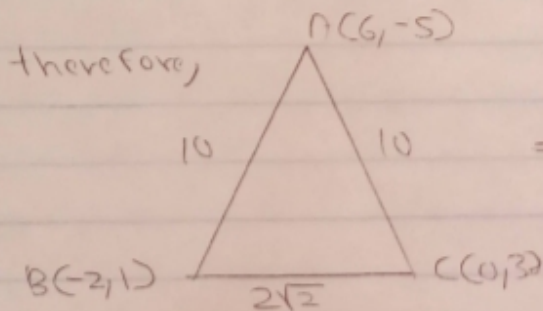


- (1) A(6, -5)  
 B(-2, 1)  
 C(0, 3)

$$\begin{aligned} \text{Line AB } (\overline{AB}) &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-2 - 6)^2 + (1 + 5)^2} \\ &= \sqrt{64 + 36} \\ &= \sqrt{100} \\ &= 10 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Line BC } (\overline{BC}) &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(0 - (-2))^2 + (3 - 1)^2} \\ &= \sqrt{4 + 4} \\ &= \sqrt{8} \\ &= 2\sqrt{2} \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Line AC } (\overline{AC}) &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(0 - 6)^2 + (3 + 5)^2} \\ &= \sqrt{36 + 64} \\ &= \sqrt{100} \\ &= 10 \text{ m} \end{aligned}$$

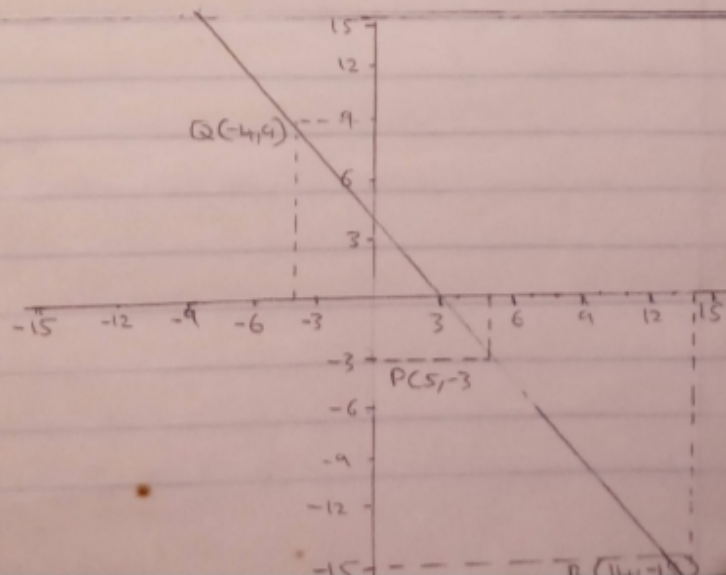


⇒ Since  $\overline{AB} = \overline{AC} = 10$ , it is an isosceles triangle since only 2 of its sides are equal in length.

NOTE: Diagram not drawn to scale

- (2) P(5, -3)  
 Q(-4, 9)  
 R(14, -15)

$$\begin{array}{l|l} x_1 = 5 & y_1 = -3 \\ x_2 = -4 & y_2 = 9 \\ x_3 = 14 & y_3 = -15 \end{array}$$



Mechanical Engineering

(i) P divides  $\overline{QR}$  Internally

$$x=5$$

$$x = \frac{L(x_1) + k(x_2)}{L+k}$$

$$x_1 = -4$$

$$x_2 = 14$$

$$5 = \frac{L(-4) + k(14)}{L+k}$$

$$5L + 5k = -4k + 14k$$

$$5L + 4L = 14k - 5k$$

$$9L = 9k$$

$\therefore$  P divides  $\overline{QR}$  in  $k:L = 1:1$

(ii) P divides  $\overline{PQ}$  Externally

$$x=14$$

$$x = \frac{L(x_1) - k(x_2)}{L-k}$$

$$x_1 = 5$$

$$x_2 = -4$$

$$14 = \frac{L(5) - k(-4)}{L-k}$$

$$14L - 14k = 5L + 4k$$

$$14L - 5L = 4k + 14k$$

$$9L = 18k$$

$\therefore$  R divides  $\overline{PQ}$  Externally in  $k:L = 2:1$