Udyokhai Samuel Osogie
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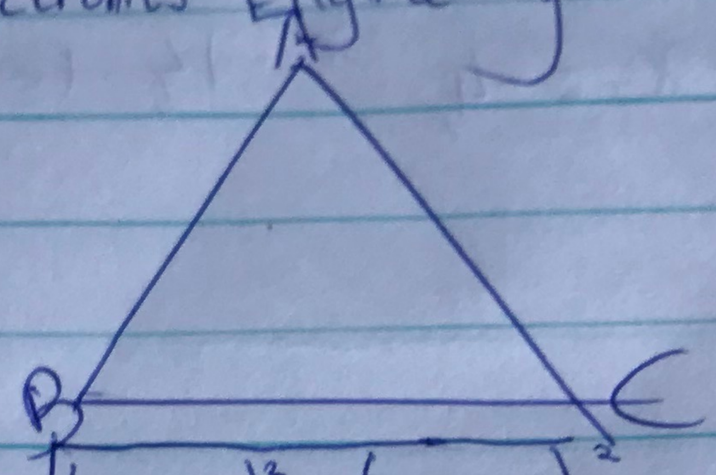
Electrical Electronics Engineering



Distance AB = $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$x_1 = 6$, $y_1 = -5$
$x_2 = -2$, $y_2 = 1$

$AB = \sqrt{(-2-6)^2+(1-(-5))^2}$

$AB = \sqrt{(-8)^2+(6)^2}$

$AB = \sqrt{64+36} = \sqrt{100} = 10$

Distance AC = $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$x_1 = 6$, $y_1 = 5$, $x_2 = 0$, $y_2 = 3$

$\sqrt{(0-6)^2+[3-(-5)]^2}$

$\sqrt{(-6)^2+(8)^2} = \sqrt{100} = 10$

Distance BC = $\sqrt{[10-(-2)]^2+(3-1)^2}$

$\sqrt{4+4} = \sqrt{8}$

Since $AB = AC$

The triangle is isosceles.

$x = \frac{lx_1 + lx_2}{l+k}$ $x = 5, x_1 = 4, x_2 = 14, l = ?, k = ?$

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

$5(l+k) = -4l + 14k$

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

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

$9l = 9k$

$l = k$

$k/l = 1/1$

The ratio of k to l is 1:1

$y = \frac{ly_1 + ky_2}{l+k}$ $y_1 = -3, y_1 = 9, y = -15, l = ?, k = ?$

$-3 = \frac{9l + (-15)k}{l+k}$

$-3l - 3k = 9l - 15k$

$-3l - 9l = -15k + 3k$

$-12l = -12k$

$K = l = K/l = 1/1$

Therefore p divides QR = 1:1

b) $x = \frac{lx_1 - Kx_2}{l - K}$ $x_1 = 5, x_2 = -4, x = 14$ $l = ?, K = ?$

$14l - 14K = 5l + 4K$

$9l/9l = 18K/9l$

$1/2 = K/l$

$\cancel{K/l = 2/1}$ $= 2:1$

$y = \frac{ly_1 - Ky}{l - K}$ $y_1 = -3, y_2 = 9, y = -15$

$-15 = \frac{3l - 9K}{l - K}$

$-15l + 15K = -3l - 9K$

$-15l + 3l = -9K - 15K$

$\cancel{-18} -12l = -24K$

$l = 2/1$

The ratio R divides PQ = 2:1