Pivot Tables:
How to Avoid all that Copying-and-Pasting to Build a 2D Table

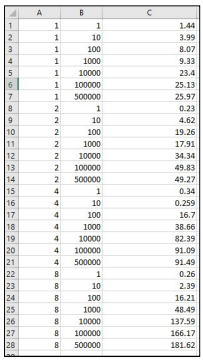
Oregon State University

Mike Bailey

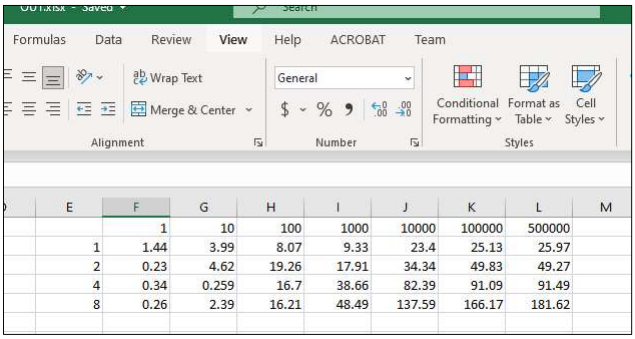
mjb@cs.oregonstate.edu

Note: you don't *absolutely* need to know about any of this. You can do perfectly well using the steps shown in the *Scripting* and *Graphing* notes to turn a linear print-out of data into a 2D table. Once you get used to them, however, Pivot Tables will save you lots and lots of time.

Remember This Slide from the *Graphing* Noteset?



	A	B	C
1	1	1	1.44
2	1	10	3.99
3	1	100	8.07
4	1	1000	9.33
5	1	10000	23.4
6	1	100000	25.13
7	1	500000	25.97
8	2	1	0.23
9	2	10	4.62
10	2	100	19.26
11	2	1000	17.91
12	2	10000	34.34
13	2	100000	49.83
14	2	500000	49.27
15	4	1	0.34
16	4	10	0.259
17	4	100	16.7
18	4	1000	38.66
19	4	10000	82.39
20	4	100000	91.09
21	4	500000	91.49
22	8	1	0.26
23	8	10	2.39
24	8	100	16.21
25	8	1000	48.49
26	8	10000	137.59
27	8	100000	166.17
28	8	500000	181.62



	E	F	G	H	I	J	K	L	M
		1	10	100	1000	10000	100000	500000	
	1	1.44	3.99	8.07	9.33	23.4	25.13	25.97	
	2	0.23	4.62	19.26	17.91	34.34	49.83	49.27	
	4	0.34	0.259	16.7	38.66	82.39	91.09	91.49	
	8	0.26	2.39	16.21	48.49	137.59	166.17	181.62	

You will need to do some copying and pasting to get the linear format into this 2D format, but it will be worth it when you automatically make the graphs!

You can avoid *all* that copying and pasting by using an Excel feature called **Pivot Tables**! Here come the steps.

Step #1: Insert Column Heading Labels

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	A	B	C
1	1	1	1.44
2	1	10	3.99
3	1	100	8.07
4	1	1000	9.33
5	1	10000	23.4
6	1	100000	25.13
7	1	500000	25.97
8	2	1	0.23
9	2	10	4.62
10	2	100	19.26
11	2	1000	17.91
12	2	10000	34.34
13	2	100000	49.83
14	2	500000	49.27
15	4	1	0.34
16	4	10	0.259
17	4	100	16.7
18	4	1000	38.66
19	4	10000	82.39
20	4	100000	91.09
21	4	500000	91.49
22	8	1	0.26
23	8	10	2.39
24	8	100	16.21
25	8	1000	48.49
26	8	10000	137.59
27	8	100000	166.17
28	8	500000	181.62

Clipboard Font

E5

	A	B	C
1	Cores	Number of Trials	MegaTrialsPerSecond
2	1	1	1.44
3	1	10	3.99
4	1	100	8.07
5	1	1000	9.33
6	1	10000	23.4
7	1	100000	25.13
8	1	500000	25.97
9	2	1	0.23
10	2	10	4.62
11	2	100	19.26
12	2	1000	17.91

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Step #2: Sweep Over the Entire Table, Including the Labels

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A1 Cores

	A	B	C
1	s	Number of Trials	MegaTrialsPerSecond
2	1	1	1.44
3	1	10	3.99
4	1	100	8.07
5	1	1000	9.33
6	1	10000	23.4
7	1	100000	25.13
8	1	500000	25.97
9	2	1	0.23
10	2	10	4.62
11	2	100	19.26
12	2	1000	17.91
13	2	10000	34.34
14	2	100000	49.83
15	2	500000	49.27
16	4	1	0.34
17	4	10	0.259
18	4	100	16.7
19	4	1000	38.66
20	4	10000	82.39
21	4	100000	91.09
22	4	500000	91.49
23	8	1	0.26
24	8	10	2.39
25	8	100	16.21
26	8	1000	48.49
27	8	10000	137.59
28	8	100000	166.17
29	8	500000	1.62
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Step #3: Insert → Pivot Table → OK

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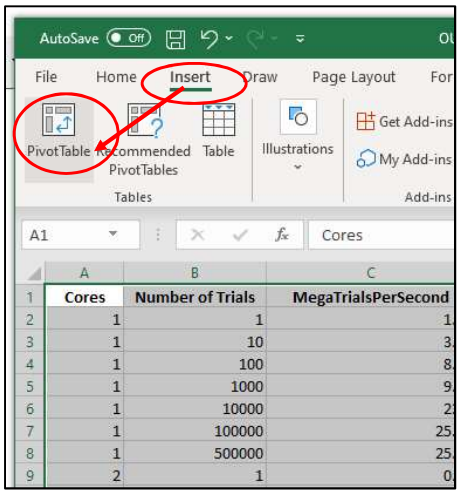
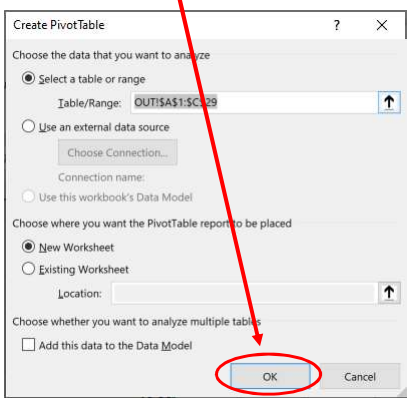
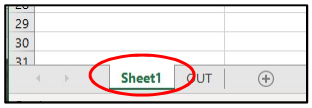




This will create a new worksheet.



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Step #4: Assign Roles for the Different Columns of Your Data

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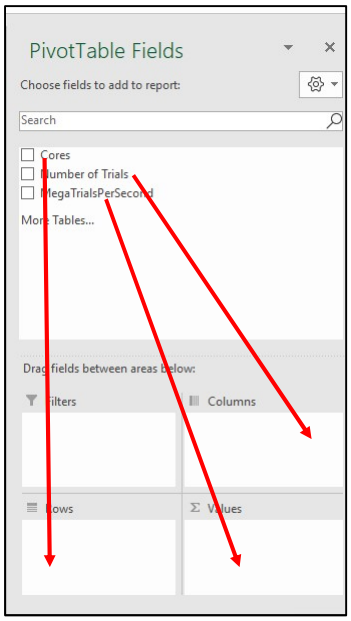
1. Drag **Cores** to **Rows**
2. Drag **Number of Trials** to **Columns**
3. Drag **MegaTrialsPerSecond** to **Values**



This defines how the 2D table will be created.

Note that you can have more than 3 columns of data to start with. This process just lets you pick which 3 will go into the 2D table.

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Ta-Da! You Have a 2D Table with No Copying and Pasting!

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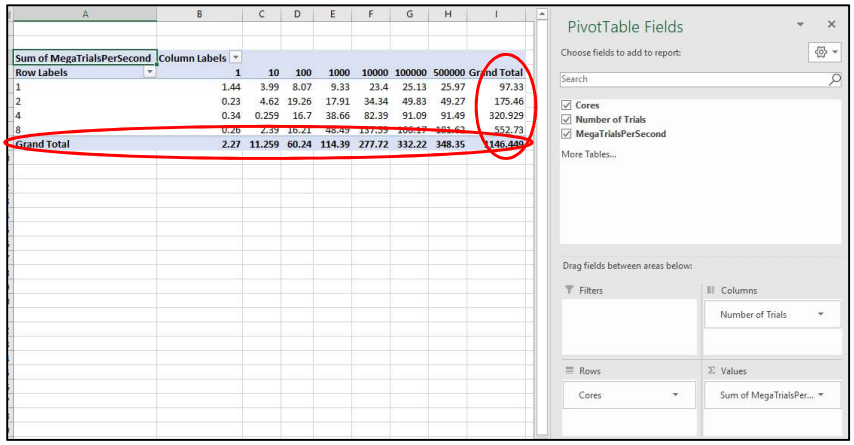

Sum of MegaTrialsPerSecond	Column Labels							
Row Labels	1	10	100	1000	10000	100000	500000	Grand Total
1	1.44	3.99	8.07	9.33	23.4	25.13	25.97	97.33
2	0.23	4.62	19.26	17.91	34.34	49.83	49.27	175.46
4	0.34	0.259	16.7	38.66	82.39	91.09	91.49	320.929
8	0.26	2.39	16.21	48.49	137.59	166.17	181.62	552.73
Grand Total	2.27	11.259	60.24	114.39	277.72	332.22	348.35	1146.449

You can get rid of the **Grand Total** row and column – they have meaning in some spreadsheet applications, but not here.

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But, You Can't Make a Graph from a Pivot Table, so Copy and Paste it into Normal Cells

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Sweep over and Copy (^c) the Pivot Table:

Row Labels	1	10	100	1000	10000	100000	500000	G
1	1.44	3.99	8.07	9.33	23.4	25.13	25.97	
2	0.23	4.62	19.26	17.91	34.34	49.83	49.27	
4	0.34	0.259	16.7	38.66	82.39	91.09	91.49	
8	0.26	2.39	16.21	48.49	137.59	166.17	1[illegible]62	

Paste (^v) those numbers somewhere else:

Row Labels	1	10	100	1000	10000	100000	500000
1	1.44	3.99	8.07	9.33	23.4	25.13	25.97
2	0.23	4.62	19.26	17.91	34.34	49.83	49.27
4	0.34	0.259	16.7	38.66	82.39	91.09	91.49
8	0.26	2.39	16.21	48.49	137.59	166.17	181.62

Clear the **Row Labels** cell:

	1	10	100	1000	10000	100000	500000
1	1.44	3.99	8.07	9.33	23.4	25.13	25.97
2	0.23	4.62	19.26	17.91	34.34	49.83	49.27
4	0.34	0.259	16.7	38.66	82.39	91.09	91.49
8	0.26	2.39	16.21	48.49	137.59	166.17	181.62

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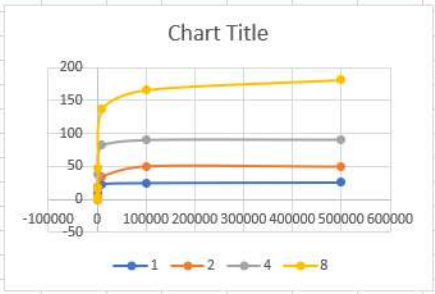
Sweep Over the New 2D Table and Copy → Insert your graph, Just like in the *Graphing* notes

	1	10	100	1000	10000	100000	500000
1	1.44	3.99	8.07	9.33	23.4	25.13	25.97
2	0.23	4.62	19.26	17.91	34.34	49.83	49.27
4	0.34	0.259	16.7	38.66	82.39	91.09	91.49
8	0.26	2.39	16.21	48.49	137.59	166.17	1[illegible]62



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