

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



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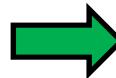
Note: you don't *absolutely* need to know about any of this. You can do perfectly well using the steps shown in the *Scripting and Graphing* notes to turn a linear print-out of data into a 2D table. Once you get used to them, however, Pivot Tables will save you lots and lots of time.



Remember This Slide from the *Graphing Noteset*?

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| A | B | C |
|----|---|--------|
| 1 | 1 | 1.44 |
| 2 | 1 | 10 |
| 3 | 1 | 100 |
| 4 | 1 | 1000 |
| 5 | 1 | 10000 |
| 6 | 1 | 100000 |
| 7 | 1 | 500000 |
| 8 | 2 | 1 |
| 9 | 2 | 10 |
| 10 | 2 | 100 |
| 11 | 2 | 1000 |
| 12 | 2 | 10000 |
| 13 | 2 | 100000 |
| 14 | 2 | 500000 |
| 15 | 4 | 1 |
| 16 | 4 | 10 |
| 17 | 4 | 100 |
| 18 | 4 | 1000 |
| 19 | 4 | 10000 |
| 20 | 4 | 100000 |
| 21 | 4 | 500000 |
| 22 | 8 | 1 |
| 23 | 8 | 10 |
| 24 | 8 | 100 |
| 25 | 8 | 1000 |
| 26 | 8 | 10000 |
| 27 | 8 | 100000 |
| 28 | 8 | 500000 |



| D | E | F | G | H | I | J | K | L | M |
|---|---|------|-------|-------|-------|--------|--------|---------|---------|
| | | 1 | 10 | 100 | 1000 | 10000 | 100000 | 1000000 | 5000000 |
| | 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 |

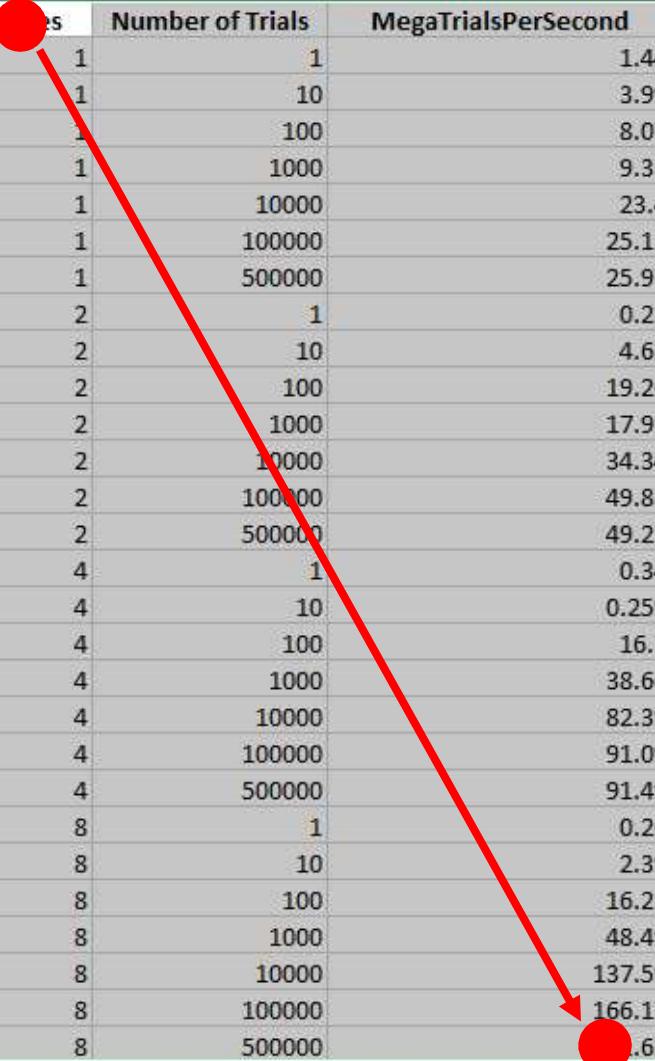
Clipboard Font

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| | 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 |

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

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| A | B | C |
|----|-------|------------------|
| 1 | cores | Number of Trials |
| 2 | 1 | 1 |
| 3 | 1 | 10 |
| 4 | 1 | 100 |
| 5 | 1 | 1000 |
| 6 | 1 | 10000 |
| 7 | 1 | 100000 |
| 8 | 1 | 500000 |
| 9 | 2 | 1 |
| 10 | 2 | 10 |
| 11 | 2 | 100 |
| 12 | 2 | 1000 |
| 13 | 2 | 10000 |
| 14 | 2 | 100000 |
| 15 | 2 | 500000 |
| 16 | 4 | 1 |
| 17 | 4 | 10 |
| 18 | 4 | 100 |
| 19 | 4 | 1000 |
| 20 | 4 | 10000 |
| 21 | 4 | 100000 |
| 22 | 4 | 500000 |
| 23 | 8 | 1 |
| 24 | 8 | 10 |
| 25 | 8 | 100 |
| 26 | 8 | 1000 |
| 27 | 8 | 10000 |
| 28 | 8 | 100000 |
| 29 | 8 | 500000 |
| 30 | | |

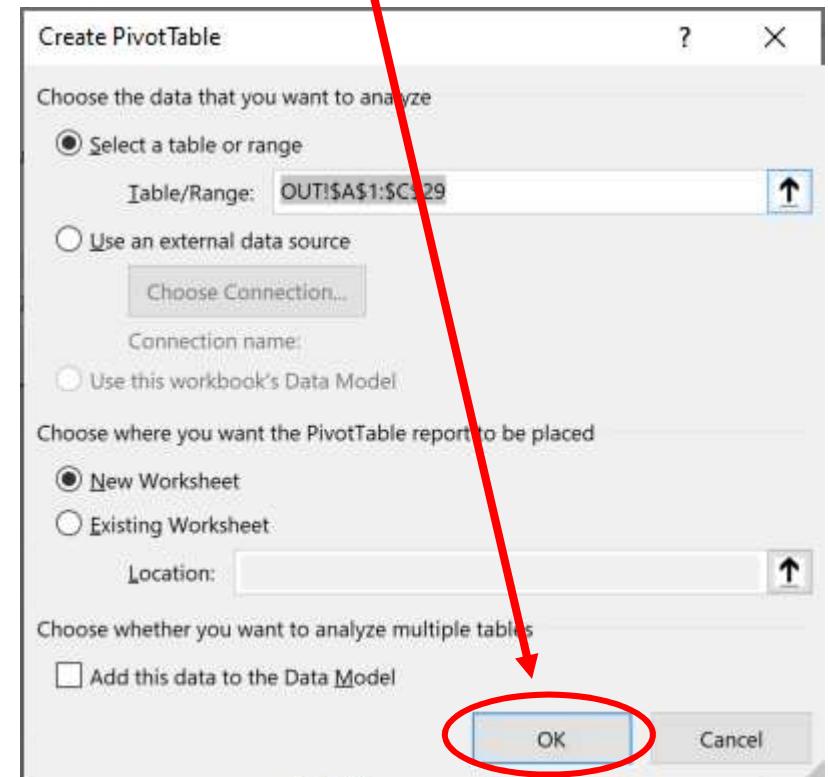


Step #3: Insert → Pivot Table → OK

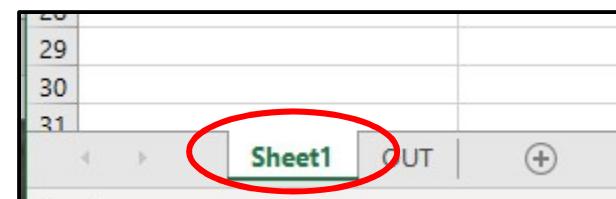
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The screenshot shows the Microsoft Excel ribbon with the 'Insert' tab highlighted. A red circle and arrow point to the 'PivotTable' icon in the 'Tables' group. The main area displays a table with columns labeled 'Cores', 'Number of Trials', and 'MegaTrialsPerSecond'. The data includes rows for 1 core with trials from 1 to 500,000, and a single row for 2 cores with 1 trial.

| | A | B | C |
|---|-------|------------------|---------------------|
| 1 | Cores | Number of Trials | MegaTrialsPerSecond |
| 2 | 1 | 1 | 1 |
| 3 | 1 | 10 | 3 |
| 4 | 1 | 100 | 8 |
| 5 | 1 | 1000 | 9 |
| 6 | 1 | 10000 | 23 |
| 7 | 1 | 100000 | 25 |
| 8 | 1 | 500000 | 25 |
| 9 | 2 | 1 | 0 |



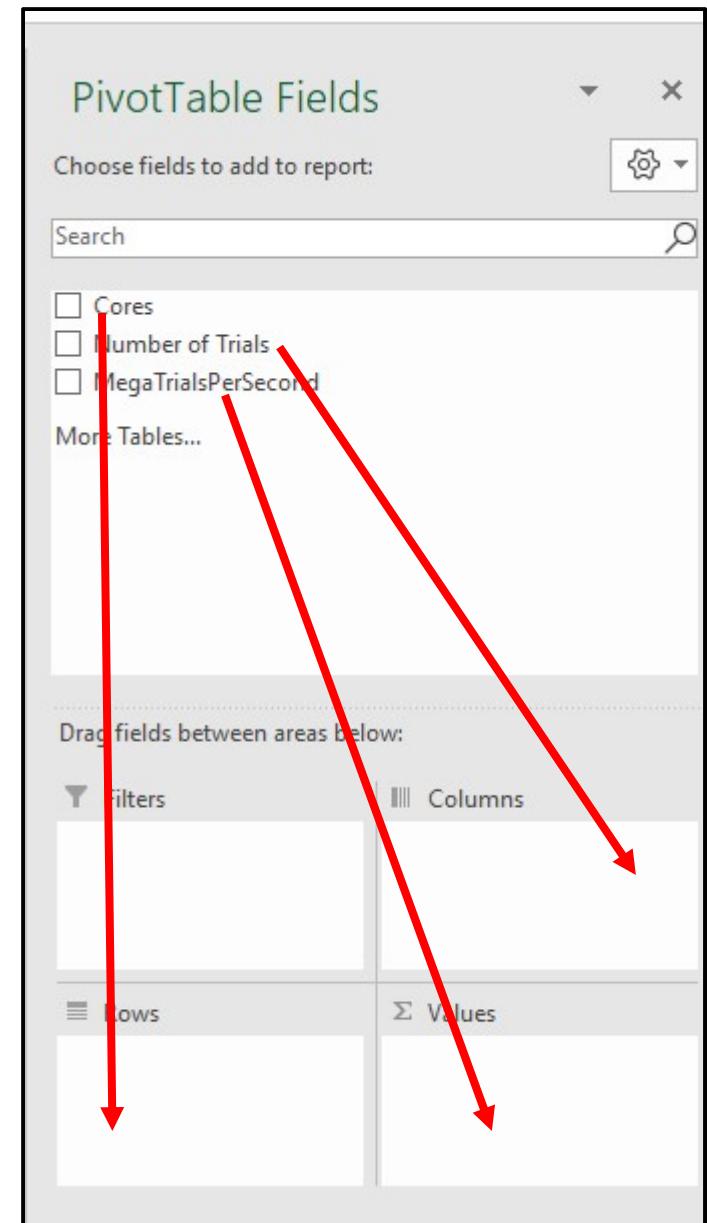
This will create a new worksheet.



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.



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

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The screenshot shows a Microsoft Excel interface with a PivotTable Fields pane on the right and a data grid on the left. The data grid displays a table with columns labeled 1, 10, 100, 1000, 10000, 100000, 500000, and Grand Total. The rows are labeled 1, 2, 4, 8, and Grand Total. A red oval highlights the Grand Total row and column. The PivotTable Fields pane shows fields for Cores, Number of Trials, and MegaTrialsPerSecond, with the Sum of MegaTrialsPerSecond selected as the value.

| | A | B | C | D | E | F | G | H | I | |
|-------------|----------------------------|---------------|------|--------|-------|--------|--------|--------|--------|-------------|
| Row Labels | Sum of MegaTrialsPerSecond | Column 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 | 1146.440 |

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



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

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 | 181.62 | |

Paste (^v) those numbers somewhere

| 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:

| 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 |

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

