Workshops on Excel
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Please cite the following reference if you use or modify these materials:

Reference: Interactive Measurement Group (2007). *Workshops on Excel.* Available from http://www.scsv.nevada.edu/~eigroup/img/

Lesson 1: Introduction to Excel

Purpose
The purpose of this workshop is to teach you basic skills in Microsoft Excel. You will begin by watching a video on Excel. Then you will use Excel to create a word search puzzle. In the puzzle, you will search for psychology terms that are listed in the word search list.

Prerequisites
No prerequisites are required to start this lesson.

Part I: Video on Basic Skills and Definitions

Watch the video located at http://woodard.latech.edu/~lpace/html/tutorials.html entitled "Basic skills and definitions"

Part II: Hands-on Introduction to Excel

Open Microsoft Excel
1. Click on Start, Programs, Microsoft Excel. Sometimes Excel is located in different places. If you have difficulty finding Excel, ask for help.

Selecting Cells, Columns, and Rows
You will create a table in the columns B-V and the rows 5-22. The purpose of this set of instructions is to select the cells where the table will be.
1. To select the column where the table will begin, put your mouse over column B
2. When the black downward arrow appears, left click
3. To select the row where the table will begin, put your mouse over row 5
4. When the black arrow appears, left click
5. To select the cell where the table will begin, put your mouse over cell B5 and left click

Changing Column Width and Row Height
1. Select rows 5-22
2. Go to Format
3. Select Row
4. From the drop down menu select Height
5. Enter 12 in the Row height box
6. Click OK
7. Select columns B-V
8. Go to Format
9. Select Column
10. From the drop down menu select Width
11. Enter 2 in the Column width box
12. Click OK
13. You should now have much smaller rows and columns

Selecting a Range of Cells to Create a Table
1. Left click cell B5
2. You should see that there is a white cross when you drag the mouse down to cell B22
3. Without letting go of the mouse, expand the table width by moving the mouse to the right
4. Stop when you get to column V

5. You should now have a table as wide as columns B-V and rows 5-22
6. Keep columns B-V and rows 5-22 highlighted.

Creating a Table Border

1. From the formatting toolbar, left click on the down arrow of the Borders tool. The Borders tool is towards the right corner of the screen, usually, and is next to the pouring paint bucket
2. Choose the Thick Box Border option (it should be the last option)
3. Click anywhere outside of the selected table; you should now have a thick table border

Entering Table Content

For this set of instructions be sure the Caps Lock key is on. It is also important to keep Caps Lock on any time content is being entered into the table.

1. In cell E8 enter the letter P
2. Hit the right arrow key to move to cell F8
3. Enter the letter S
4. Continue this pattern until you have entered the term PSYCHOLOGY
5. In cell S10 enter the letter S
6. Hit the down arrow key to move to cell S11 and enter K
7. Continue this pattern until you have entered the name SKINNER
8. In cell N16 enter the letter B
9. Using the right arrow key enter the name BANDURA (the letter R in SKINNER will be used to create part of this name)
10. In cell C13 enter the letter F
11. Using the down arrow key enter the name FREUD
12. In cell C20 enter the letter E
13. Using the right arrow key enter the term EMOTIONAL AWARENESS leaving cell L20 empty
14. In cell J12 enter the letter A
15. Using the down arrow key enter the term ANOVA
16. In cell I12 enter the letter D, in cell K12 enter T and in cell L12 enter A (the first A in ANOVA will be used to create part of this term)
17. In cell P7 enter the letter C
18. Using the down arrow key enter the term CONTROL
19. In cell F18 enter the letter D
20. Using the right arrow key enter the term DENDRITES

Creating Formulas

Creating formulas is helpful when cell content from one cell is used within a different cell. The following steps will use formulas to create a term from the word search using letters from various cells.

1. Select cell F7
2. In the function box, labeled fx, type
   = E8
3. Hit the enter key
4. Select cell F9
5. In the function box, labeled fx, type
   = S12
6. Hit the enter key
7. Select cell F10
8. In the function box, labeled fx, type
   = P7
9. Hit the enter key

10. Select cell F11
11. In the function box, labeled fx, type
    = I8
12. Hit the enter key
13. Select cell F12
14. In the function box, labeled fx, type
    = G20
15. Hit the enter key
16. In cells F7-F12 you should have created the name PSICHI

Creating New Worksheets

Now that the table has all the terms, it will be copied and then moved into Sheet 2 to be used as an answer key.

1. To select the table select cell B5 and drag the mouse to the right and down to cell V22 until the table is highlighted
2. Right click and select Copy
3. Locate the worksheet tabs at the bottom edge of the workbook. The default tabs will say "Sheet 1" "Sheet 2" and "Sheet 3"
4. Select Sheet 2
5. Select cell B5
6. Right click and select Paste Special
7. Under Paste select Column widths
8. Click OK
9. With the table still selected right click and select Paste

Renaming, Creating and Moving Worksheets

To rename a sheet, double-click the tab of the sheet you wish to rename

1. Rename Sheet 1 Word Search
2. Rename Sheet 2 Answer Key
3. To move a worksheet, click on the sheet tab, and drag it to its new location.
4. To create a new sheet, go to "Insert" then "Worksheet"

Changing Font

In this section the names in the table will be changed into a red font. The non-name terms in the table will be changed into a blue font. When you do this, all the terms in the table will be readily identifiable.

1. From the Answer Key worksheet select the name SKINNER in cells S10-S16
2. Right click and select Format Cells
3. Select the Font tab
4. Under Color select Red
5. Click OK
6. To change the font color of the remaining names simultaneously, select FREUD then press the Ctrl key while selecting BANDURA
7. Repeat steps 2-5
8. Select the term EMOTIONAL AWARENESS
9. Right click and select Format Cells
10. Select the Font tab
11. Under Color select Blue
12. Click OK
13. Repeat with the remaining terms using the Ctrl key to select them all at once

Copy and Paste

To copy a cell, row, or column, put your mouse over the cell, row, or column, and right click. Select copy. You can also copy several cells at once.

To paste a cell, row or column, put your mouse over the cell, row, or column where you want it to be pasted, and right click. Select paste.

1. Return to the Word Search worksheet and Select cell C21 and enter the letter K
2. Beginning in cell D21, using the right arrow key enter the letters
   O P Y N M E V D W Q J Y V T C E
3. The last letter (E) should be in cell S21
4. Select and copy the string of letters you entered
5. Select cell C6 and paste the letters here
6. Select cell D8
7. Using the down arrow key enter the letters A U L B F R D
8. Select column D
9. Right click and select Copy
10. Select column U
11. Right click and select Paste
12. The letter A should begin in cell U8

Paste Transpose

To take the contents of a row and turn it sideways so that it is a column (or visa versa), you need to transpose the cells.

1. Select and copy cells U8 through U14
2. Select cell D19
3. Click on the Edit menu
4. Select Paste Special
5. Select Transpose
6. Click OK

Move Cell Contents

To move a cell, select the cell, move your mouse to one of the edges of the cell (it doesn't matter which one) until the cursor turns into a plus sign with arrows pointing in every direction. Then push down the right mouse button, and hold the mouse button down while you drag the cell contents to its new location. Once you have reached the new location, release the right mouse button.

1. Move the content of cell U21 to U19
2. Move the content of cell D19 to cell F15 (if it says Do you want to replace the contents of the destination cells, click OK)

Fill Down

1. Select cell B5
2. Using the down arrow key enter the letters Q C X S W P L M Y X I
3. Select cells B5 through B15
4. Move the cursor to the bottom right corner of cell B15 until the black cross appears (not the one with the arrows pointing in every direction)
5. Hold down the left mouse button, while dragging the mouse down
6. Keep dragging until the mouse is over cell B22 then release the mouse
7. When the Auto-fill options box appears below the table drag the mouse over the box and click on the downward arrow when it appears
8. Select Fill Without Formatting to fix the table border
9. Select cell V5
10. Using the down arrow key enter the letters H F T S Q I M Y W Z A
11. Select cells V5 through V15
12. Use Fill Down to fill in the numbers up to cell V22
13. When the Auto-fill options box appears below the table click the down arrow
14. Select Fill Without Formatting
15. Fill in the remaining cells with any capitalized letters
16. Use Fill Down or copy cells to make this process easier
17. Leave a blank cell between the words EMOTIONAL and AWARENESS

Creating a Word List

1. Select column Y
2. Go to Format
3. Select Column
4. From the drop down menu select Width
5. Enter 19 in the Column width box
6. Click OK
7. Enter "Word List" in cell Y5
8. Highlight the title Word List
9. Right click and select Format Cells
10. Under Font scroll down and select Bookman Old Style
11. Under Font Style select Bold
12. Under Underline select Single
13. Under Color select Sea Green
14. Click OK
15. Enter the term Psychology in cell Y6
16. In cells Y6-Y15 enter the remaining terms and names: Skinner, Bandura, Freud, Emotional Awareness, ANOVA, Control, Dendrites, Data and PSICHI
17. Select column Y
18. Right click and select Format Cells
19. Select the Alignment tab

20. Under Horizontal select Center
21. Click OK

Lesson 2: Advanced Excel (Data Management)

Purpose
In this workshop, you will learn how to use different applications to manage data. These applications include learning the following: concatenate, variable labels, and paste special / values.

Prerequisites
You should have successfully completed Lesson 1: Introduction to Excel, before attempting this lesson.

Application 1: Variable Labels
The POES calculates 4 types of scores for each of 20 items and a total score. The four types of scores are Highest-4 (H4), All-Sum (AS), 334 (34), and 3345 (35). For each item and scoring method, it generates scores for the three different parts of the item: Self, Other, and Total. You will use Excel to create variable labels for each of the 21 (20 item scores + 1 total score) * 4 (methods) * 3 (self, other total) = 252 variables. The labels should use the following format:

LEAS.SC.AS.Item.12.O
The word "LEAS", whether or not the data was spell-checked ("SC"), scoring method ("AS"), the word "Item", item number ("12"), item part("O")

1. Open a new excel file
2. In cell A1, type LEAS
3. In cell B1, type a period
4. Use Fill Down to copy A1 and B1 into the cells in rows 2 through 252
5. In cell C1, type SC
6. In cell D1, type a period
7. Use Fill Down to copy C1 and D2 into the cells in rows 2 though 252.
8. In column E, type the four types of scoring methods. In E1, type H4. In E2, type AS. In E3, type 34. In E4, type 35.
9. In cell E5, type the formula =E1
10. Use Fill Down, to copy the formula in E5 to the rest of the cells in column E.
11. Left align column E
12. In cell F1, type a period. Use Fill Down to copy this period into the rest of the cells in column F.
13. In cell G1, type Item. In cell H1, type a period. Use Fill Down.
14. In cells I1, I2, I3, and I4, type the number 1.
15. In cell I5, type the formula =I1+1
16. Use Fill Down to copy the formula in I5 to the cells I6 through I84.
17. In cell I85, type the formula =I1
18. Use Fill Down to copy the formula in I85 to the rest of the cells in column I.
19. Select column I
20. Click on Edit, Copy
21. Click on Edit, Paste Special
22. Select Values, and click OK
23. In column I, where you see the number 21, type Tot. For example, you get some 21's around row 81. Some more around row 165. Some more around row 249.
24. Left align column I.
25. In cell J1, type a period. Use Fill Down to copy it to the rest of the cells in column J.
26. In cell K1, type S
27. Use Fill Down to copy this S to the cells up to row 84.
28. In cell K85, type O
29. Use Fill Down to copy this O to the cells up to row 168.
30. In cell K169, type T
31. Use Fill Down to copy this T to the cells up to row 252.

32. In cell L1, type the formula =concatenate(A1, B1, C1, D1, E1, F1, G1, H1, I1, J1,K1)
33. Use Fill Down to copy this formula to the rest of the cells in column L
34. Congratulations! You did it! If you were analyzing these variables in SPSS, you could copy these labels directly into SPSS at this point.

Application 2: Getting ID's to Repeat

In our LEAS data entry, the ID is given at the top of each participant. When we go to score this data with POES, we need to get the ID to show up as the first line before EVERY item, so that column A has an ID in every row.

1. Open Workshops on Excel Getting IDs to repeat example.xls (in the Lab Meetings folder on the cluster server).
2. Save the file to the desktop so that you do not destroy the example file.
3. Insert a new column before the first column. This new column will now be called column A.
4. For the first participant, in column A, type consecutive numbers in each row. We are numbering the rows for the participant.
5. For the remaining participants, we will use formulas to get these row numbers. In cell A5, type =a1. Select cell A5. Use fill down to copy this formula to the rest of the cells in column A, to number the rows for all remaining participants.
6. Insert a new column before the first column. This new column will now be called Column A.
7. In cell A1, type the formula =c1. This will put the first ID in the first cell in Column A.
8. We want to put ID's in every row in Column A. We will use an IF statement. In cell A2, type the following =if(b2<b1,c2, a1)
   What this is saying is, if b2 < b1, then this is a new participant. In that case, we should use the ID that is found in column C. Otherwise, this row is the same participant as the previous row, and we should use the same ID as we used for the last row.
9. Select cell A2. Use Fill Down to copy this formula to the rest of the rows next to participant data.
10. The ID's we have right now are formulas. If we rearranged the data at all, the formulas would not do what we want them to do. We need to change these formulas into numbers. Select Column A. Copy. Click on Edit, Paste Special, Values, OK.
11. Check that column A has the right ID numbers. Compare them to the ID's in Column C. When are you are sure that this worked properly, delete columns B and C.
12. Congratulations! You did it! Getting the ID's to repeat in the first column of the Excel spreadsheet is one of the steps we have to do to get the LEAS data ready to be scored by POES. There are a few other steps. For example, we have to remove the commas. But this is one of the hardest and most important steps.

Lesson 3: Double Entry with Checking for Mismatches

Purpose

To ensure accurate data entry, it is best to entry data twice, and compare the entries to make sure they are identical. In this workshop, you will learn several ways to do this using conditional formatting, Sum and Countif functions.

Prerequisites

You should have successfully completed Lesson 1: Introduction to Excel, before attempting this lesson.

Setting up the Data

1. Open a new excel file
2. In cell A1, type ID
3. In cell B1, type item 1
4. In cell C1, type item 2
5. Select cells B1 and C1. Use Fill Right to create the item labels for items 3 though 6.
6. Copy the item labels you have, B1-G1. Paste them starting in cell H1, so you have a second set of item labels. We must put this second set of identical item labels so we can enter data twice.
7. In cell N1, type CHECK. At this point, the first row should look like this:

   ID item 1 item 2 item 3 item 4 item 5 item 6 item 1 item 2 item 3 item 4 item 5 item 6 CHECK
8. Under ID, type 1 in cell A2, type 2 in A3, and type 3 in A4. Type the example data below for three participants.

Example ID	item 1	item 2	item 3	item 4	item 5	item 6	item 1	item 2	item 3	item 4	item 5	item 6
1	6	5	4	3	2	1	6	5	4	3	2	1
2	6	5	4	3	2	1	6	5	4	3	2	1
3	6	5	4	3	2	1	6	5	4	99	2	1

9. In Sheet 1, I will show you one way of checking your data. In Sheet 2, I will show you a second method. In Sheet 3 I will show you how to check for out of range errors. Select your entire worksheet, and copy it to Sheet 2 and then to Sheet 3. Then go back to Sheet 1 again.

Method 1
The first method of checking for mismatches is to calculate the sum of the squared differences of the values.

Checking for Mistakes
10. Go to Sheet 1 and copy the item labels for your six items (B1-G1), and paste them starting in cell O1, so you have a third set of item labels.
11. In cell O2, type =(B2-H2)^2 You can type the cell references to B2 and H2, or you can use the mouse to select these cells. The ^ symbol is shift-6. This formula will calculate the difference between the numbers you typed for the first and second time you entered the data for the first participant. It will then square that difference. If the two numbers match, this should evaluate to 0 when you hit the enter key.
12. Use Fill Right to copy this formula to the rest of the cells O2 to T2 in row 2, so that you have formulas for all six items.
13. Select cells O2 through T2. Then use Fill Down to copy this formula to the two rows below, so that you have formulas for all three participants. You will notice that one of these cells is NOT 0. That's because there is a mismatch. And Excel is now showing you where that mismatch is.
14. In cell N2, type =sum(O2:T2) You can type the cell references to O2 and T2, or you can use the mouse to select this range of cells
15. Use Fill Down to copy this formula to the rest of the participants. You can see that one subject where cell N4 there is a mismatch. It doesn't evaluate to 0.

Highlighting
16. Select columns N through T
17. Click Format, Conditional Formatting
18. Set Condition 1 to be Cell Value is not equal to 0
19. Click on the Format button, select the Patterns tab, select the color red, and then click OK.
20. Click OK. Look how the non-zero numbers are highlighted.
21. Select row 1
22. Click on Format, Conditional Formatting.
23. Click Delete. Select condition 1. Click OK. Click OK. This just makes it look nicer.
24. Congratulations! You have now created a worksheet that checks for mismatches, and which highlights both the subject and the individual response that don't match. This is the method that I personally use when I am entering grades, because it is so easy to set up.

Method 2
The second method of checking for mismatches are to use the Sum and IF functions. This method does basically the same thing as the first method. The advantage is that it takes up fewer columns to do the comparison. And so if you are short on columns in your spreadsheet, this might be better. There are two disadvantages. First, the formula (in step 30) is complicated. Personally, I still have to look it up. Second, it does not tell you which item failed to match.

Checking for Mistakes
24. Go to the worksheet 2.
25. You are going to type a big formula in cell N2. I'll take you through it one step at a time. First, type =SUM(IF(
26. Use the mouse to select the range of cells where the data was entered the first time. In our example, this was cells B2 through G2. Excel will add B2:G2 to your formula, so that your formula now reads =SUM(IF(B2:G2
27. Type the = sign.

28. Use the mouse to select the range of cells where the data were entered the second time. In our example, this was cells H2 through M2. Excel will add H2:M2 to your formula, so that your formula now reads =SUM(IF(B2:G2=H2:M2
29. Type ,0,1))
30. Hit Ctrl-Shift-Enter all at the same time. Excel will put braces at the beginning and end of the formula to indicate that this is an array formula, and your formula will now read {=SUM(IF(B2:G2=H2:M2,0,1))} Do not attempt to type the braces yourself: it will not work.
31. Use Fill Down to copy this formula to the rest of the rows.

Highlighting

32. Select column N
33. Click Format, Conditional Formatting
34. Set Condition 1 to be Cell Value is not equal to 0
35. Click on the Format button, select the Patterns tab, select the color red, and then click OK.
36. Click OK.
37. Select row 1
38. Click on Format, Conditional Formatting.
39. Click Delete. Select condition 1. Click OK. Click OK.

Checking for Out of Range Errors

To ensure accurate data entry, it is best to enter the data twice, and compare the entries to make sure they are identical. Another error than simply typing in the wrong entry for an item, is to enter an item that creates an outlier! For example, if you mean to type in a score of 3 for an entry item, but instead type in a 33, this could be disastrous! Thankfully, there is a way to check for these out of range errors. I will show you two how to do this.

1. Go to Sheet 3 in your open Excel Workbook.
2. Delete Columns B-G.
3. In cell H1, delete the word "CHECK" and type "Out of Range." You can enlarge the column width to have the work fit, but this is not necessary.
4. Next, we must specify the minimum and maximum acceptable values. In this case, we have values from 1-6.
5. In cell I1 type "Min" and in cell J1 type "Max."
6. In cell I2 type 1 and in cell J2 type 6. When writing the formula for the Out of Range Error column, we will need to reference cells I2 and J2 because they specify our minimum and maximum values.
7. You are going to type a big formula in cell H2. I'll take you through it one step at a time. First type =COUNTIF(
8. Use the mouse to select the range of cells that contain the data we want to check. In our example, this was B2 through G2. Excel will add B2:G2 to your formula, so that your formula now reads =COUNTIF(B2:H5
9. After "B2:H5" of your formula type ,"<"&I$2) What this says is that the content in cells B2-H5 must be no lower than the value of 1. (Remember, in cell I2, the value is 1). Your formula should now read =COUNTIF(B2:G2,"<"&I$2)
10. Next type +COUNTIF(B2:G2,">"&J$2) What this statement says that the content in cells B2-H5 must be no larger than 6. Combined, your statement means that the content in cells B2-H5 should have values that range from 1 to 6 and if not, the number in the Out Of Range column will be larger than 0.
11. Your formula is now complete and should now read =COUNTIF(B2:G2,"<"&I$2)+COUNTIF(B2:G2,">"&J$2)
12. Use Fill Down to copy this formula to the rest of the rows.

13. Cells H2 and H3 should have Zeros. Cell H4 should have a 1. This means that there is one cell in the cell range that is not an acceptable value and is outside our minimum and maximum value range.

Cell Protection

Now that you typed all those long and complicated formulas, you don't want anyone to mess them up! This is quite easily done through the "copy and paste" function, adding additional rows, or even simply if someone accidentally over-types those cells so the easiest way to avoid this is to prevent it! I will show you how to protect your cells and the formulas in them.

1. Select column H.
2. Under the Format Menu, click on Cells.
3. Under the Protection Tab, make sure the box next to "Locked" is checked. Then click OKAY. This will lock all the cells in column H. This means that now no one can type, click, or do any formatting in those cells
4. Now select columns A-G.
5. Under the Format Menu, click on Cells.
6. Under the Protection Tab, make sure the box next to "Locked" is NOT checked. These are the columns that we will allow people to type in. These columns contain no formulas.
7. Under the Tools Menu, select Protection, and then select "Protect Sheet." You may enter a password. This will prevent anyone without the password from unlocking the locked cells.
8. Congratulations! Your formulas are safe!
9. To prepare for the next lesson, unprotect your sheet and do not exit out of the workbook.

Lesson 4: Advanced Skills for Data Entry (file sharing and split window)

Purpose
In the previous lesson, you learned the basics of doing double data-entry. In this lesson, you will master more advanced topics of data entry, including a safe way to work on data entry simultaneously, as well as freezing columns and rows.

Prerequisites:
You should have successfully completed Lesson 3: Double Entry with Checking for Mismatches before attempting this lesson.

Part 1: File-Sharing

Purpose
In order to facilitate and quicken data entry, it is possible to have more then one person work on entering data at one time. There are two options to enter data simultaneously.

The first option is to have each person enter data on separate Excel files. However, there are disadvantages to this method. One person entering data entry cannot see what has been entered by others, so some data could be entered twice or more. Along the same lines, one person doing data entry could assume that another person has already entered some specific set of data, which means that there is a risk of some data not being entered.

Instead, it is possible to enable an Excel file to be worked on simultaneously. This allows the people doing the data entry to see what has been entered already. However, specific steps must be taken in order to ensure that no data is lost.

Setting Up Spreadsheet For File-Sharing
1. Open the file from Lesson 3. It does not matter whether you use Sheet 1 or Sheet 2 for this lesson. It is highly advised to have all the components of the file ready for data-entry before enabling file-sharing.
2. Under the Tools Menu, select Share Workbook.
3. Under the Editing tab, select "Allow changes by more than one user at the same time" and click OK.
4. The file can now be shared.

IMPORTANT: If you are working on data entry while you are in the lab and wish to save your progress, check if anyone else is working on the same file. If there is no one working on the file, proceed with the save. However, if there is a person(s) working on the file, ask them to stop what they are doing while you proceed with the save. After the file is saved, inform the others that they can continue with the data entry. This is **very** important, as if they do not stop entering data as you save, it is possible that data will be lost.

Part 2: Split Window

Purpose
Now that we have learned to allow people to work on the file simultaneously, we can now move on to making data entry easier.

Most of the time, there are so many participants and/or items, that the headings of the rows and columns will be lost if you scroll elsewhere in the sheet.

This can be easily remedied by splitting the window, which allows chosen rows and/or columns to be visible at all times.

Splitting the Window
1. Open the Excel file from Lesson 3, and select Sheet 1.
2. Select the cell immediately below the column headings and immediately to the right of the row headings. This will be B2 in this file.
3. Click on the Window menu, and select Split.
4. To remove the split, use Window, Remove Split.
5. Scroll through the file to ensure that row 1 and column A are always visible.

Lesson 5: Creating Frequency Tables Using Pivot Tables

Purpose
In this lesson you will be learning how to use array formulae, histograms, and pivot tables / chart wizard. You will begin be watching two videos. The first is on frequency distributions and the second is on hands-on frequency distributions.

Prerequisites
You should have successfully completed Lesson 1: Introduction to Excel, before attempting this lesson.

Part I: Video on Frequency Distributions

Watch the video located at http://woodard.latech.edu/~lpace/html/tutorials.html entitled "Simple Frequency Distribution in Excel".

Part II: Hands-on Frequency Distributions

Opening Example Data

1. First watch the video, in Part I.
2. Open Excel.
3. Open the Example file, Intermediate Excel 1, which is designed to go with this lesson. Open the cluster server, open Barchards Lab, open Lab Meetings and Training, and open
   Workshops on Excel Frequency Tables Example Data.xls
4. Select entire file and copy. Open a new file and paste.

Array Formula

1. Rearrange the possible values of X in descending order from 10-1. Select cells B2-B11. Select the sort descending icon on the toolbar. A message box will pop out. Select continue with the current selection. IF there is no icon, select data from the menu bar. Select sort. Select continue with the current selection. Select sort. Under "sort by" select descending.
2. Select cells C2-C11.
3. Enter =FREQUENCY(A2:A31, B2:B11) in the formula bar. Then hold down the control and shift buttons while at the same time pressing enter. Your formula should now look like: =FREQUENCY(A2:A31, B2:B11)}. This counts the frequency within this data range for all the possible values of X at once.

Histogram

1. Sort X values in ascending order. (There is an icon on the toolbar to do this.) A message box will pop out. Select continue with the current selection. F(x) values will automatically rearrange themselves.
2. Select Tools from the menu bar.
3. Select Data Analysis. If there is no data analysis select add-ins; and select Analysis Toolpak; and click OK; and then select Tools / Data Analysis.
4. Select Histogram.
5. For Input Range select the data (A2 – A31). It should look like this: $A$2:$A$31
6. For the Bin Range select B2-B11. It should look like this: $B$2:$B$11
7. Select Output Range which will be put under column D. It should look like this: $D$1

8. Click OK.

Pivot Table or Pivot Chart Wizard

1. Select Data from the menu bar.
2. Select Pivot Table and Pivot Chart Report.
3. Under “where is the data you want to analyze?” Select Microsoft Office Excel list or database.
4. Under “what kind of report do you want to create?” Select Pivot Table.
5. Click next.
6. A message box will come up and ask “where is the data you want to use?” Select cells A1-A31. It should look like this: Data!$A$1:$A$31
7. Click next.
8. A message box will come up and ask “where do you want to put the Pivot Table report?” Select Existing worksheet.
9. Click on Select cell F1. This should look like this: Data!$F$1 under existing worksheet.
10. Click finish.
11. In the Pivot Table Field List, drag grades to the “drop row fields here”.
12. In the Pivot Table Field List, drag grades to the “drop data items here”.
13. Select cell F1 and right click.
14. Select field settings.
15. Select Count. Next to name it should now read: Count of grades.
16. Click ok.