Practical work 4 Correlation

The correlation coefficient (a value between -1 and +1) tells you how strongly two variables are related to each other. We can use the CORREL function or the Analysis Toolpak add-in in Excel to find the correlation coefficient between two variables.

- A correlation coefficient of +1 indicates a perfect positive correlation. As variable X increases, variable Y increases. As variable X decreases, variable Y decreases.



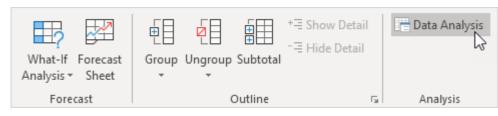
- A correlation coefficient of -1 indicates a perfect negative correlation. As variable X increases, variable Z decreases. As variable X decreases, variable Z increases.

B	B8 \checkmark : \checkmark f_x =CORREL(A2:A6,B2:B6)									
	А	В	с	D	E	F	G	н	I.	
1	Х	Z		15 -						
2	0	2		15						
3	10	-8		10	~	^				
4	2	0								
5	12	-10		5	_/ ``					
6	6	-4		0	X			—X		
7					1 2	3 4	5	Z		
8		-1		-5	\rightarrow	$ \rightarrow $				
9					\sim					
10				-10		×	r			
11				-15						
12										
13										

- A correlation coefficient near 0 indicates no correlation.

To use the Analysis Toolpak add-in in Excel to quickly generate correlation coefficients between multiple variables, execute the following steps.

1. On the Data tab, in the Analysis group, click Data Analysis.

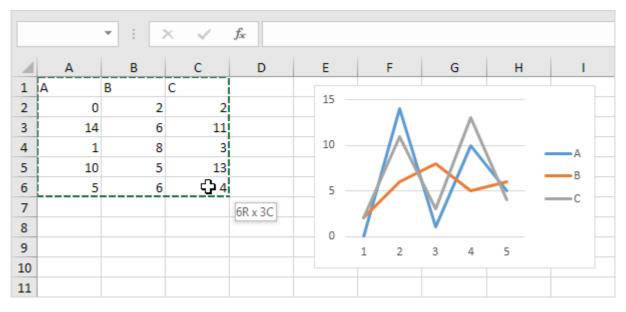


Note: can't find the Data Analysis button? Click here to load the Analysis ToolPak add-in.

2. Select Correlation and click OK.

Data Analysis	?	×	
<u>A</u> nalysis Tools	OK N		
Anova: Single Factor		-	
Anova: Two-Factor With Replication		C	ancel
Anova: Two-Factor Without Replication			
Covariance		<u> </u>	<u>l</u> elp
Descriptive Statistics			
Exponential Smoothing			
F-Test Two-Sample for Variances			
Fourier Analysis			
Histogram	×		

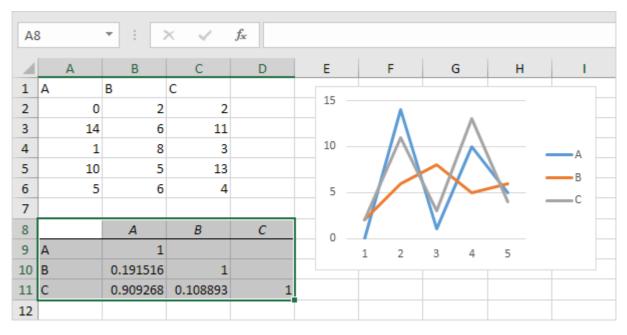
3. For example, select the range A1:C6 as the Input Range.



- 4. Check Labels in first row.
- 5. Select cell A8 as the Output Range.
- 6. Click OK.

Correlation		? ×
Input Input Range: Grouped By: Labels in first row	SAS1:SCS6	OK Cancel <u>H</u> elp
Output options	SAS8	

Result.



Conclusion: variables A and C are positively correlated (0.91). Variables A and B are not correlated (0.19). Variables B and C are also not correlated (0.11). You can verify these conclusions by looking at the graph.

Ex: Apply the above in series 3.