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LESSON 1

Absolute Cell Addressing

Using Absolute References

Examples of absolute references:

1. \$H\$1 = Locks in the column and row. The formula will only use the data found in this cell.
2. \$H1 = Locks in the column. As you pull your formula down or across, the formula will always pull the data from column H for the corresponding row.
3. H\$1 = Locks in the row. As you pull your formula down or across, the formula will always pull the data from row 1 for the corresponding column.

LESSON 2

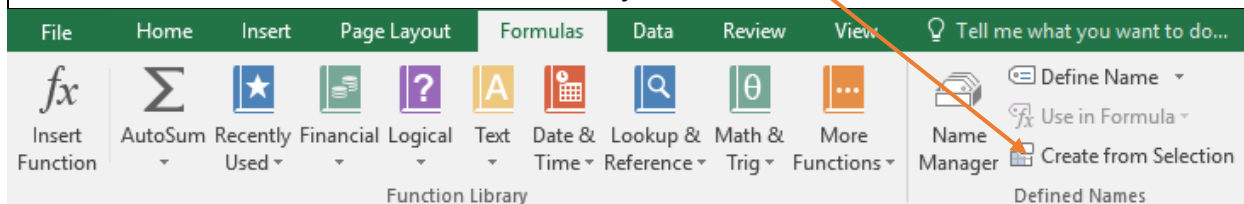
Naming Cells and Ranges

Using the Create Method to Name Cells

Create Method to Name Cells

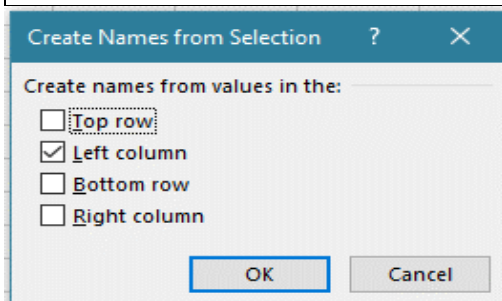
1. Select the entire range of data from your naming cell in first col to values in second col

2. Go to Formula Tab on the ribbon choose *Create from Selection*



3. Check the box next to Left Column and click OK

Doing this will cause Excel to automatically create defined names for each of the cells in first col for the values in second col.



Revenue	1,000,000
Cost of Sales	600,000
Gross Margin	400,000
Operating Expenses	515,000
Net Income	

Once you have defined the names, you can create formulas with the names -

In this example C28 (Net Income) becomes C26-C27 becomes **=Gross_Margin - Operating Expenses**

Revenue	1,000,000		
Cost of Sales	600,000		
Gross Margin	400,000		
Operating Expenses	515,000		
Net Income	+Gross_Margin-Operating_Expenses		

LESSON 3

Data Consolidation

Consolidating Data across Worksheets

Consolidating Data across Workbooks

1. Start from clean worksheet. On the data tab, in the data tools group choose consolidate

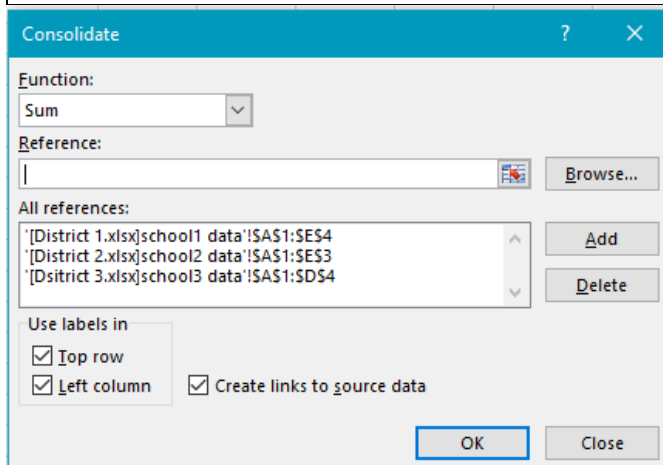


Make Sure all three workbooks(files) are open - District 1, 2 and 3

2. Choose the sum function to sum the data

3. Click in the reference box and select the range A1:E4 in the school1 data workbooks

4. Repeat step three for the other workbooks choosing all the data for school2 and school3



5. Check Top Row, left column and create links to source data

Note: if you don't check Top row and Left column, Excel sums all cells that have the same position. For example, cell B2 (in district1.xlsx) + cell B2 (in district2.xlsx) + cell B2 (in district3.xlsx). Because our worksheets are not identical, we want Excel to sum cells that have the same labels. If you check Create links to source data, Excel creates a link to your source data (your consolidated data will be updated if your source data changes) and creates an [outline](#).

7. Click ok

LESSON 4

Using Formulae and Functions

How to Enter a Formula

Using Sum/Average/Max/Min

Copying Formulas

Lookup Functions

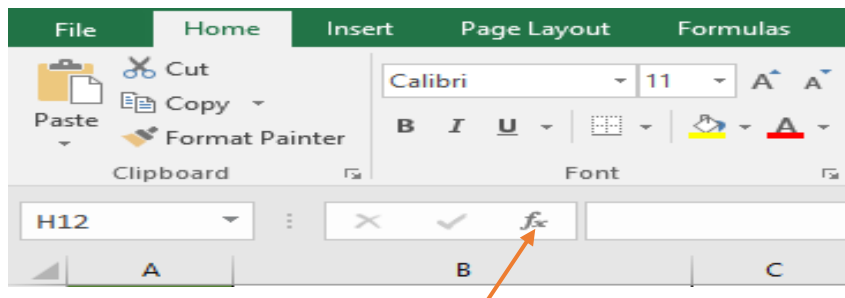
Using Vlookup

Using Hlookup

Index Function

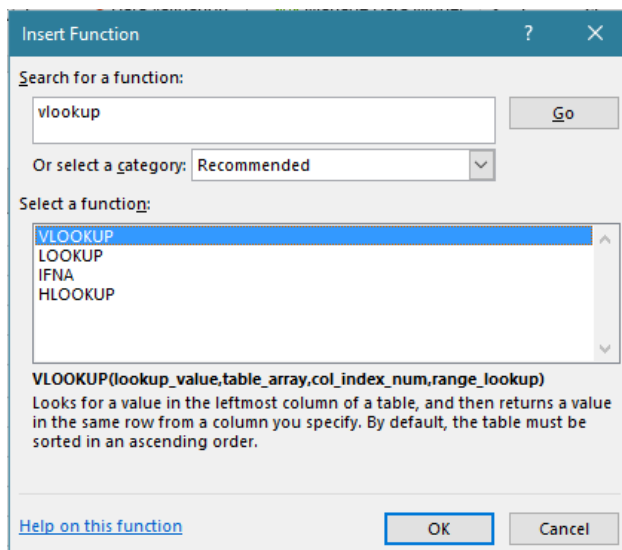
Vlookup (VERTICAL LOOKUP)

1. Put your cursor in the cell that you want to return data to



2. Click on the fx icon on your ribbon.

3. Type vlookup in the search box and then hit go. It should come up in the select function box below and you can double click on it to add to your cell



4. At this point, the box below will pop up.

Function Arguments

VLOOKUP

Lookup_value A59 = "330"
Table_array O\$57:P\$62 = {"Job Group","Job Grp Name";240,"I..."
Col_index_num 2 = 2
Range_lookup FALSE = FALSE

=

Looks for a value in the leftmost column of a table, and then returns a value in the same row from a column you specify. By default, the table must be sorted in an ascending order.

Lookup_value is the value to be found in the first column of the table, and can be a value, a reference, or a text string.

Formula result =

[Help on this function](#) OK Cancel

lookup value is saying look at the cell to the left
Table Array is telling where to look
Col_index_num is telling which col of data to return to your cell
Range_lookup - you choose false, so it will return an exact match

Some things to note -
--> The look up value must be formatted correctly and directly to the left of the cell you are returning to
--> The look up value in you data must be formatted the exact same way as your look up value
--> When looking at the array, you must start with the column that matches your data exactly and the number you want to return, must be to the right of that
--> The table array should use absolute references to make sure it holds and looks in the same data for all your returned data should you fill your formula down

Index Function
1. Put your cursor in the cell that you want to return data to - E161
2. Click on the fx icon on your ribbon.
3. Type index in the search box and then hit go. It should come up in the select function box below and you can double click on it to add to your cell
4. The Select arguments box will pop up. Double click on array, row num, col num

Select Arguments

INDEX

This function has multiple argument lists. Please select one of them.

Arguments:

array,row_num,column_num
 reference,row_num,column_num,area_num

[Help on this function](#) OK Cancel

Function Arguments

INDEX

Array I162:L165 = {0,75,50,25;75,50,25,0;37.5,25,12.5,0;37.5,25,12.5,0}

Row_num D162 = 0

Column_num C162 = 3

= {50;25;12.5;12.5}

Returns a value or reference of the cell at the intersection of a particular row and column, in a given range.

Column_num selects the column in Array or Reference from which to return a value. If omitted, Row_num is required.

Formula result = 50

[Help on this function](#) OK Cancel

In this example: your student type is the row - D161 and your column is the quarter - C146. The yellow boxes are user inputs and the look up data is in the two data tables to the right.

This argument should look at the grid and return the intersection of the free and reduced student and quarter 1.

	A	B	C	D	E	F	G	H	I	J	K	L
153												
154												
155									Q1	Q2	Q3	Q4
156									8/11/2016	10/15/2016	1/1/2017	3/11/2017
157									10/14/2016	12/31/2016	3/10/2017	5/25/2017
158												
159									Columns			
160	Student ID	Withdraw Date	Quarter	Student Type	Refund Amount				LRF Refund Rate			
161	1000222	12/10/2016	2	4	25	Rows	Student Type		Q1	Q2	Q3	Q4
162	1000425	1/1/2017	3	2	25	1	Free and Reduced Student	0	75	50	25	25
163	1001534		FALSE			2	General Student	75	50	25	0	0
164	1001600		FALSE			3	Part Time Student	37.5	25	12.5	0	0
165	1002458		FALSE			4	Private School Student w/ no GenEd	37.5	25	12.5	0	0

LESSON 5

Data Validation

Using the Data Validation feature

Finding Invalid Data

Set a Range of Numeric Values That Can Be Entered in a Cell

You can place limits on the data that can be entered into a cell, you can set minimums and maximums or check for the effect an entry might have on another cell.

1. Highlight cells B22:B29

2. On the Data menu, click Data Validation and click the Settings tab.

3. In the Allow list, click Whole number.

4. In the Data list, click between.

5. In the Minimum box, enter 1.

6. In the Maximum box, enter 12.

7. Click OK.

Data Validation ? X

Settings Input Message Error Alert

Validation criteria

Allow: Whole number ☒ Ignore blank

Data: between

Minimum: 1

Maximum: 12

☐ Apply these changes to all other cells with the same settings

Clear All OK Cancel

Example You have sent out a template for people to fill in. You want to make sure they return valid information. You want to make sure that no one can enter invalid data -

Name	Birth Month	Birth Day
Sally		5
Jane	13	
Jimmy		
Carol		
Paul		
Aubrey		
Alice		
Gertrude		

month message
Hey There!
Remember this is a month and should be 1-12

Error X

Number out of Range

Retry Cancel Help

LESSON 6

Conditional Formatting

Setting Up Conditional Formats

Using Formulae in Conditional Formats

Conditional Formatting using formula

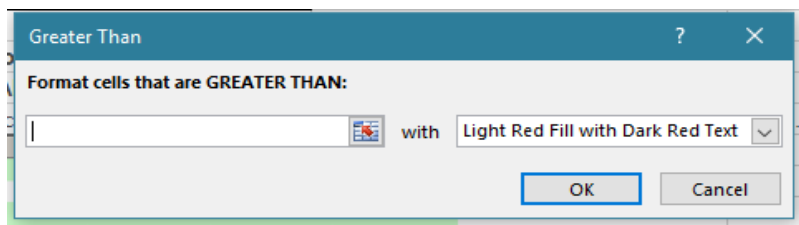
Shade Alternating Rows

You can use Excel conditional formatting to shade alternating rows on the worksheet.

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				

1. Place your curser in cell A25 and choose CTRL+A - this will choose all the data in your sheet below
2. On the Ribbon's Home tab, click Conditional Formatting, then click New Rule
3. Click <i>Use a Formula to Determine Which Cells to Format</i>
4. For the formula, enter =MOD(ROW(),2)
5. Click the Format button.
6. On the Patterns tab, select a color for shading
7. Click OK, click OK

Conditional Formatting
1. Place your cell in the column you wish to format
2. On the Ribbon's Home tab, click Conditional Formatting, then click Highlight Cell Rules
3. Choose what you want to determine - Greater than
4. Enter the value in the Format Cells that are GREATER THAN box

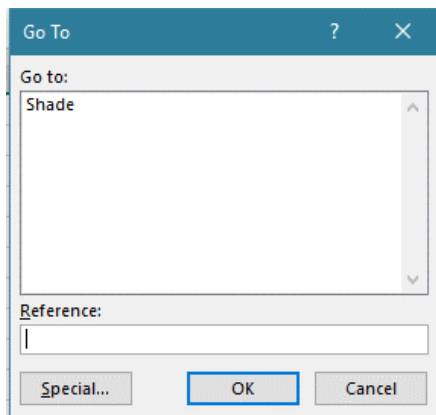


5. click ok

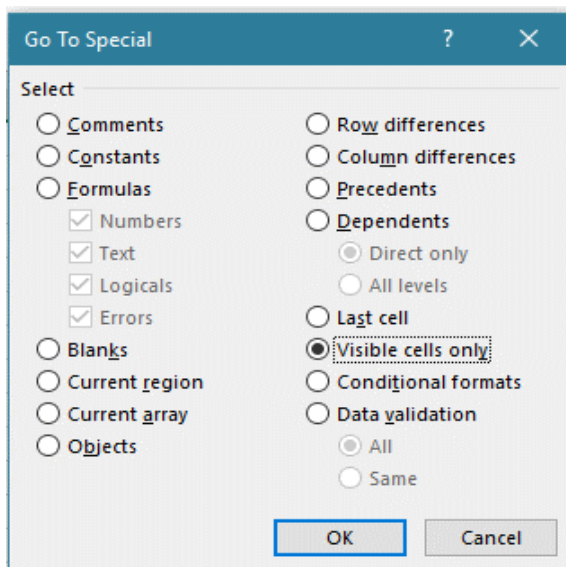
LESSON 7

Working with Data Lists
Copying Visable Cells
Sorting
Subtotals
Filtering
Text to Columns

Copying Visible Cells Only
<i>Often during our work, we filter our spreadsheets to show only certain data we care about at the time. I wanted to copy this data to another sheet. I would highlight all the data I could see and hit copy. When I pasted into another sheet, the filtered out data came with it, in addition to the data I wanted. The steps below outline how to copy over filtered data.</i>
1. Highlight the data you want to copy.
2. Hit F5.



3. Click the “Special” button in the lower left hand corner.



4. Click on the “Visible Cells Only” Circle box.

5. Hit OK.

6. Press Ctrl “C” or Edit Copy.

7. Paste data into the appropriate sheet.

8. The visible data should have been copied over.

Text to Columns

To separate fixed-width text into multiple columns, follow these steps:

1. Insert Columns to the right for data to fill into

2. Highlight the range of cells that includes text to be separated.

3. Go to Data, Text to Columns.

4. Select Fixed Width from step 1 of the wizard and click Next.

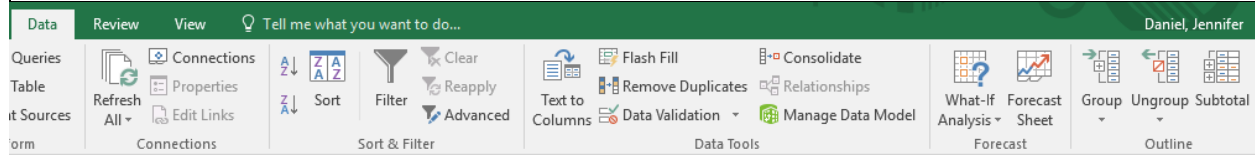
5. Excel will guess at where the column breaks should go

Subtotals

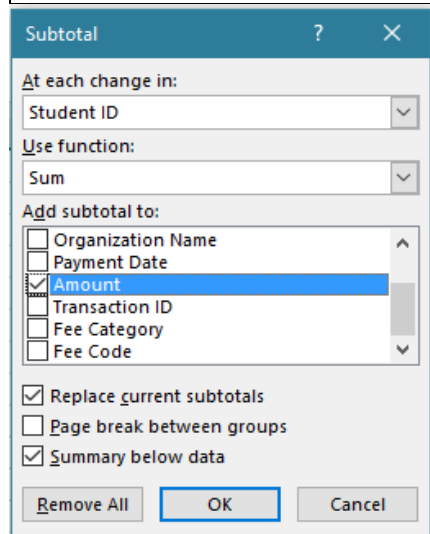
To subtotal your data - follow steps below

1. Place your cell in the top leftmost cell and highlight all data - or CTRL+A

2. On the Ribbon - choose Data - Subtotal



3. At the pop up box - choose



4. Click OK

LESSON 8

Pivot Tables

Using the Pivot Table Wizard

Modifying the Pivot Table

	Creating a Pivot Table
1	First step in using pivot tables is to make sure you have clean data. You need to make sure you do not have any blank rows or columns. Also, each column must have a unique header title and the workbook must be a named and saved file on your computer. You will also need to evaluate how you are wanting to consolidate your data - (by fee and total fee collected or by student/employee and total fees collected or by school and then total fees collected)
2	Once you have valid data, choose another tab in your workbook and click in the cell you want to insert your table.

3	Go to the insert tab and choose pivot table
---	---

4	This dialog box will show up - put your cursor in the table/range and then click over to your set of data you wish to consolidate
---	---

Create PivotTable

Choose the data that you want to analyze

☒ **Select a table or range**

Table/Range:

☐ Use an external data source

Choose Connection...

Connection name:

☐ Use this workbook's Data Model

Choose where you want the PivotTable report to be placed

☐ New Worksheet

☒ **Existing Worksheet**

Location:

Choose whether you want to analyze multiple tables

☐ Add this data to the Data Model

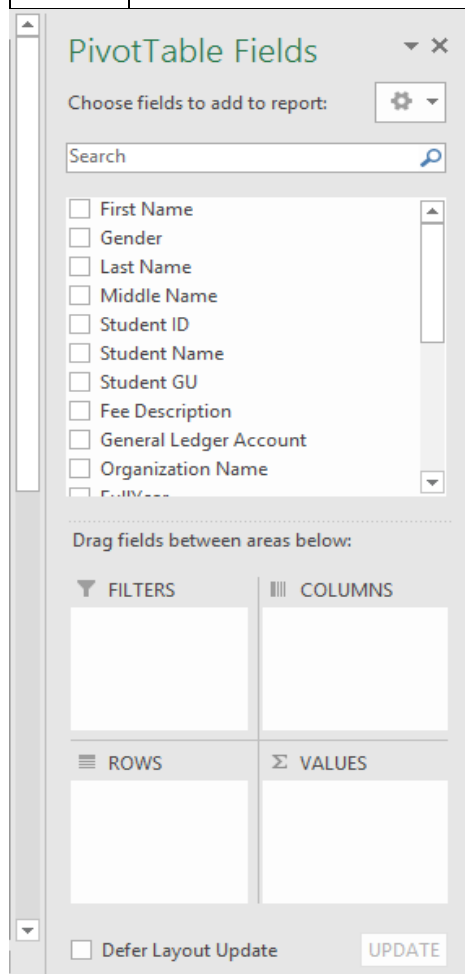
OK Cancel

5	To start: at the top left data cell, you can then highlight all the data including your header row. To grab all the data at once - click CTRL+A. When you have chosen all the data, click ok and you will see this prompt below where you are inserting your table
---	---

PivotTable1

Click in this area to work with the PivotTable report

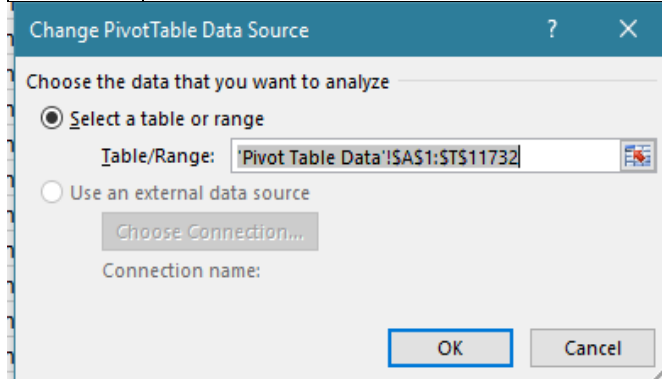
6	Click on this box and it will open up the following prompt below
---	--



7	Drag the header titles that you want consolidated into the boxes below (either rows or columns) and the data you want consolidated into the value box. This will create your table.
8	The last step is to always validate that the total of the column you are getting to, matches the grand total of your table

	Modifying
	<i>Changing numbers in your data file</i>
1	It is very important to note, that if you change anything in your data table, you need to go back in and refresh the table
2	click on the table and then go to your excel ribbon
3	choose analyze and then refresh

	Adding Rows or Columns to Data Source
1	click on the table and then go to your excel ribbon
2	choose analyze
3	Then Change Data Source - this will give you the data source box below again to capture all of your numbers.



4	This takes you back to your tab of data and you can simply choose A1 and highlight all of your data again - CTRL+A
---	--

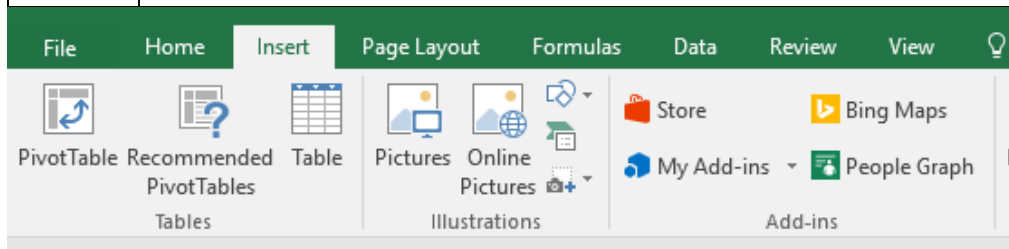
LESSON 9

Data Tables

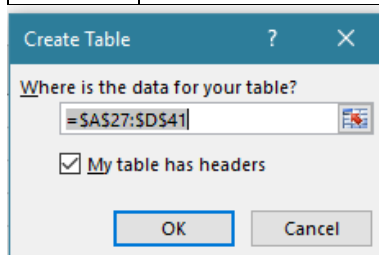
Creating Data Tables

One Way and Two Way Tables

	Insert a Table
1	Click in any cell within the data set
2	On Insert tab, click table



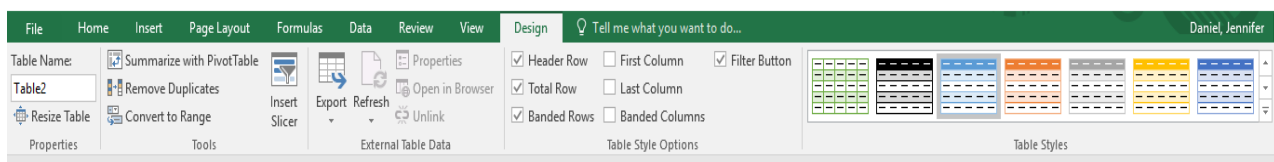
3	Excel automatically selects the data for you. Check 'My table has headers' and then click OK
---	--



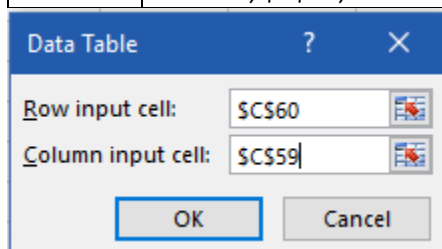
	The result is a nicely formatted table. It may seem normal, but this has a lot of great features.
--	---

Last Name	Sales	Country	Quarter
Smith	\$ 16,753	UK	Qtr 3
Johnson	\$ 14,808	USA	Qtr 4
Williams	\$ 10,644	UK	Qtr 2
Jones	\$ 1,390	USA	Qtr 3
Brown	\$ 4,865	USA	Qtr 4
Williams	\$ 12,438	UK	Qtr 1
Johnson	\$ 9,339	UK	Qtr 2
Smith	\$ 18,919	USA	Qtr 3
Jones	\$ 9,213	USA	Qtr 4
Jones	\$ 7,433	UK	Qtr 1
Brown	\$ 3,255	USA	Qtr 2
Williams	\$ 14,867	USA	Qtr 3
Williams	\$ 19,302	UK	Qtr 4
Smith	\$ 9,698	USA	Qtr 1

* From here you can choose the design tab and create more functionality



	Two Variable Data Tables - What if Analysis
1	Copy the original formula entered in cell C61 into cell B64 by typing = (equal to) and then clicking cell C61.
	For a two-variable data table, the copy of the original formula must be entered at the intersection of the row and column input values.
2	Select the cell range B64:F74.
	The range of the data table includes the formula along with the various growth rates.
3	Choose What-If Analysis→Data Table in the Data Tools group on the Data tab.
	Excel opens the Data Table dialog box with the insertion point in the Row Input Cell text box.
4	Click cell C60 to enter the absolute cell address, \$C\$60, in the Row Input Cell text box.
5	Click the Column Input Cell text box and then click cell C59 to enter the absolute cell address, \$C\$59, in this text box.



6	Click OK
	Excel fills the blank cells of the data table with a TABLE formula using C60 as the Row Input Cell and C59 as the Column Input Cell.

55	EXAMPLE					
56	A	B	C	D	E	F
57		Sales Projections 2017				
58		Sales 2016	875,000			
59		Growth 2017	1.0%			
60		Expenses 2017	8.0%			
61		Projected Sales 2017	813,750			
62						
63			Expense %s			
64		813,750	10%	15%	20%	25%
65	Growth Rates	1.0%	796,250	752,500	708,750	665,000
66		1.5%	800,625	756,875	713,125	669,375
67		2.0%	805,000	761,250	717,500	673,750
68		2.5%	809,375	765,625	721,875	678,125
69		3.0%	813,750	770,000	726,250	682,500
70		3.5%	818,125	774,375	730,625	686,875
71		4.0%	822,500	778,750	735,000	691,250
72		4.5%	826,875	783,125	739,375	695,625
73		5.0%	831,250	787,500	743,750	700,000
74		5.5%	835,625	791,875	748,125	704,375

LESSON 10

If Then Statements

If then statement

Nested If then statement

If Then Statements....

Example 1

The example may be easier to understand if you copy it to a blank worksheet.

How do I copy an example?

	A	B	C
1	Data		
2	50	23	
3	Formula	Description	Result
4	=IF(A2<=100,"Within budget","Over budget")	If the number in cell A2 is less than or equal to 100, the formula returns "Within budget." Otherwise, the function displays "Over budget."	Within budget

26	A	B	C	D	E	F	G	H
27							EXAMPLE PROBLEM	
28	In cell H30 write your own If . . . Then statement. It should							
29	be exactly the same as Example 1. H30 will either say						Budget Item	
30	"Within budget" or "Over budget" if you do it correctly.						90	Within budget
31							800	
32	Once you get H30 to work correctly						75	
33	highlight it and fill down to H34						1600	
34	and see if it will work in all the cells.						100	
=IF(G30<=100,"Within budget","Over Budget")								

Nested If Thens....

	A	B	C
1	Score		
2	45		
3	90		
4	78		
5	Formula	Description	Result
6	=IF(A2>89,"A",IF(A2>79,"B", IF (A2>69,"C",IF(A2>59,"D","F"))))	Assigns a letter grade to the score in cell A2	F
7	=IF(A3>89,"A",IF(A3>79,"B", IF (A3>69,"C",IF(A3>59,"D","F"))))	Assigns a letter grade to the score in cell A3	A
8	=IF(A4>89,"A",IF(A4>79,"B", IF (A4>69,"C",IF(A4>59,"D","F"))))	Assigns a letter grade to the score in cell A4	C

A	B	C	D	E	F	G	H
In cell H59 write your own If . . . Then statement. It should						EXAMPLE PROBLEM	
be exactly the same as Example above. H59 will either say						Grades	RESULT
A,B,C,D,F if you do it correctly.						20	F
						90	
Once you get H59 to work correctly						85	
highlight it and fill down to H63						69.4	
and see if it will work in all the cells.							
=IF(G59>89,"A",IF(G59>79,"B",IF(G59>69,"C",IF(G59>59,"D","F"))))							

Shortcut	Description
F2	Edit the selected cell.
F3	After a name has been created, F3 will paste names.
F4	Repeat last action. For example, if you changed the color of text in another cell, pressing F4 will change the text in cell to the same color.
F5	Go to a specific cell. For example, C6.
F7	Spell check selected text or document.
F11	Create chart from selected data.
Ctrl + Shift + ;	Enter the current time.
Ctrl + ;	Enter the current date.
Alt + Shift + F1	Insert New Worksheet.
Alt + Enter	While typing text in a cell, pressing Alt + Enter will move to the next line, allowing for multiple lines of text in one cell.
Shift + F3	Open the Excel formula window.
Shift + F5	Bring up search box.
Ctrl + I	Open the Format Cells window.
Ctrl + A	Select all contents of the worksheet.
Ctrl + B	Bold highlighted selection.
Ctrl + I	Italic highlighted selection.
Ctrl + K	Insert link.
Ctrl + S	Save the open worksheet.
Ctrl + U	Underline highlighted selection.
Ctrl + 1	Change the format of selected cells.
Ctrl + 5	Strikethrough highlighted selection.
Ctrl + P	Bring up the print dialog box to begin the printing process.
Ctrl + Z	Undo last action.
Ctrl + F3	Open Excel Name Manager.
Ctrl + F9	Minimize current window.
Ctrl + F10	Maximize currently selected window.
Ctrl + F6	Switch between open workbooks or windows.
Ctrl + Page up	Move between work sheets in the same document.
Ctrl + Page down	Move between work sheets in the same document.
Ctrl + Tab	Move between Two or more open Excel files.
Alt + =	Create a formula to sum all of the above cells.
Ctrl + '	Insert the value of the above cell into the cell currently selected.
Ctrl + Shift + 1	Format number in comma format.
Ctrl + Shift + 4	Format number in currency format.
Ctrl + Shift + 3	Format number in date format.
Ctrl + Shift + 5	Format number in percentage format.
Ctrl + Shift + 6	Format number in scientific format.
Ctrl + Shift + 2	Format number in time format.
Ctrl + Arrow key	Move to next section of text.

Shortcut	Description
Ctrl + Space	Select entire column.
Shift + Space	Select entire row.
Ctrl + -	Delete the selected column or row.
Ctrl + Shift + =	Insert a new column or row.
Ctrl + Home	Move to cell A1.
Ctrl + ~	Switch between showing Excel formulas or their values in cells.