Level 2 Further Maths

Midpoint of a Line
Ratio

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

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1. AB is a straight line

The coordinates of A are \((-9, -4)\)
The midpoint of AB is \((8, 1.5)\)

Work out the coordinates of B

\[…………………..\]

\[\text{(2)}\]

2. M is the midpoint of AB

Work out the value of \(k\)

\[…………………..\]

\[\text{(3)}\]
3. M is the midpoint of PQ.

P is the point \((-15, 6)\)
M is the point \((-7, -1)\)

Work out the coordinates of point Q.

4. M is the midpoint of the line AB.
The coordinates of the point M are \((7, 2)\)
The coordinates of the point B are \((11, 8)\)
The coordinates of the point C are \((7, -4)\)

Find the area of triangle ACM.
5. P is the point \((-10, 8)\)
   R is the point \((10, 4)\)
   Q is the point \((2, -10)\)

   A is the midpoint of the line PQ.
   B is the midpoint of the line PR.
   M is the midpoint of the line AB.

   Find the coordinates of the point M
6. ABC is a straight line.
   \[ \frac{AB}{BC} = \frac{3}{2} \]
   Work out the coordinates of the point B

7. PQR is a straight line.
   \[ \frac{PQ}{QR} = \frac{2}{5} \]
   Work out the coordinates of the point Q

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8. ABC is a straight line.
AB : BC = 4 : 3

(a) Find the value of p

..............................
(2)

(b) Find the value of q

..............................
(3)
9. PQR is a straight line.
P is the point (−6, 11)
R is the point (26, −5)

PQ : PR = 3 : 8

Work out the coordinates of the point Q
10. \( A(-5, -2) \) and \( B(31, -20) \) are joined by a straight line.

P is a point on AB.
AP : PB is 7 : 2

Work out the coordinates of the point P.

\[ \text{coordinates of } P \]
11. PQR is a straight line.

QR is 50% longer than PQ
Work out the coordinates of Q.
12. ABC is a straight line. AB is 40% longer than BC.

Work out the coordinates of B.
13. The line \(3x - 2y + 24 = 0\) passes through P, Q and R.

\[PQ : QR = 1 : 3\]

Find the equation of the straight that passes through points Q and O.
14. A, B and C are points on the line \(5x - 3y + 12 = 0\)

\[\text{AB : BC = 2 : 7}\]

Work out the area of triangle OBC.