



Exercise 16B

Question 7:

(i) The coordinates of mid - points of the line segment joining A(3,

$$\left(\frac{3-5}{2}, \frac{0+4}{2}\right) \text{ or } (-1, 2)$$

0) and B(-5, 4) are

(ii) Let M(x, y) be the mid - point of AB, where A is (-11, -8) and B is (8, -2). Then,

$$x = \frac{8-11}{2} = \frac{-3}{2} \text{ and } y = \frac{-8-2}{2} = \frac{-10}{2} = -5$$

hence, the required point is $\left(\frac{-3}{2}, -5\right)$

Question 8:

The midpoint of line segment joining the points A(6, -5) and B(-2, 11) is

$$\left(\frac{6-2}{2}, \frac{-5+11}{2}\right) \text{ or } (2, 3)$$

Also, given the midpoint of AB is (2, p)

$$\Rightarrow p = 3$$

Question 9:

C(1, 2a + 1) is the midpoint of A(2a, 4) and B(-2, 3b)

$$x = \frac{x_2 + x_1}{2} \text{ and } y = \frac{y_2 + y_1}{2}$$

$$1 = \frac{-2+2a}{2} \text{ and } 2a+1 = \frac{3b+4}{2}$$

$$2 = -2 + 2a \text{ and } 4a+2 = 3b+4 \text{ --- (1)}$$

$$a = 2 \text{ --- (2)}$$

Putting $a = 2$ in (1), we get

$$4 \times 2 + 2 = 3b + 4 \Rightarrow 10 - 4 = 3b$$

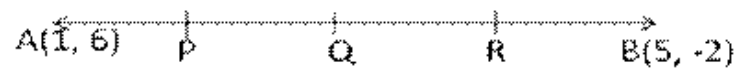
$$\Rightarrow 3b = 6 \Rightarrow b = \frac{6}{3} = 2$$

Hence, $a = 2$ and $b = 2$

Question 10:

Points P, Q, R divide the line segment joining the points A(1,6) and B(5, -2) into four equal parts

Point P divide AB in the ratio 1 : 3 where A(1, 6), B(5, -2)



Therefore, the point P is

$$\left(\frac{1 \times 5 + 3 \times 1}{1 + 3}, \frac{1 \times (-2) + 3 \times 6}{1 + 3} \right) \text{ or } \left(\frac{8}{4}, \frac{16}{4} \right) \text{ or } (2, 4)$$

Now, Q is the midpoint of AB

$$\text{The point Q is } \left(\frac{1+5}{2}, \frac{6-2}{2} \right) \text{ or } (3, 2)$$

Also, R is the midpoint of the line segment joining Q(3, 2) and B(5, -2)

$$\therefore \text{The point R is } \left(\frac{3+5}{2}, \frac{2-2}{2} \right) \text{ or } (4, 0)$$

***** END *****