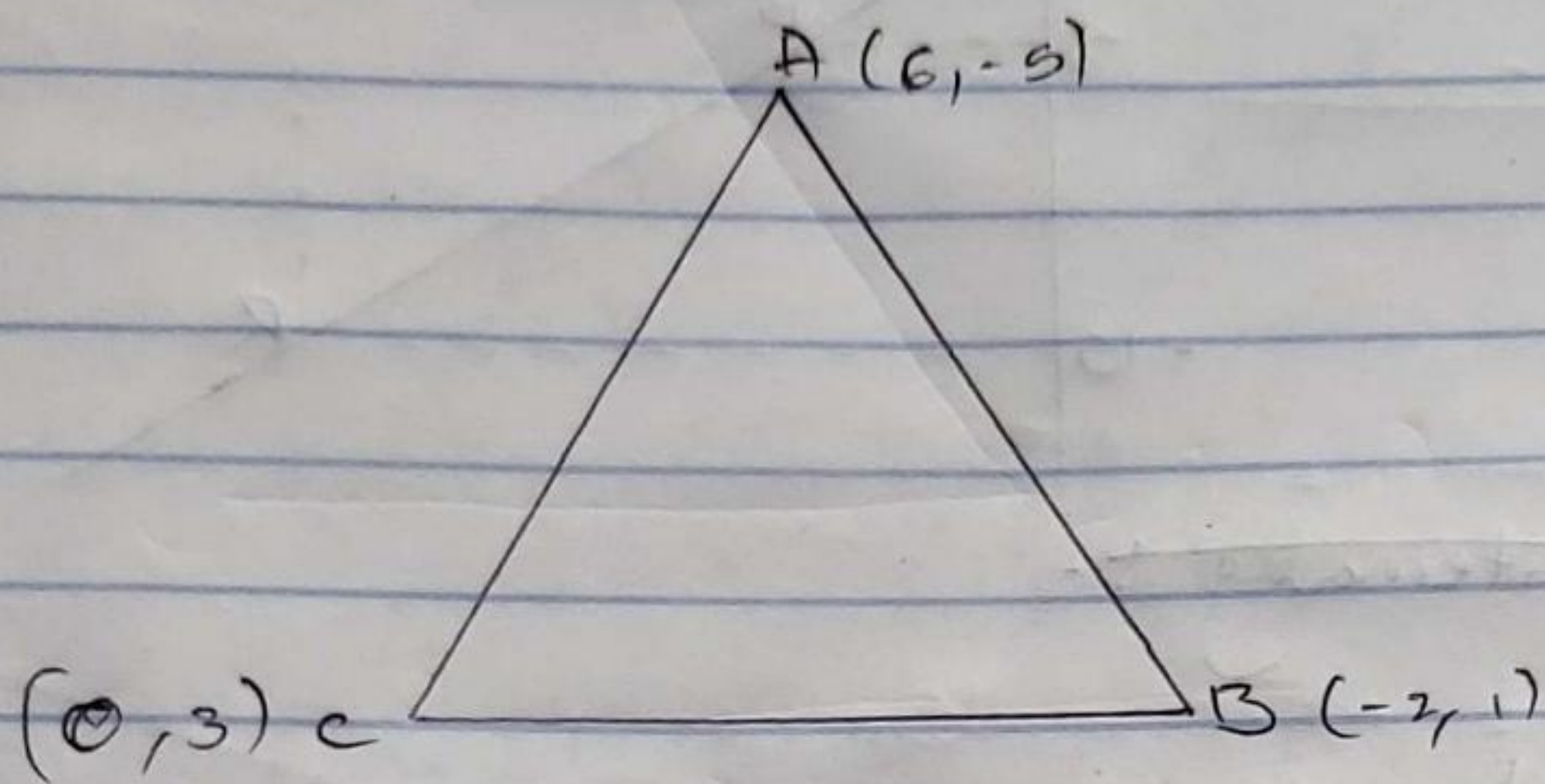


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19/ENG 05/019.

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



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

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

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

$$= \sqrt{36 + 64}$$

$$= \sqrt{100}$$

$$\overline{AC} = 10$$

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

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

$$= \sqrt{64 + 36}$$

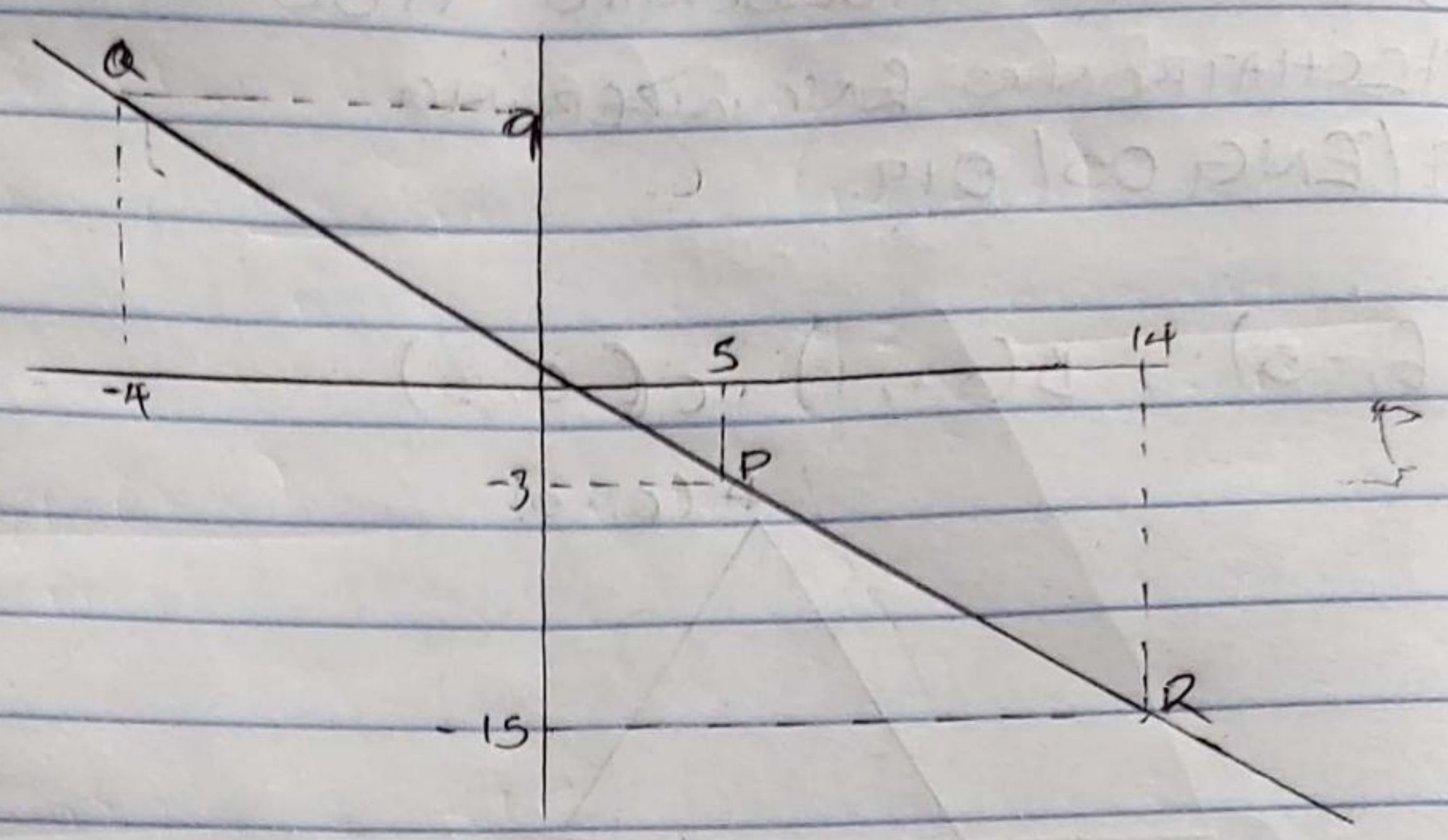
$$= \sqrt{100}$$

$$\overline{AB} = 10$$

$$AB = AC = 10$$

$\therefore \Delta ABC$ is an isosceles triangle.

2



~~P divides QR internally:~~

P divides QR internally:

$$\frac{mx_2 + ny_1}{m+n}, \frac{my_2 + ny_1}{m+n} = (5, -3)$$

$$= \frac{m(14) + n(-4)}{m+n} = 5$$

$$\frac{14m + (-4n)}{m+n} = 5$$

$$\frac{14m - 4n}{m+n} = 5$$

$$14m - 4n = 5m + 5n$$

$$14m - 5m = 5n + 4n$$

$$9m = 9n$$

$$\frac{m}{n} = \frac{9}{9}$$

$$\frac{m}{n} = \frac{1}{1}$$

∴ The ratio in which P divides QR is 1:1

Q divides PA externally

$$\frac{mx_2 - nx_1}{m-n}, \frac{my_2 - ny_1}{m-n} = (14, -15)$$

$$y = \frac{my_2 - ny_1}{m-n}$$

$$\frac{m(a) - n(-5)}{m-n} = -15$$

$$\frac{9m + 3n}{m-n} = -15$$

$$9m + 3n = -15m + 15n$$

$$9m + 15m = 15n - 3n$$

$$24m = 12n$$

$$\frac{m}{n} = \frac{24}{12}$$

$$\frac{m}{n} = \frac{2}{1}$$

$$m:n = 2:1$$

∴ Q divides PA in the ratio 2:1