Mon Dec 14 (HW due by Jan 3; last 2 lessons are Jan 4 and Jan 18)
We begin today's lesson with a list and review of everything I hope you should know from the first 3 lessons. Lesson 4 is our midpoint of the course. My goal (and probably yours) is to increase your skills and awareness with Excel significantly so this is a good point to pause and reflect. These are in order of the 3 lessons.

background color of cells
column width
row height
number formats
date formats
rotated text
vertical text
align horizontally
align vertically
wrapping text
merging text in a rectangle of cells
using a graphic
magic fill down
SUM formula
AVERAGE formula
MIN formula
MAX formula
& usage in a formula
MID
COUNT
COUNTBLANK
COUNTA
COUNTIF
make your own formula
printing so all data fits on 1 page
printing so there is a border around each cell
printing so you have minimal margins
SORTING with several levels
Using MY LIST HAS HEADERS to your advantage
inserting rows or columns
FILTERS
HIDE a column
The SHIFT CLICK trick
How to highlight non-contiguous rows or columns

Splitting windows
Freezing rows and/or columns
Finding Excel files on the web
IF formula
Conditional formatting
LOOKUP formula
VALIDATION for cell entry
Boolean Search String
manual vs. automatic update of Calculation formulae
randbetween formula

I am going to now create an EXCEL spreadsheet with your names using a new feature called VALIDATION. I want you to see every step of the process so here is the 17 minute video to watch: http://youtu.be/NZeql0HaZmY

HW 4.1: Watch this video above that deals with the creation of this spreadsheet below and the new feature called VALIDATION.

H17		fx	=LOOKUP(G17,$C$50:$C$52,$D$50:$D$52)				
	A	B	C (Deborah)	D	E (Michael)	F	G (Robb) H
1	AVER	For each TOPIC, please enter a 1, 2 or 3 in the column underneath your name. Thanks!		results in		results in	results in
27	#DIV/0!	MIN formula	•	#N/A	•	#N/A	• #N/A
28	#DIV/0!	number formats	•	#N/A	•	#N/A	• #N/A
29	#DIV/0!	printing so all data fits on 1 page	•	#N/A	•	#N/A	• #N/A
30	#DIV/0!	printing so there is a border around each cell	•	#N/A	•	#N/A	• #N/A
31	#DIV/0!	printing so you have minimal margins	•	#N/A	•	#N/A	• #N/A
32	#DIV/0!	rotated text	•	#N/A	•	#N/A	• #N/A
33	#DIV/0!	row height	•	#N/A	•	#N/A	• #N/A
34	#DIV/0!	SORTING with several levels	•	#N/A	•	#N/A	• #N/A
35	#DIV/0!	Splitting windows	•	#N/A	•	#N/A	• #N/A
36	#DIV/0!	SUM formula	•	#N/A	•	#N/A	• #N/A
37	#DIV/0!	The SHIFT CLICK trick	•	#N/A	•	#N/A	• #N/A
38	#DIV/0!	using a graphic	•	#N/A	•	#N/A	• #N/A
39	#DIV/0!	Using MY LIST HAS HEADERS to your advantage	•	#N/A	•	#N/A	• #N/A
40	#DIV/0!	VALIDATION for cell entry	•	#N/A	•	#N/A	• #N/A
41	#DIV/0!	vertical text	•	#N/A	•	#N/A	• #N/A
42	#DIV/0!	wrapping text	•	#N/A	•	#N/A	• #N/A
43							
44		SUMMARY		0 Number of 1s		0 Number of 1s	0 Number of 1s
45				0 Number of 2s		0 Number of 2s	0 Number of 2s
46				0 Number of 3s		0 Number of 3s	0 Number of 3s
47							
48							
49							
50				1 I knew this feature before the course began.			
51				2 I learned this as part of the first few lessons.			
52				3 I am still shaky on this feature.			
53							

HW 4.2: Enter 1,2 or 3 into each location of this spreadsheet underneath your name preferably using the FILE **Lesson 4 Column Entry.xlsx**.

Next topic: Pivot Table Exercises and a Pivot Table Video

Here are 7 problems to do using the new feature on Pivot Tables.

HW 4.3A: Using the US Presidents spreadsheet, let's analyze the colleges attended by the 35 presidents and tally by the political party.

HW 4.3B: Using the US Presidents spreadsheet, let's analyze the occupations of the 35 presidents and tally by the inauguration age.

HW 4.3C: Using the US Presidents spreadsheet, let's analyze the political parties of the 35 presidents and tally the average % of electoral and popular votes.

HW 4.3D: Using the Countries of the World spreadsheet, let's analyze the regions of the 227 countries and tally the average population and infant mortality rates.

HW 4.3E: Using the Countries of the World spreadsheet, let's analyze the birth rate and death rate of the 227 countries and use a filter to find which 2 regions of the world are closest for each rate.

HW 4.3F: Using the Sample Scheduling spreadsheet, let's analyze the courses of the 155 students.

HW 4.3G: Using the Lesson 4 Florida Schools spreadsheet, let's analyze the 3187 schools by DISTRICTS and then tally averages for the TOTAL POINTS 2013 in column E.

HW 4.25 This one 32 minute video will get you to be smart and skillful with Pivot Tables so that you can do these exercises, possibly while watching and pausing the video -- your choice! So you might want to watch the entire video first or you might want to watch the first 10-15 minutes of the video and then try HW 4.3A and HW
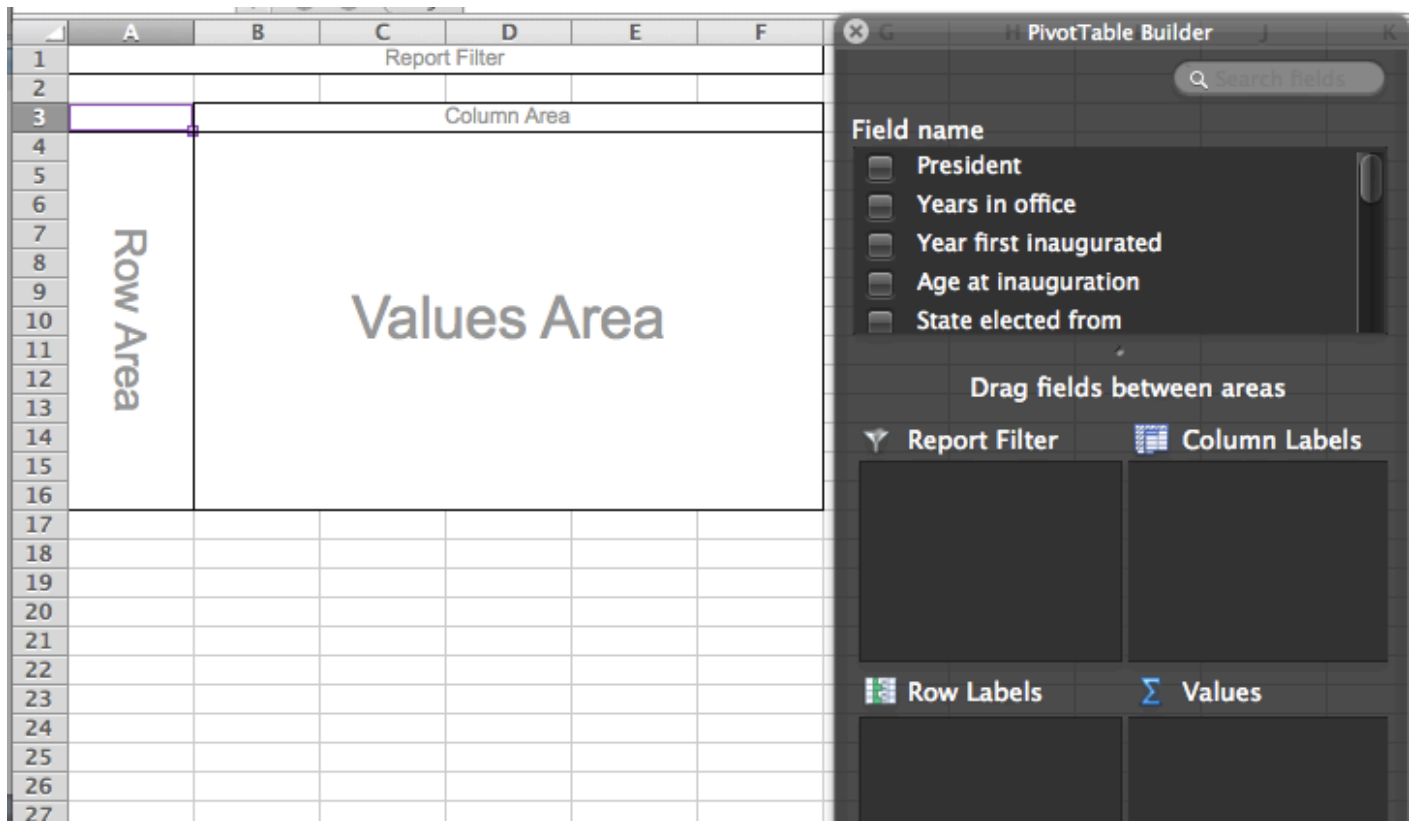
4.3B. The video goes through the seven HW programs in an instructional way. Please do all seven, then pick any two of the seven and email them to me as proof that you have done all seven!

http://youtu.be/S22hVV0nngI

One piece of key advice is to SELECT ALL or SELECT the Key Rows and Columns and then choose PIVOT TABLES under the DATA MENU.

Then you will see this screen which is called the PIVOTTABLE BUILDER:

You will be moving ONE FIELD NAME (i.e. CATEGORY) from the TOP into either the ROW LABELS section or the COLUMN LABELS section or the VALUE section. If you mess up, you can pick it up and move it elsewhere.

Make just ONE move and notice what happens on the left. In the picture below I dragged the ONE field called COLLEGE and brought it into the ROW LABELS.

Notice how the colleges from Allegheny College to Stanford have filled up the rows from 5 to 17 above. Why? Because we move the FIELD called COLLEGE into the ROW LABELS area into the section of the PivotTable Builder.

Next I will take the field PRESIDENT and drag to the VALUE section.

Notice that column B has now been populated with the # of Presidents who went to that college. Notice the Grand Total of 35 at the bottom. Why? Because we dragged President FIELD to the VALUE section of the PivotTable builder.

Notice that it says COUNT of PRESIDENT. Later in the video, you will see how to change COUNT to SUM or AVERAGE by using the "i" in a circle.

That is it for exercise A. Just drag two things and you have the analysis of college for the 35 presidents. You are done with exercise A!

Next Topic: shortcut for absolute reference

As promised, here is the shortcut for Mac or PC so that you don't have to type the $ symbol so often. In other words, if I have a formula such as =SUM(B3:B12) or a more complicated one like =LOOKUP(B3,M1:M5,N1:N5) all I do is click the cursor in the middle of the B3 and then when I push the TOGGLE button below, it cycles like a 4 way light switch to $B$3 then B$3 then $B3 then back to B3.

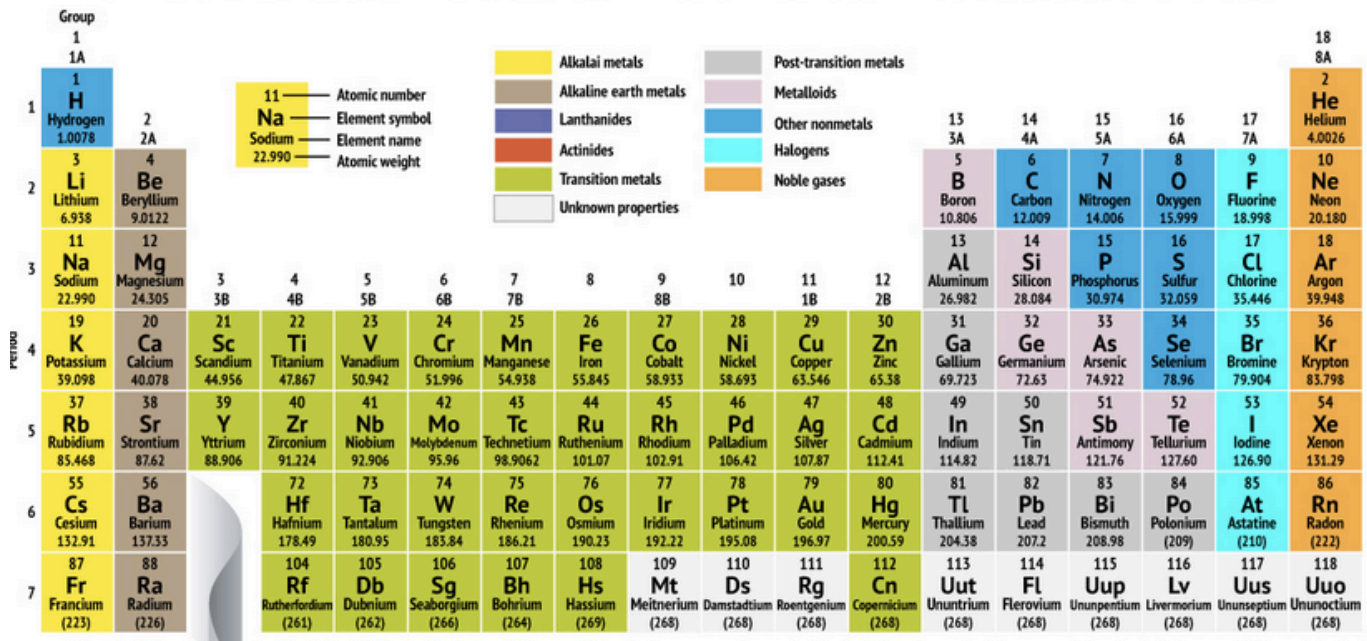## Toggle absolute and relative references

Windows shortcut:	Mac shortcut:
F4	⌘ T

All lessons stored at teachingcompany.com/n15

Next Topic: using & and absolute reference to construct a Boolean search string.

Periodic Table of the Elements

source: http://www.livescience.com/images/i/000/034/144/original/periodic-table-elements-121206c.jpg?1354814553

Let us imagine you are a scientist and needing to frequently search for a variety of chemical elements using the exact syntax of
"Krypton" OR "Borium" OR "Calcium" OR "Iron"

How can you automate this using Excel?
First, you will put the " symbol into a cell on the side and reference it with the $ Absolute Reference parameters. Note that it is E1 but I call it $E$1 repeatedly.
Second, you will list the desired elements in column 1 of your spreadsheet.
Third, you will use & (pronounced "ampersand") to join cells being careful to use spaces. Here is a prototype of the Excel spreadsheet.

	A	B	C	D	E
1	Krypton	=$E$1&A1&$E$1			"
2	Borium	=$E$1&A2&$E$1			
3	Calcium	=$E$1&A3&$E$1			
4	Iron	=$E$1&A4&$E$1			

These ampersand formulae result in

	A	B	C	D	E
1	Krypton	"Krypton"			"
2	Borium	"Borium"			
3	Calcium	"Calcium"			
4	Iron	"Iron"			

Now to build a Boolean String (with either OR or AND)
you will put a joining formula into C2 with & which joins cells.

=B1&" OR "&B2

This formula says "I will join B1 with the word OR surrounded by spaces and then will join B2. This results in

	A	B	C
1	Krypton	"Krypton"	
2	Borium	"Borium"	"Krypton" OR "Borium"
3	Calcium	"Calcium"	
4	Iron	"Iron"	

Then I need a different formula in C3 so I cannot use the magic fill down yet. The new formula is similar joining C2 (the one above) and B3 (the one on the left)

=C2&" OR "&B3

After using the magic fill, this results in

	A	B	C
1	Krypton	"Krypton"	
2	Borium	"Borium"	"Krypton" OR "Borium"
3	Calcium	"Calcium"	"Krypton" OR "Borium" OR "Calcium"
4	Iron	"Iron"	"Krypton" OR "Borium" OR "Calcium" OR "Iron"

And we have success!
Remembering that C4 is a formula however, we might want to use PASTE SPECIAL so that we can take the text and get rid of any formula reference. So we COPY C4 then click in C6 and choose PASTE SPECIAL and VALUES only. Now we have our Boolean text.

|	A	B	C	D	E
1	Krypton	=$E$1&A1&$E$1			"
2	Borium	=$E$1&A2&$E$1	=B1&" OR "&B2		
3	Calcium	=$E$1&A3&$E$1	=C2&" OR "&B3		
4	Iron	=$E$1&A4&$E$1	=C3&" OR "&B4		
5					
6			"Krypton" OR "Borium" OR "Calcium" OR "Iron"		
7					

HW 4.3H: Using the technique above, construct a 10 item Boolean Search string using AND or OR. Instead of elements from the periodic table, use basketball teams, e.g. Celtics, Lakers, Spurs, etc.

**HW 4.3I: Challenge Problem with Video**
Use the RANDBETWEEN command, teach Excel to roll two dice for you 1000 times, a red die and a blue die. Tabulate the # of times it comes up each value from 2 to 12. Option? Convert these tallies to percentages and display a bar graph of the values.

You will need the RANDBETWEEN command such as
=RANDBETWEEN(1,6)
You may choose to TURN OFF the automatic calculation of Excel which can drive you crazy since all your numbers will be re-randomized each time.. You will find this CHECK BOX under Excel preferences
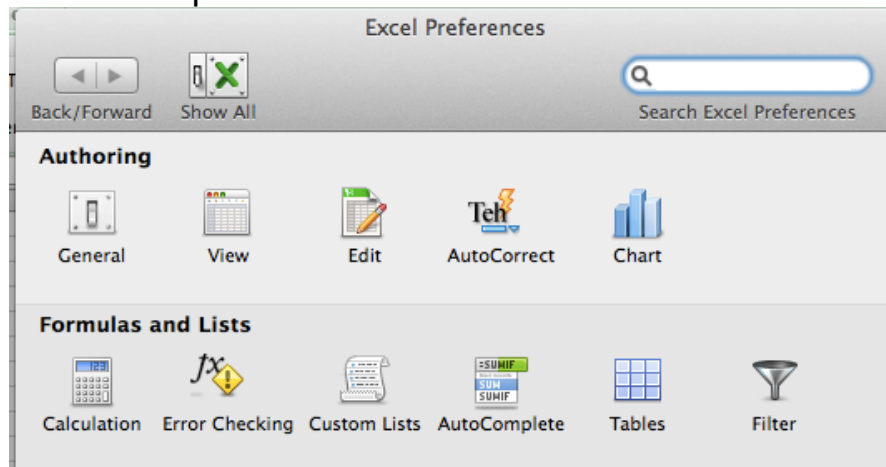
and the subchoice of CALCUATION. Changing to MANUAL MODE might be helpful.
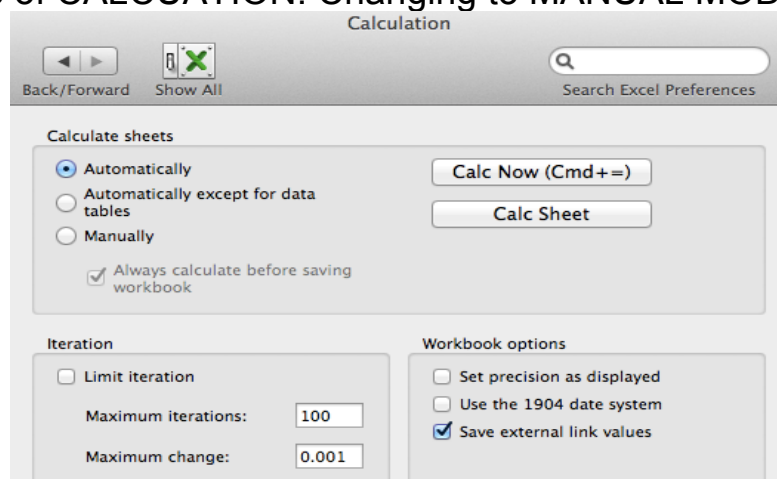
Our Challenge Problem for this week

Take the challenge with whatever comfort level you prefer. Some people like to drive themselves crazy figuring out the solution. Other people like to get some hints from the video and then pause and solve the rest. Other people like to watch the video thoroughly and then replicate the solution. Got it? Whatever you do, you must share comments in our collaborative document as part of your weekly homework!

Here is the SOLUTION VIDEO for which you watch NONE or JUST A BIT or THE WHOLE THING -- http://youtu.be/wOdday1kZPE

One more thing -- when you put Excel into MANUAL MODE then you can RECALCULATE using F9 (PC) or CMD = (MAC).

INDEX of HIGHLIGHTS can be found on the last page

HW 4.1: Watch the video that deals with the creation of this spreadsheet below and the new feature called VALIDATION. (p2)

HW 4.2: Enter 1,2 or 3 into each location of this spreadsheet underneath your name (p3)

ATTACHED FILE named Lesson 4 Column Entry.xlsx

HW 4.25 This one 32 minute video will get you to be smart and skillful with Pivot Tables (pages 8-9)

Shortcut for absolute reference (page 9)

HW 4.3H: Using the technique above, construct a 10 item Boolean Search string using AND or OR. (page 10)

HW 4.3I: Challenge Problem with Video
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