Dependent-tests

To calculate a Dependent t-test in Excel

• Set up your data with the pretest scores in one column and the posttest scores in the adjacent column as shown below:



• Click on Data Analysis and drag the cursor down to "t-test: Paired Two Sample for Means" and click on OK.

🕱 🗑 🖤 • 🔃 🐔 🛛 🔻 ERA 244 Module 4 Data Set w stats.stsx - Microsoft Excel 🗖 🖬													23									
	ile	Home	Insert	Page	Layout	Formulas	Data	Review	View												۵ 🕜 🗆	er XX
Fr	A Fro	m Fro eb Tex Get	m From (xt Source t External D	Other ces C	Existing onnections	Refresh All - Con	Connectio Properties Edit Links nections	ns ⊉↓ ∡↓	AZA Sort	Filter ort & Filt	K Clear Reapply Advanced ter	Text to Columns	Remove Duplicates	Data Validatio Data T	Consolidat	e What-If Analysis *	Group	Ungroup Su Out	ibtotal	Show Detail Hide Detail	Data Ana	alysis
	B	12	- (0	f _×																	~
	Α		В	С	D	E	F	G		Н	I.	J	К	L	М	N	0	Р	Q	R	S	
1	Pre	Pos	st																			
2		10	10																			
3		5	6																			
4		8	8																			
5		4	5																			
7		5	4																			
8		5	5																			
9		8	9																			
10		7	10																			
11		6	7																			
12																						
13																						
15														Dat	a Analysis				_	? X		
16														Ar	nalysis Tools							
17														F	-Test Two-Sampl	e for Variance	s			ОК		
18														F	ourier Analysis istogram				(Cancel		
19														M	loving Average	Ceneration				Help		
20														R	ank and Percent	ile			=			
21														R	egression ampling							
22															Test: Paired Two Test: Two-Samn	o Sample for N le Assuming F	leans qual Varia	nces	-			
23															reser no sump	ine i noodinii ng L	qua fana					
24																						

• The following box will appear.

Line Inset Prove Form	🕱 🖬 🔊 - 🔍 - 🗋 🚵 1 = ERA 244 Module 4 Data Set w stats.xlsx - Microsoft Excel 🗆 📾												e X										
Press Free		File	Home	e Inse	rt Pa	ge Layout	Formulas	Data	Review	Viev	N											۵ ()	- # %
B12 Image: Constraint of the constrain	FI	A om cess	From F Web 1 G	rom Fror Text Sou iet Externa	n Other urces • I Data	Existing Connections	Refresh All -	Connect Propertio Edit Link	ions ⊉↓ es X↓	A Z A	Filter	K Clear Reapply Advance	d Colum	o Remove ns Duplicate	Data s Validation Data Too	Consolidat	e What-If Analysis ~	Group	Jngroup Sub	●∃ Sho ■∃ Hic total	ow Detail le Detail	Le Dat	a Analysis alysis
A B C D E F G H I J K L M N O P Q R S F 1 Prec Post -			B12	•	. (*	f _×																	*
1 Pre Post Image: State St		[A	В	С	D	E	F	G	i	Н	I.	J	К	L	М	N	0	Р	Q	R	S	
2 10 <t< th=""><th>1</th><th>Pre</th><th>P</th><th>ost</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	1	Pre	P	ost																			
3 5 6 6 8 6 7 7 7 8 9 7 10 7 10 7 10 7 10 7 10 <td< th=""><th>2</th><th></th><th>10</th><th>10</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	2		10	10																			
4 8 8 6 8 6 8 6	3	_	5	6																			
5 6 8 5 6 4 5 6 4 5 6 4 5 6 4 5 6 6 6 7 6 7 5 4 6 7 6 7 6 7 6 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 7 10 10 7 10 10 7 10	4	_	8	8																			
6 4 5 6 6 6 6 7 7 5 4 6 7	5	-	6	8																			
7 5 4 1	6	-	4	5																			
8 3 5 9 8 9 10 7 10 11 6 7 12 Imput Imput 13 Imput Imput 16 Imput Imput 17 Imput Imput 18 Imput Imput 19 Imput Imput 11 Imput Imput 12 Imput Imput 14 Imput Imput 15 Imput Imput 16 Imput Imput 17 Imput Imput 18 Imput Imput 19 Imput Imput 11 Imput Imput 12 Imput Imput 13 Imput Imput 16 Imput Imput 17 Imput Imput 18 Imput Imput 19 Imput Imput 11 Imput Imput	/	-	5	4																			
3 3 3 11 6 7 12 12 12 12 13 14 15 14 17 16 17 16 19 16 19 16 19 16 </th <th>8</th> <th>-</th> <th>د د</th> <th>2</th> <th></th>	8	-	د د	2																			
11 6 7 12 13 13 1000000000000000000000000000000000000	10		7	10																			
12 Imput Imput 13 Imput Imput 14 Imput Imput 15 Imput Imput 16 Imput Imput 17 Imput Imput 18 Imput Imput 19 Imput Imput 20 Imput Imput 21 Imput Imput 22 Imput Imput 23 Imput Imput 24 Imput Imput 25 Imput Imput	11		6	7																			
13 Image: Imag	12		Ē																				
14 Input OK 15 Input OK 16 Variable 1 Range: Imput 17 Imput OK 18 Hypothesized Mean Difference: Imput 19 Imput Imput 20 Imput Imput 21 Output options Imput 22 Imput Imput 23 Imput Imput 24 Imput Imput 25 Imput Imput	13														t-Test: F	Paired Two Sa	ample for Me	ans		-7			
15 Variable] Range: OK 16 Variable] Range: Cancel 17 Image: Image: 18 Hypothgized Mean Difference: Image: 19 Image: Image: 20 Image: Image: 21 Output options 22 Image: Image: 23 Image: Image: 24 Image: Image: 25 Image: Image: 26 Image: Image:	14														Input								
16 Variable 2 Range: Kancel 17 Hypothgized Mean Difference: Heb 18 Labels Labels 20 Apha: 0.05 21 Output options 23 Output ongo: Kit 24 New Worksheet By: Mex 25 New Worksheet By: Mex	15														Variab	le <u>1</u> Range:	L		1	0			
17 Hypothgized Mean Difference: Help 18 Labels 19 Labels 20 Alpha: 0.05 21 Output options 23 Quput Range: 16 24 New Worksheet Bly: 1 25 New Workshoet District 1	16														Variab	le <u>2</u> Range:			1	Can	cel		
18 Important and interence: <td< th=""><th>17</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>He</th><th>lp </th><th></th><th></th></td<>	17																			He	lp		
19 Image: mark </th <th>18</th> <th></th> <th>Hypot</th> <th>ngsized mean l</th> <th>unerence:</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	18														Hypot	ngsized mean l	unerence:						
20 Alpha: 0.05 21 Output options 22 Output options 23 New Worksheet Bly: 25 New Workbook	19														Lat	bels					-		
21 Output options 22 Qutput Range: 23 New Worksheet By: 25 New Worksheet Dy: 26 New Worksheet Dy:	20														<u>Alpha</u> :	0.05					-		
22 Output Range: Fill 23 New Worksheet Bly: Second 25 New Workbook Second	21	-													Output	t options					-		
23 	22														© <u>O</u> u	tput Range:			1		-		
25 26	23	-													Ne	w Worksheet <u>F</u>	ly:						
26	24														© Ne	w <u>W</u> orkbook							
	26																		_	-			
27	27																						

- Type in the cells that enclose the label and data for the pretest A1:A11. Then type in the cells that enclose the label and data for the posttest B1:B11.
- Type "0" for the Hypothesized Mean Difference.

- Click in the box by labels (If you don't type in the cell for the label, you don't have to check this box.)
- Click on Output range and give an empty cell for the results to be printed in. Here it is A14.
- Click on OK.



Your data will appear below. Notice that the means are labeled according to the column labels.

🕱 🖌 🌮 🕫 🕐 🗋 📸 🖙 ERA 244 Module 4 Data Set w stats.xisx - Microsoft Excel 🗆 📾											23										
File Home Insert Page Layout Formulas Data Review View 🛆 🖓 🗆 🖗													P 23								
Fro	m From ess Web	From Text	From Other Sources *	Existi Connec	ng tions	Refresh All *	Connection Properties Edit Links	ns 2↓ 2 Z↓ S	ort Cort % Ei	K Clear	d Column	D Remove ns Duplicates	Data Validation	Consolidate	What-If Analysis *	Group U	Ingroup Sub	● Sho ■ Hic total	ow Detail le Detail	Data Analy	/sis
	A1/	Gel Ext		£	+ Tor	coi	Two Samp	lo for Moa	501L & FI	iiter			Data 100	15			Outim	e	131	Andiysis	~
	AIG	, 	•	JX	- teres	st. Pallet	riwo samp					IV.			N	0	D	0	0	6	
1	Pre	Post	L		U	E	F	G	н		J	ĸ	L	IVI	IN	0	P	ų	ĸ	3	-
2	1	0	10																		
3		5	6																		
4		8	8																		
5		6	8																		
6		4	5																		
7		5	4																		_
8		5	5																		_
9		8	9																		_
10		/ 6	7																		- 1
12		•	·																		
13																					
14	t-Test: P	aired Tw	o Sample f	or Mear	ns																
15																					
16		Pre	Post																		
17	Mean		6.4	7.2																	
18	Variance	3.377	778 4.622	222																	
19	Observa -	ti	10	10																	
20	Pearson	C 0.849	226	_																	
21	df	51	9																		
23	t Stat	-2.22	834																		
24	P(T<=t) (on 0.02	642																		
25	t Critical	o 1.833	113																		
26	P(T<=t) t	w 0.052	839																		
27	t Critical	t 2.262	157																		
28																					
29																					
30																					

I have copied the results into this Word file

	Pre	Post
Mean	6.4	7.2
Variance	3.377778	4.622222
Observations	10	10
Pearson Correlation	0.849226	
Hypothesized Mean		
Difference	0	
df	9	
t Stat	-2.22834	
P(T<=t) one-tail	0.02642	
t Critical one-tail	1.833113	
P(T<=t) two-tail	0.052839	
t Critical two-tail	2.262157	

t-Test: Paired Two Sample for Means

The means for are in red. The variances are in blue. You can get standard deviations by squaring this variance number for each group. The t-value and the one-tailed P value are in green. The two-tailed p-value is in orange. Remember you want the p value to be less than .05 for the t to be significant meaning that the pretest is significantly different from the posttest. The degrees of freedom are in purple.

In my example these are spelling test grades. I want to do a one-tailed test since I think my students should be better (one direction) on the posttest than on the pretest. (If I wasn't sure which way the results should turn out, I would be doing a two-tailed test.

Your write-up should read:

The means and standard deviations appear in Table 1 (you can do that table yourselves.)

The dependent t-test of differences between pretest (M = 3.78) and posttest (M = 4.62) means in spelling was significantly different (t (9) = -2/23. P = .03).

If this p is less than .05, you would need to say that there was a significant difference, and the group with the highest mean was different from the group with the lowest mean.