

*The lab questions listed on this page are the **ONLY ONES** you must answer*

Don't Panic

use the LINEST function on google spreadsheet to find the slope (much easier than excel):

<https://support.google.com/drive/answer/3094249>

how to type it:

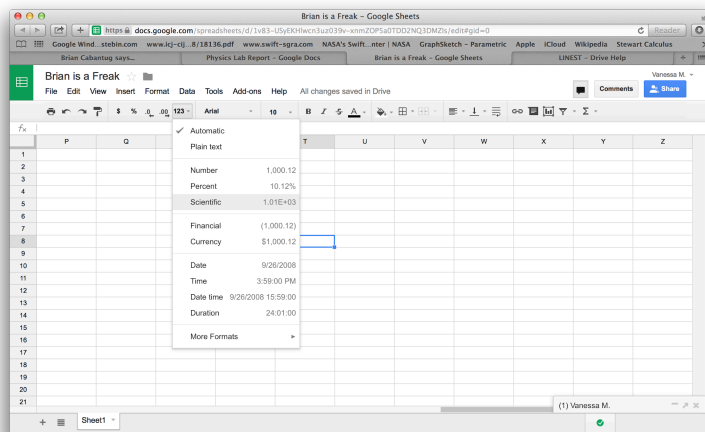
=LINEST(y-values (energy loss),x-values(frequency),1,1)

the value in the top left cell is the slope

make sure to highlight **all the data**, go to the tab labeled “123”, and choose “scientific”

Here is a spreadsheet

https://docs.google.com/spreadsheets/d/1dA17oJ2EoEavNWZbv0pUD_fF_2HfgBAfBSkB-CHh5cQ/edit#gid=0 how to use LINEST.



Outline: <https://www.dropbox.com/s/li3vfq99bt5cd0r/Lab%20Report%20%2812th%20Grade%20Framework%29.doc>

Rubric: https://docs.google.com/file/d/0BzqIpKV_tZjqYnhieXhRd3hMZGs/edit

Phantastic Photon: https://docs.google.com/file/d/0BzqIpKV_tZjqTFBIOkVoTVNrcUU/edit

LED: <https://docs.google.com/file/d/0B-w7c4065bNuTmpkTU92UkZnUDg/edit>

Lab Questions:

1) What has made this experiment meaningful to your science experience during senior year?

(Each person in your group should write a paragraph answer for this question. Clearly label which answer correspond to group members.)

2) In nanofabrication labs, scientists make microprocessor chips in cleanrooms; these rooms prevent dust and human hair from interfering with the creation of microprocessor chips. The chips are very sensitive to light because they are made with layers of chemicals. One chemical in particular – photoresist - will completely disintegrate if it is exposed to UV light, thereby destroying the chip's ability to be used in an electronic device.

a. Why are cleanrooms where photoresist is used illuminated with yellow light instead of standard fluorescent lights?

b. Why does photoresist disintegrate when exposed to UV light?

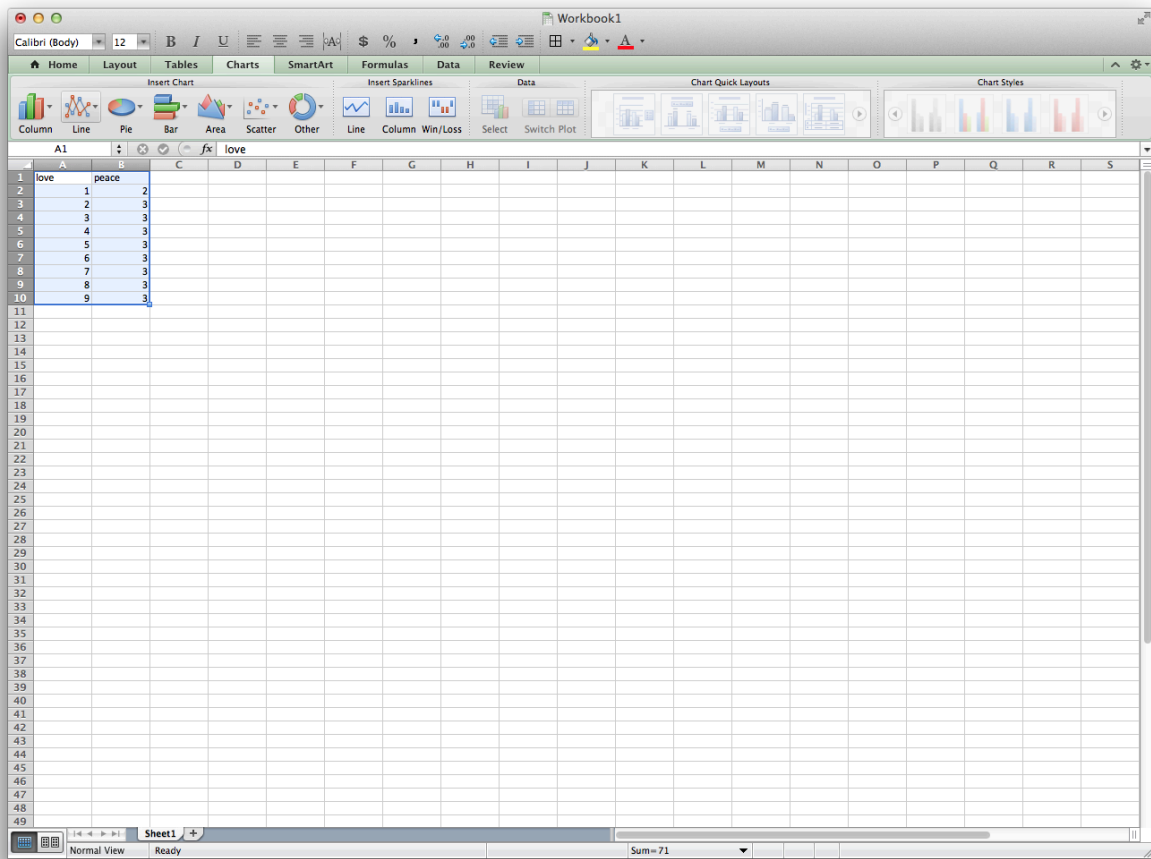
V to eV:

Refer to this website for an explanation of this (as recommended by Pittman):

<http://www.rapidtables.com/convert/electric/volts-to-ev.htm>

Finding Planck's Constant:

You must make a graph with energy loss (J) on one axis and frequency on the other. To do this, copy and paste the data onto an Excel sheet, make a graph (just go to “charts” and choose the line graph option).



Right click the graph and choose “select data”, and highlight the data you want for the x-axis and the y-axis.

Format Chart Area...

Change Chart Type...

Save as Template...

Select Data...

Move Chart...

3-D Rotation...

Cut ⌘X

Copy ⌘C

Paste ⌘V

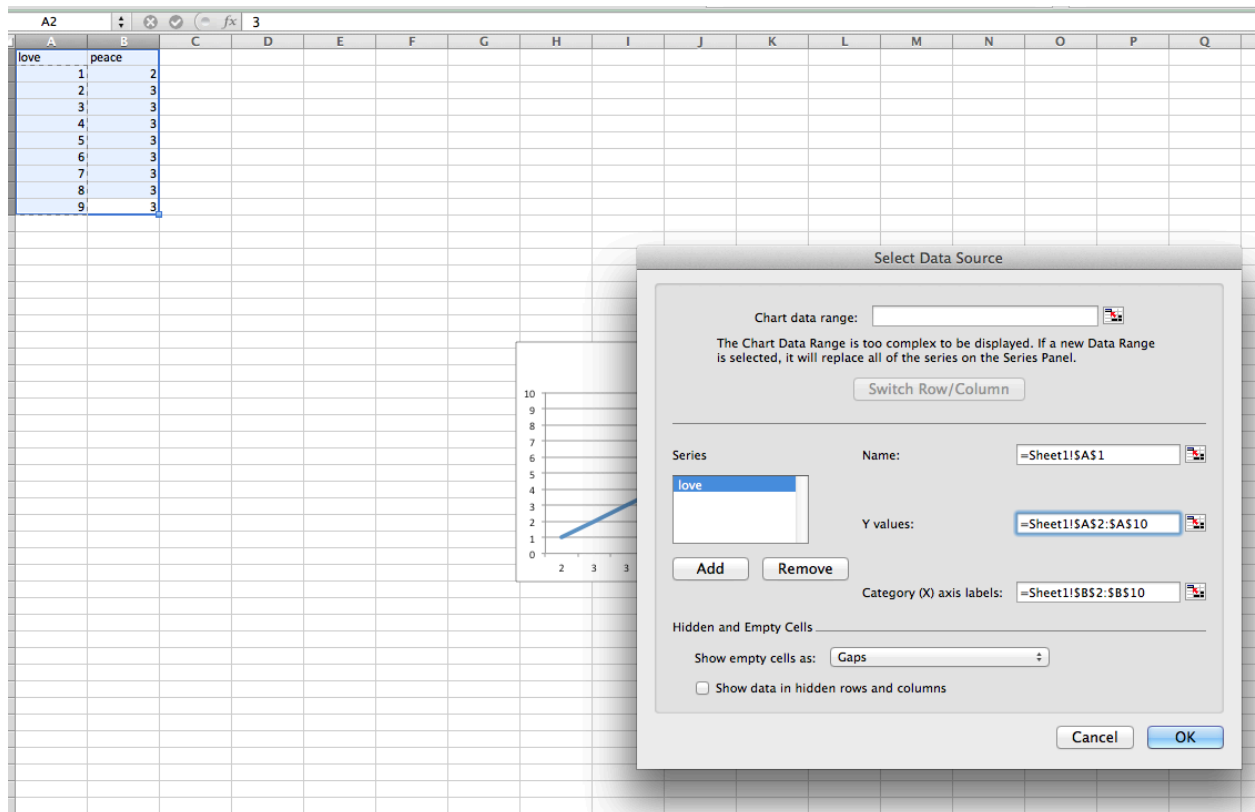
Clear

Save as Picture...

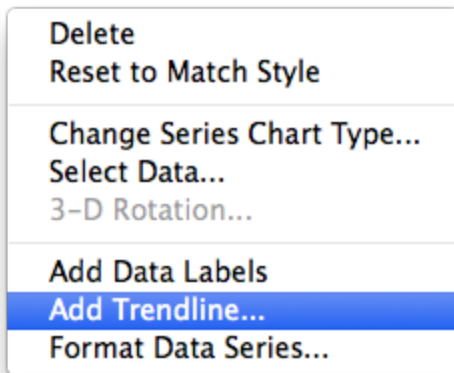
Bring to Front

Send to Back

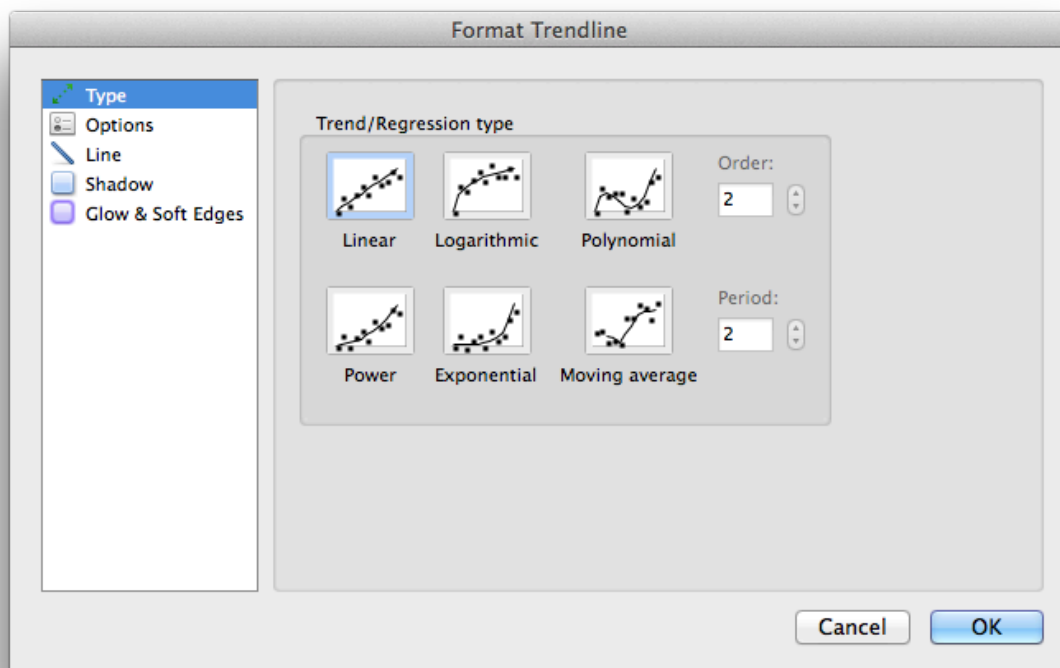
Assign Macro...



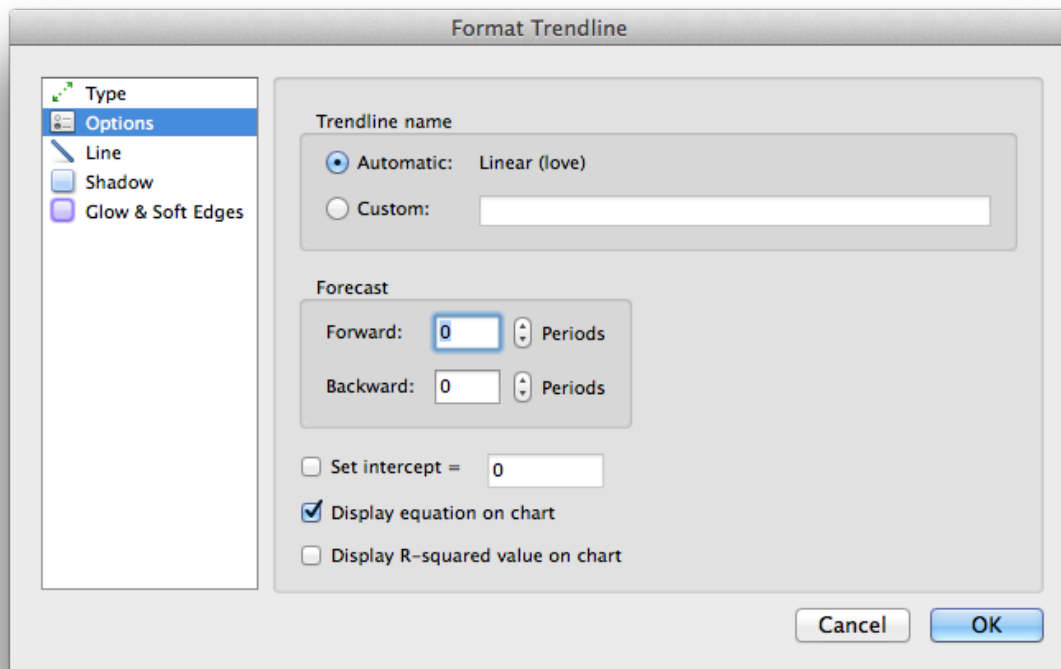
Next, click on the line your graph, right click, and choose “Format Trendline”.



Now choose “linear”, go to options...



...and check that box next to “Display equation on chart.”



There is a way to do this on google spreadsheets, as described at the top of this page.

In fact, it is the better way! Use google spreadsheet! Way easier!