- For participants 2, 3 and 5, their scores on each variable are all below the respective means for each variable, for participants 1 and 4 their scores are all above the respective means for each variable.

- To formalise this, we can calculate the average combined differences…..

$$\text{cov}(x,y) = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{N - 1}$$

- For our example:

Participant	Study Time (X)	Exam Score (Y)	Mean X	Mean Y	X - Mean X	Y - Mean Y	(X - Mean X) * (Y - Mean Y)
1	14	5	14.6	6.4	-0.6	-1.4	0.84
2	15	7	14.6	6.4	0.4	0.6	0.24
3	16	7	14.6	6.4	1.4	0.6	0.84
4	13	5	14.6	6.4	-1.6	-0.4	0.64
5	15	7	14.6	6.4	0.4	0.6	0.24

Σ = 2.8

Cov (x,y) = 2.8/N-1 = 2.8/4 = 0.7