Problem:

The two regression lines of a bivariate distribution are:

4x – 5y + 33 = 0 (line of y on x) 20x – 9y – 107 = 0 (line of x on y).

Estimate the value of x when y = 7. Compute the correct answer to one decimal place.

Solution:

We have, line of y on x,

$4x - 5y + 33 = 0$

⇨ $5y = 4x + 33$

⇨ **$y = (4/5)x + 33/5$**

Other one is line of x on y,

$20x - 9y - 107 = 0$

⇨ $20x = 9y + 107$

⇨ **$x = (9/20)y + 107/20$**

Estimating the value of x when y = 7,

⇨ $x = (9/20)y + 107/20$

⇨ $x = (9/20) * 7 + 107/20$

⇨ $x = 0.45 * 7 + 5.35$

⇨ $x = 3.15 + 5.35$

⇨ **$x = 8.5$**