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Rearrangement: estimate of  $y = slope \times x + intercept$ where

$$slope = \frac{r \times \sigma_y}{\sigma_x} \qquad and \qquad intercept = \mu_y - slope \times \mu_x$$

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The regression line passes through the point of averages.

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Weights: average 160 pounds, SD 20 pounds

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 = 0.09 inches per pound

intercept 
$$= 67 - 0.09 \times 160 = 52.6$$
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**Answer:** estimated height =  $0.09 \times$  weight + 52.6

Use: A person who weighs 100 pounds is estimated to be  $0.09 \times 100 + 52.6 = 61.6$  inches tall.

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#### Another use of the slope:

If one of the people is 5 pounds heavier than another, then the heavier person is estimated to be  $0.09 \times 5 = 0.45$  inches taller.