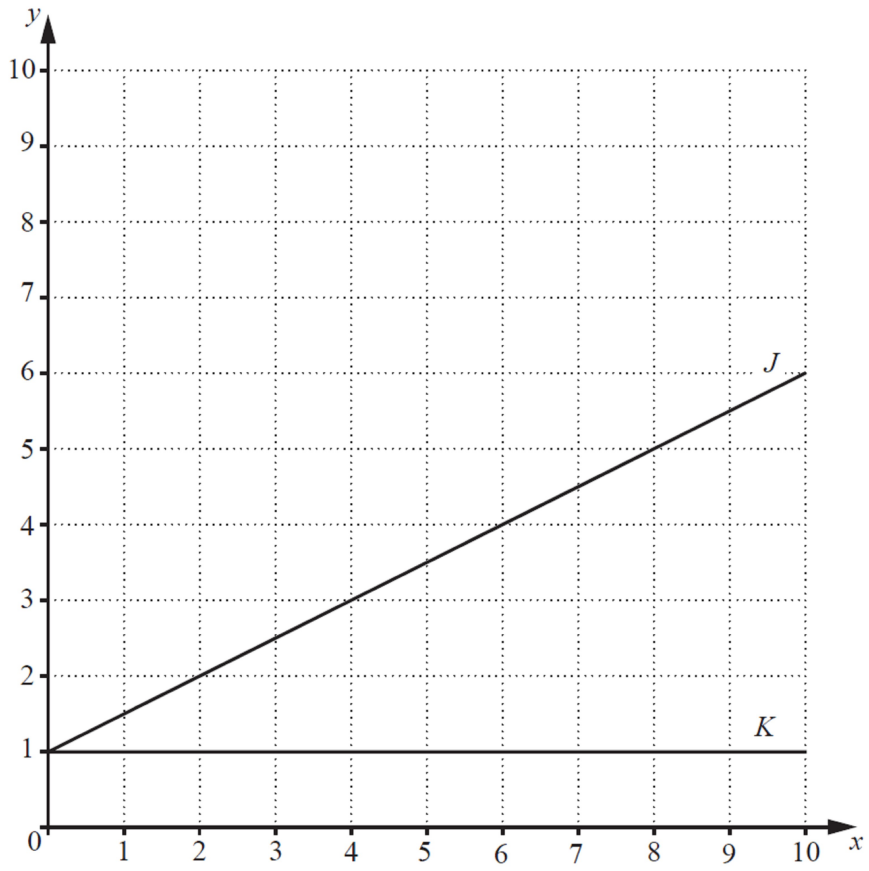
(ii) The line $x + Ay = 3$ is parallel to L.

Find the value of A.

1 **(a)** Simplify $\frac{4x-1}{3}+\frac{3x+5}{2}$.

Answer ..... [2]

(b)



(i) Find the gradient of line J.

Answer ..... [1]

(ii) Write down the equation of line K.

(iii) Draw a line, L, through (6, 1) such that the area enclosed between J, K and L is 6 cm^2.

[1]

(iv) Find the equation of line L.

Answer ..... [2]

(v) The line N is perpendicular to line J at (2, 2).

Find the coordinates of the point where line N crosses the y-axis.

(b) P is the point $(r, 4)$ and Q is the point (t, u).

The midpoint of line PQ is $(1, 3)$.
The gradient of line PQ is $-\frac{1}{4}$.

Find the value of each of r, t and u.

$r =$ .....

$t =$ .....

$u =$ ..... [4]

9 Written as a product of prime factors, $168 = 2^3 \times 3 \times 7$.

For Examiner's Use

(a) Express 140 as a product of its prime factors.

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

(b) Find the highest common factor of 168 and 140.

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

(c) Find the smallest positive integer, n, such that $168n$ is a square number.

Answer (*c*) .....[1]

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

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12 $a^x = 5$

(a) Find a^{2x}.

Answer ..... [1]

(b) Find a^{-x}.

Answer ..... [1]