Variance

Average income in the United States

EXERCISE 1

Background You have the annual personal income of 11 people from the USA. You have the mean income from the exercise on mean, median and mode

Task 1 Decide whether you have to use sample or population formula for the variance

Task 2 Calculate the variance of their income

Task 3 Generally, what does this number tell you?

Annual income	
$	62,000.00
$	64,000.00
$	49,000.00
$	324,000.00
$	1,264,000.00
$	54,330.00
$	64,000.00
$	51,000.00
$	55,000.00
$	48,000.00
$	53,000.00

Mean $ 189,848.18

TASK 1

In this case this is a sample not population. So we will go for variance for sampl

TASK 2

variance (sample)	133433409536.36
std	365285.38

TASK 3

This number tells that the spread of the data is big, which shows the very different income range or dispersion for the all population.

Covariance

SAT scores

EXERCISE 2

Background You are given data on the SAT reading and writing scores of several students from our lesson on cross tables and scatter plots

Task 1 Determine if this is sample or population

Task 2 Calculate the covariance and correlation of the two datasets

Task 3 Plot the data and using your previous knowledge comment on whether there is a noticeable relationship between the two variables.

Writing	Reading
344	378
383	349
611	503
713	719
536	503

$(x-\bar{x})*(y-\bar{y})$

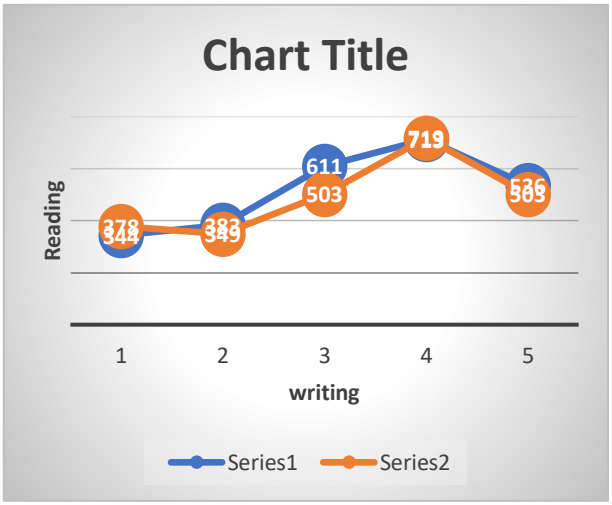
TASK 1

This is sample

TASK 2

covariance sample	21155.55
corr coeff	0.938125713

TASK 3



Conclusion :

If we take into covariance of the sample it clearly depicts that both writing and reading have a positive relationship. The strength of the relation can be determined by corr coff which is ~94%. Scatter plot also supports the above statement.