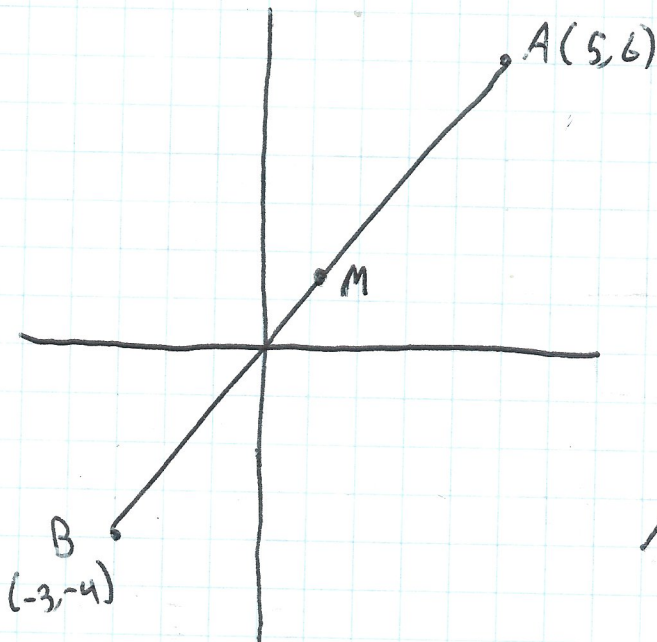


# ADDITIONAL DISTANCE-MIDPOINT-DIVISION POINT PRACTICE

①



$$M_x = \frac{x_1 + x_2}{2}$$

$$M_y = \frac{y_1 + y_2}{2}$$

$$A(x_1, y_1) \quad B(x_2, y_2)$$

$$M_x = \frac{(-3) + (5)}{2} = \frac{2}{2} = 1$$

$$M_y = \frac{6 + (-4)}{2} = \frac{2}{2} = 1$$

$$M = (1, 1)$$

②

$$A(12, 14)$$

$$B(28, 32)$$

Ratio = 3:2 from A

$$P_x = x_1 + \frac{p}{w} (x_2 - x_1)$$
$$P_y = y_1 + \frac{p}{w} (y_2 - y_1)$$

$$3:2 \rightarrow \frac{3}{3+2} = \frac{3}{5} \rightarrow \frac{p}{w}$$

$$A(x_1, y_1) \quad B(x_2, y_2)$$

$$P_x = 12 + \frac{3}{5} (28 - 12) = 12 + \frac{3}{5} (16) = 12 + 9.6 = 21.6$$

$$P_y = 14 + \frac{3}{5}(32 - 14)$$

$$P_y = 14 + \frac{3}{5}(18)$$

$$P_y = 14 + 10.8$$

$$P_y = \boxed{24.8}$$

$$P = (21.6, 24.8)$$

③  $L(5, 8)$   $M(11, 17)$  Ratio = 1:2 from M

$x_2, y_2$        $x_1, y_1$

$\rightarrow x, y$ , since Ratio starts from M

$$\frac{3}{1+2} = \left(\frac{2}{3}\right) \rightarrow \frac{P}{W}$$

$$P_x = 11 + \frac{2}{3}(5 - 11)$$

$$P_x = 11 + \frac{2}{3}(-6)$$

$$P_x = 11 + (-4) = \boxed{7}$$

$$P_y = 17 + \frac{2}{3}(8 - 17)$$

$$P_y = 17 + \frac{2}{3}(-9)$$

$$P_y = 17 + (-6) = \boxed{11}$$

$$P = (7, 11)$$

$$\rightarrow \boxed{\text{Point N} = (7, 11)}$$



4.

$$L(x_1, y_1) \quad M(x_2, y_2)$$

$$M_x = \frac{12 + 12}{2} = \frac{24}{2} = 12$$

$$M_y = \frac{(-6) + (6)}{2} = \frac{0}{2} = 0$$

$$M = (12, 0)$$

5.

$$A(x_2, y_2) \quad B(x_1, y_1)$$

Ratio 2:5 from B

$$\frac{2}{2+5} = \left(\frac{2}{7}\right) \rightarrow \frac{P}{Q}$$

$$\text{Point } C_x = 18 + \frac{2}{7}(4 - 18)$$

$$C_x = 18 + \frac{2}{7}(-14)$$

$$C_x = 18 + (-4)$$

$$C_x = \boxed{14}$$

$$\text{Point } C_y = 20 + \frac{2}{7}(5 - 20)$$

$$C_y = 20 + \frac{2}{7}(-15)$$

$$C_y = 20 + (-4.29)$$

$$C_y = \boxed{15.71}$$

$$\text{Point } C = (14, 15.71)$$

⑥

$$A(x_1, y_1) \quad B(x_2, y_2)$$

$$\frac{2}{5} \rightarrow \frac{P}{W}, \text{ from } A$$

$$P_x = 1 + \frac{2}{5}(9-1)$$

$$P_x = 1 + \frac{2}{5}(8)$$

$$P_x = 1 + 3.2 = \boxed{4.2}$$

$$P_y = 1 + \frac{2}{5}(9-1)$$

$$P_y = 1 + \frac{2}{5}(8)$$

$$P_y = 1 + 3.2 = \boxed{4.2}$$

$$\boxed{\text{Point } P = (4.2, 4.2)}$$