

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

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

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

$$\frac{9L}{9} = \frac{9k}{9} \quad L = k \quad \therefore \frac{k}{L} = \frac{1}{1}$$

The ratio is 1:1

$$y = \frac{ly_1 + ky_2}{L+k} \quad y = -3, \quad y_1 = 9, \quad y_2 = -15$$

$$L = 7, \quad k = 7$$

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

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

$$k = L = \frac{k}{L} = \frac{1}{1}$$

The ratio p divides QR = 1:1

$$2.) \quad x = \frac{lx_1 - kx_2}{L-k}$$

$$x_1 = 5, \quad x_2 = 14$$

$$x_2 = -4$$

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

$$\frac{1}{2} = \frac{k}{L} = \frac{2:1}{1}$$

$$y = \frac{ly_1 - ky_2}{L-k} \quad y_1 = 3, \quad y_2 = 9$$

$$y = -15$$

$$-15 = \frac{-3L - 9k}{L-k}$$

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

$$\frac{L}{2} = \frac{2k}{2} \quad \therefore \frac{1}{2} = \frac{k}{L}$$

The ratio r divides PQ = 2:1

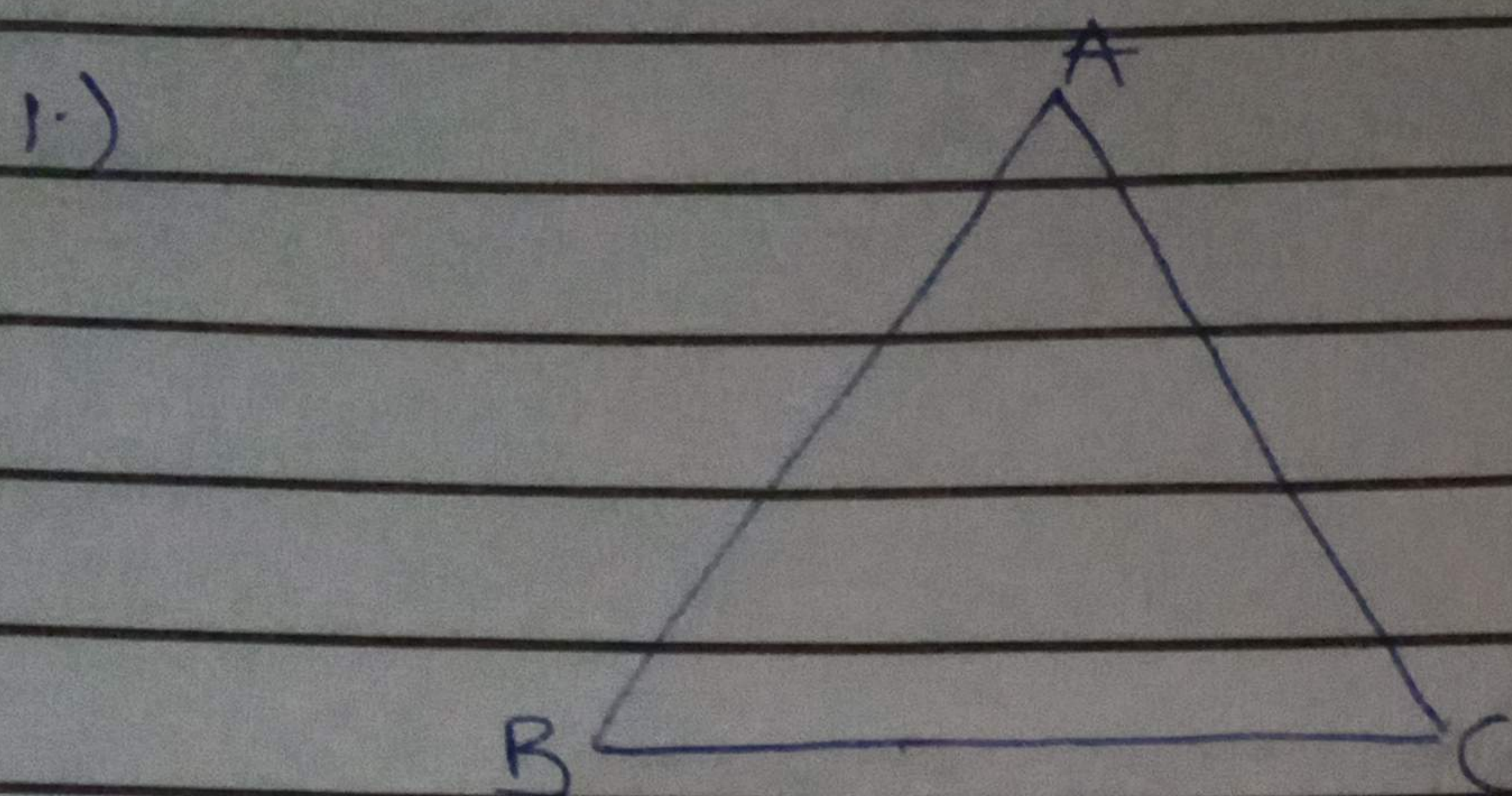
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$$\text{Distance } AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$x_1 = 6 \quad y_1 = -5$$

$$x_2 = -2 \quad y_2 = 1$$

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

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

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

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

$$x_1 = 6 \quad y_1 = 5$$

$$x_2 = 0 \quad y_2 = 3$$

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

$$\sqrt{100} = 10$$

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

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

Since $AB = AC$

The triangle is isosceles

2a.) $x = \frac{Lx_1 + Kx_2}{L+K}$

$$x = 5, \quad x_1 = 4, \quad x_2 = 14$$

$$L+K$$

$$L = 7, \quad K = 7$$