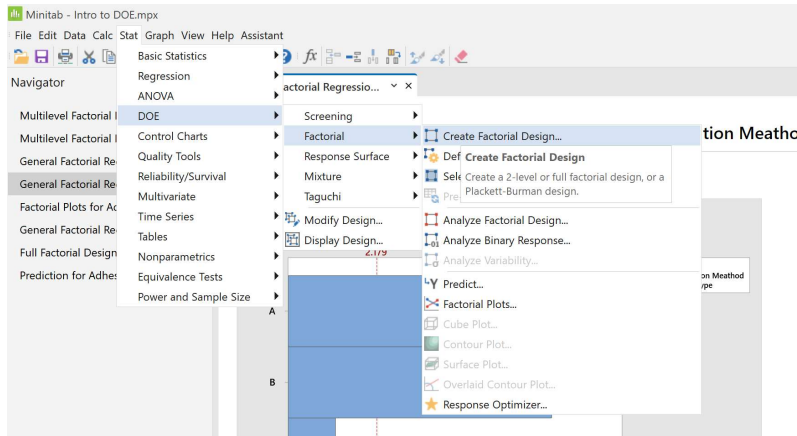
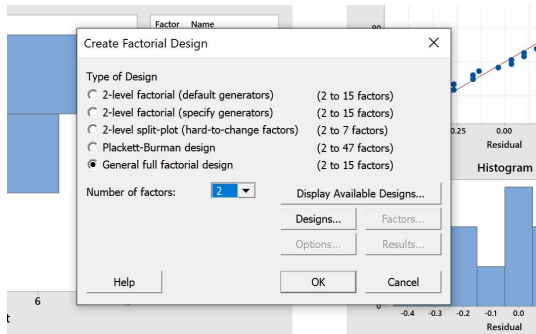


Directions for Factorial DOE

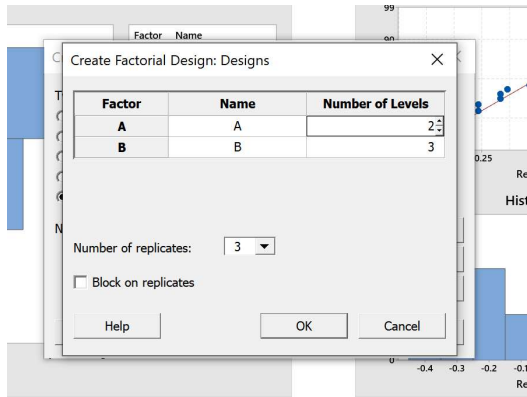
- 1) First you must set up your DOE in Minitab – go to Stat-> DOE-> Factorial - > Create Factorial Design



- 2) Select the correct options from the menu (for now will be sticking with general full factorial design) – select the number of factors from the dropdown menu, and click “designs”

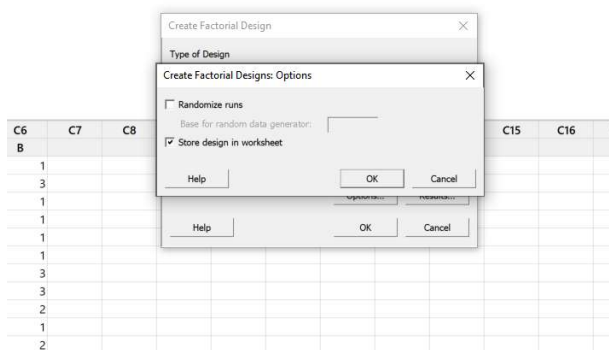


- 3) Once in the “designs menu” select the replicates from the drop down menu and also select the number of levels for each factor. Click “ok” and then “ok” again.

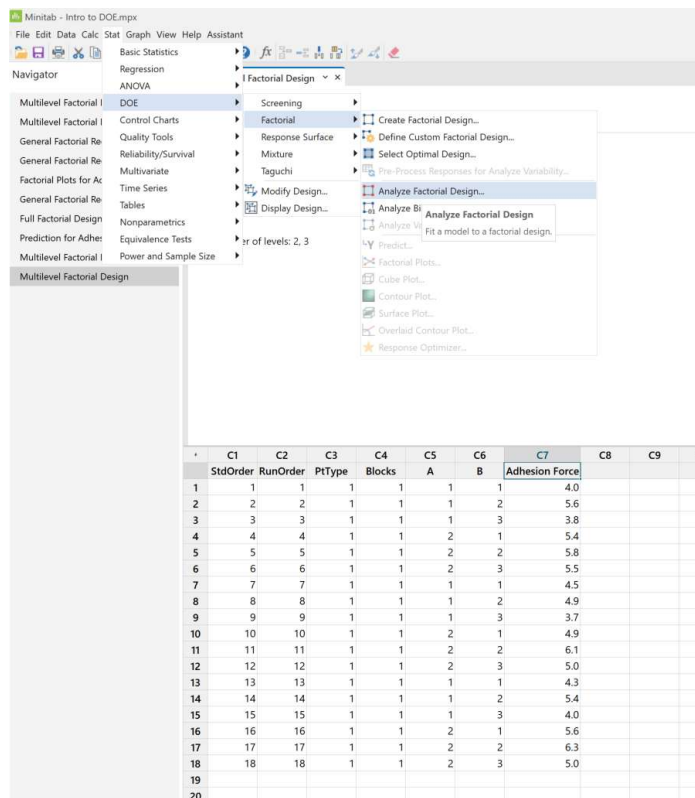


- 4) The design will automatically populate the spreadsheet with a suggested run order for each of the settings. Next you should input your data (to make it easier you can go to options in the Create Factorial Design Menu and uncheck the Randomize runs box if you do not want the program to suggest a randomized order when you set it up).

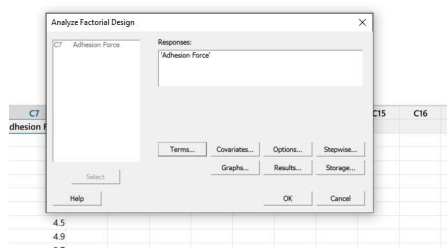
	C1	C2	C3	C4	C5	C6	C7	C8	C9
	StdOrder	RunOrder	PtType	Blocks	A	B			
1	13	1	1	1	1	1			
2	12	2	1	1	2	3			
3	16	3	1	1	2	1			
4	7	4	1	1	1	1			
5	1	5	1	1	1	1			
6	4	6	1	1	2	1			
7	15	7	1	1	1	3			
8	18	8	1	1	2	3			
9	14	9	1	1	1	2			
10	10	10	1	1	2	1			
11	5	11	1	1	2	2			
12	3	12	1	1	1	3			
13	9	13	1	1	1	3			
14	11	14	1	1	2	2			
15	8	15	1	1	1	2			
16	17	16	1	1	2	2			
17	6	17	1	1	2	3			
18	2	18	1	1	1	2			
19									
20									
21									



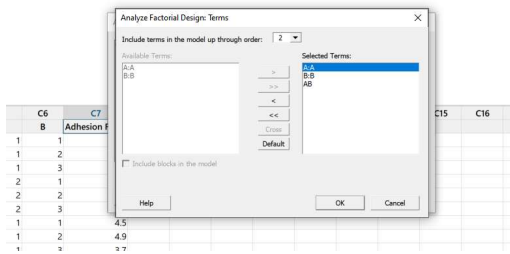
5) After entering the data, go to stat -> factorial -> Analyze factorial design in the menu



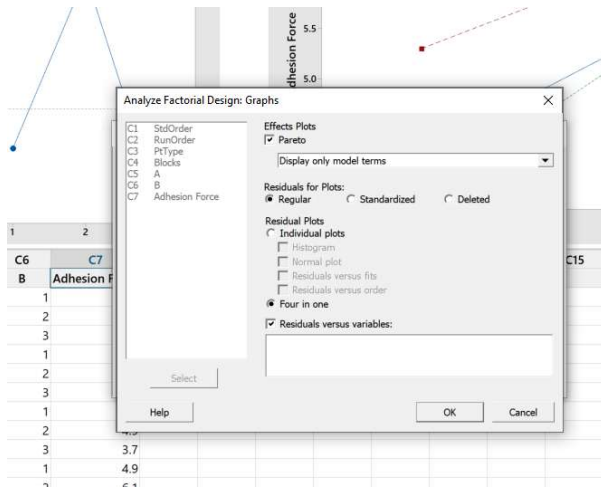
6) Select the response (or responses) by double clicking them in the selection menu to appear in the Responses list.



7) Click “terms” and make sure the terms you want (main effects and interactions) are selected for your model (select 1 order from the dropdown menu for now – but be sure to include the interaction term)

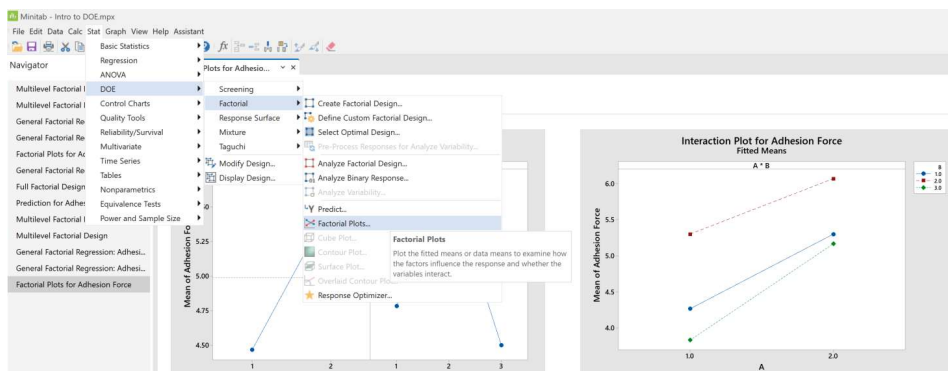


- 8) To tune what residuals you would like plotted go to Graphs and select “residuals vs. variables” and select variables and click ok



- 9) Click OK to get the DOE ANOVA output and graphs

- 10) To plot Main Effects and Interactions go to Stat->DOE->Factorial->Factorial Plots



Once this is complete, and if none of the assumptions are violated you can do the following:

- 1) Based on results, consider removing terms from the model that are above the alpha level in the ANOVA table
- 2) Repeat 2-3 till all of the factors are significant
- 3) Generate final model and contour plots

Process is called backward elimination:

Stat-> DOE-> Factorial > Analyze Factorial Design > Select "stepwise" button > Select "backward elimination"