

Excel & Business Math
Video/Class Project #01
Introduction to Excel. Why We Use Excel for Math. First Formula.

Topics Covered in Video:

1) USB Drive to store files from class	2
2) Save As to Download Excel & pdf Files	2
3) Save Class Files & Create Class Folder	3
4) Windows Explorer to view and open files	4
5) Why we use Excel for Business Math.....	4
6) Conventions for Class.....	5
7) What does Excel do?	6
8) Excel Workbook Layout.....	7
9) First Excel Formula: Total Sales = Price * Number Units Sold.....	9
10) Selecting a Range of Cells with the Selection Cursor	12
11) Number Formatting	13
12) Second Excel Formula for Net Income & How To Copying Formula to the Side	14
13) Verify that Number Formatting is NOT displaying a misleading Number	15
14) PDF Notes.....	15
15) Practice Homework & Answers to Homework	15

1) USB Drive to store files from class

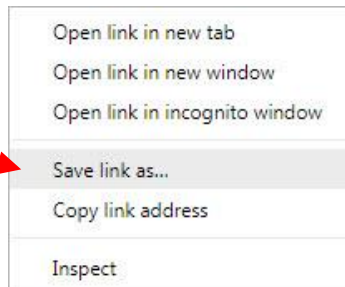
As is required from our syllabus, you must buy a Jump Drive to store all the Excel and PDF files for our class. Example of USB Jump Drives:



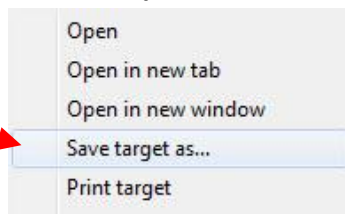
2) Save As to Download Excel & pdf Files

At our class web site, right-click the file, and depending on your browser, point to:

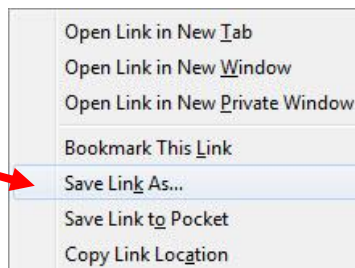
1) Chrome:



2) Internet Explorer:

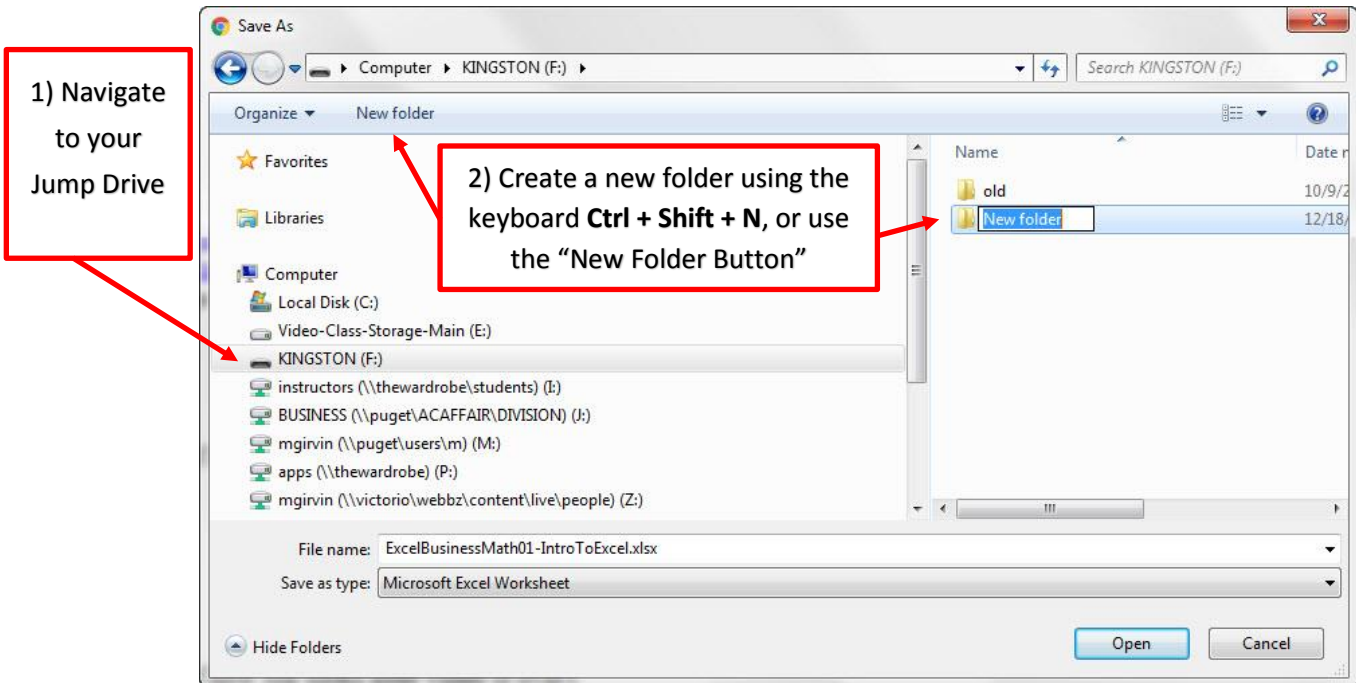


3) Mozilla:

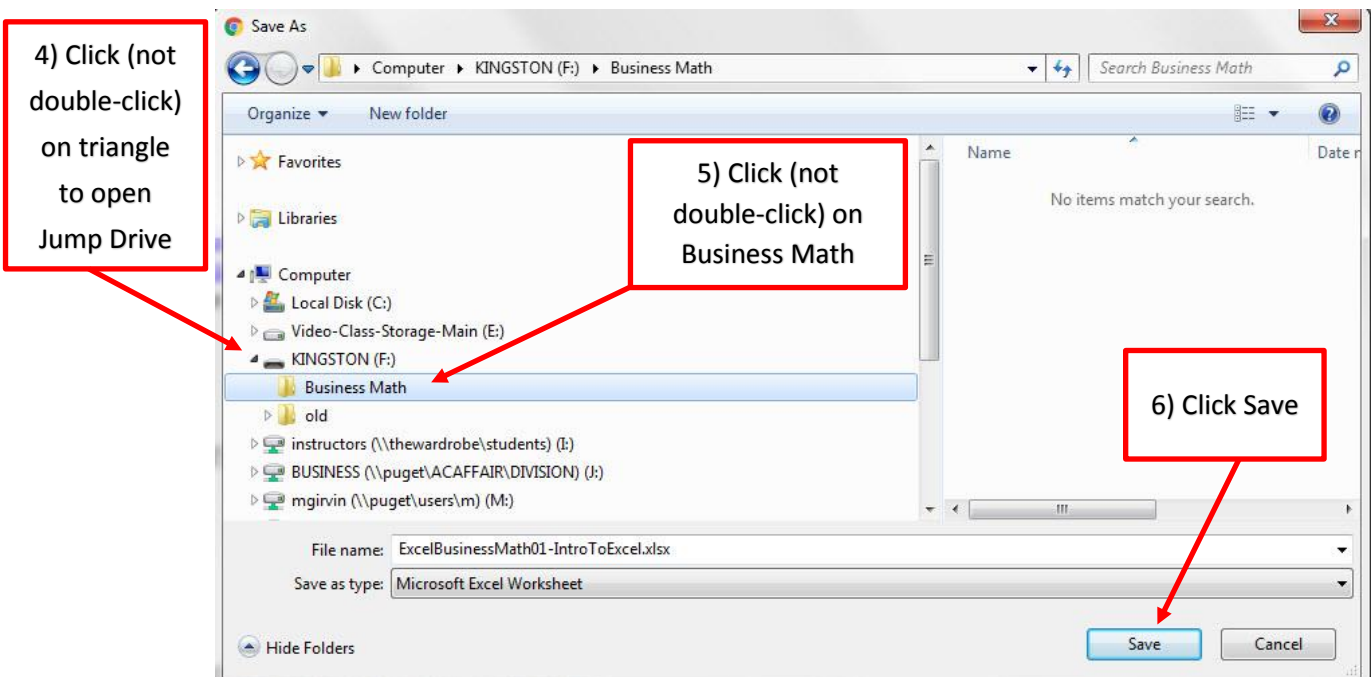


3) Save Class Files & Create Class Folder


1. When we download a file, we Navigate to our Jump Drive.
2. In the Save As dialog Box you can create a new folder using the keyboard Ctrl + Shift + N, or use the “New Folder Button”:



3. Name our class folder “Business Math”:
4. On the Left Side of the Save As dialog box, click (not double-click) on the triangles to open your Jump Drive.
5. Then click (not double-click) on Business Math Folder.
6. Then click Save.



4) Windows Explorer to view and open files

1. Windows Explorer is a program that allows use to perform File and Folder Management
2. Windows Explorer allows us to:
 - 1) Verify files and folders are in correct location
 - 2) Open Files
 - 3) Move, Copy Delete files or folders
 - 4) Backup folders and files
3. Keyboard to open Windows Explorer =  + E



4. Examples of what Window Key Looks Like:

5) Why we use Excel for Business Math

1. Your Job will require it!!!!
2. Make many calculations quickly.

Example for Video of making many “Net Pay” calculations quickly:

	A	B	C	D
6	Employee	Gross Pay	Tax Deduction	Net Pay
7	Jesenia Earley	4819.89	578.39	4241.5
8	Francene Nobles	5009.01	250.45	4758.56
9	Tandra Carbone	5605.18	616.57	4988.61
10	Tam Leak	4216.38	252.98	3963.4
11	Vince Pitre	4102.2	492.26	3609.94
12	Bobbie Moore	4000.17	402.01	4000.17

3. Make complicated calculations MUCH easier.

Example of FV Function (as seen in video):

	F	G	H	I	J	K
6	Years	35				
7	Months in A Year	12				
8	Annual Interest Rate	0.12				
9	Monthly Deposit	(\$100.00)				
10	Monthly Interest Rate	0.01				
11	Total Number of Months	420				
12	Pension Value	\$643,095.95	=FV(G10,G11,G9)			
13	Pension Value	\$643,095.95	=-G9*((1+G8/G7)^(G6*G7)-1)/(G8/G7)			

4. What IF Analysis: Change Formula Input and Answer Instantly Updates.

Example of changing Year Formula Input and our answer instantly updated (as seen in video):

	F	G	H	I	J	K
6	Years	40				
7	Months in A Year	12				
8	Annual Interest Rate	0.12				
9	Monthly Deposit	(\$100.00)				
10	Monthly Interest Rate	0.01				
11	Total Number of Months	480				
12	Pension Value	\$1,176,477.25	=FV(G10,G11,G9)			
13	Pension Value	\$1,176,477.25	=-G9*((1+G8/G7)^(G6*G7)-1)/(G8/G7)			

6) Conventions for Class

	A	B	C	D	E	F	G	H	I	J	K	
1	Blue Worksheet Tab	You work on this sheet. You do things like make calculations / create formulas on these sheets										
2	Red Worksheet Tab	Shows completed work										
3	Yellow Worksheet Tab	Sheets with Notes										
4	Black Worksheet Tab	Homework Problems come after the Black Sheet										
5						Dark Blue Fill with White Font	Variable (Formula Inputs) Names					
6	Dark Blue Fill with White Font	Column Headers in Data Set				v v v v v						
7	v v v v v											
8						Years	35		<<<	Cells with no Fill Color	Item typed in cell	
9	Employee	Gross Pay	Tax Deduction	Net Pay		Months in A Year	12					
10	Jesenia Earley	4819.89	578.39	4241.5		Annual Interest Rate	0.12					
11	Francene Nobles	5009.01	250.45	4758.56		Monthly Deposit	-100					
12	Tandra Carbone	5605.18	616.57	4988.61		Monthly Interest Rate	0.01		<<<	Cells with Light Green Fill Color	Calculation = Formula	
13	Tam Leak	4216.38	252.98	3963.4		Total Number of Months	420					
14	Vince Pitre	4102.2	492.26	3609.94		Pension Value	\$643,095.95					
15	Bettie Maes	4838.12	483.81	4354.31		Pension Value	\$643,095.95					
16	Edris Cormier	4525.03	497.75	4027.28								
17	Melda Barrios	5554.64	388.82	5165.82								
18	Belle Cameron	4046.97	526.11	3520.86		Cells with Light Yellow Fill Color = Instructions, like for practice homework or tests.						
19	Doria Kopp	4686.88	328.08	4358.8		v v v v v						
20	Marita Ricketts	3756.34	413.2	3343.14								
21	Colene Leslie	4734.13	520.75	4213.38		In cell I25 create a formula that calculates Net Pay. Then copy the formula down the column. The formula for Net Pay is: Net Pay = Gross Pay - Tax Deduction						
22	Fae Dunbar	5296.25	317.78	4978.47								
23	Mellisa Rapp	5669.16	566.92	5102.24								
24	Ethan Hamm	5461.85	546.19	4915.66		Employee	Gross Pay	Tax Deduction	Net Pay			
25	Maryjane Mayhew	5209.77	260.49	4949.28		Glennis Giron	1159.74	69.58	1090.16			
26	Rochell Staten	5042.1	302.53	4739.57		Carman Brandon	983.69	108.21	875.48			
27	Lou Zook	5119.35	511.94	4607.41		Shad Tapp	691.13	89.85	601.28			

1. Blue Worksheet Tab = You work on this sheet. You do things like make calculations / create formulas on these sheets
2. Red Worksheet Tab = Shows completed work
3. Yellow Worksheet Tab = Sheets with Notes
4. Black Worksheet Tab = Homework Problems come after the Black Sheet
5. Dark Blue Fill with White Font = Column Headers in Data Set
6. Dark Blue Fill with White Font = Variable (Formula Inputs) Names
7. Cells with no Fill Color = Item typed in cell
8. Cells with Light Green Fill Color = Calculation = Formula
9. Cells with Light Yellow Fill Color = Instructions, like for practice homework or tests.

7) What does Excel do?

1. Store Raw Data.

Excel can store raw data, like names and numbers, but it is not as effective in storing Raw Data as a Database is at storing Raw Data.

2. Makes Calculations (Formulas)

Like calculating a Net Pay amount

3. Perform Data Analysis (Convert Raw Data into Useful Information).

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	What Excel Does:												
2	1) Store Raw Data												
3	2) Make Calculations (Formulas)												
4	3) Perform Data Analysis												
5													
6	1) Store Raw Data			2) Make Calculations (Formulas)				3) Perform Data Analysis					
7										(Convert Raw Data into Useful Information)			
8													
9	Sales Rep	Sales		Employee	Gross Pay	Tax Deduction	Net Pay		Sales Rep	Sales		Sales Rep	Sum of Sales
10	Sioux	3832		Jesenia Earley	4819.89	578.39	4241.5		Sioux	3832		Gigi	2324
11	Tyrone	2808		Francene Nobles	5009.01	250.45	4758.56		Tyrone	2808		Luong	6390
12	Luong	2633		Tandra Carbone	5605.18	616.57	4988.61		Luong	2633		Sioux	7308
13	Gigi	1063		Tam Leak	4216.38	252.98	3963.4		Gigi	1063		Tyrone	9067
14	Sioux	3476		Vince Pitre	4102.2	492.26	3609.94		Sioux	3476		Grand Total	25089
15	Tyrone	3266		Bettie Maes	4838.12	483.81	4354.31		Tyrone	3266			

8) Excel Workbook Layout

1. Column Headers = Letters. Row Headers = Numbers.
2. Cells = Intersection of Column & Row, like cell D14

This is important because we can store raw data in cells and refer to raw data in cells in formulas by using Cell References.

	A	B	C	D
1	Boomerang Sold Product	Price	Number Units Sold	Total Sales
2	Sunset	21.95	5	=B2*C2
3	Flattop	29.95	2	

The Formula is in Cell D2. The Formula uses Cell References that refer to the numbers in cells B2 and C2.

3. Worksheets = "Spreadsheet" = Sheet = All The Cells
4. Sheet Tab Names Worksheet Tab Names = Name of Sheet
5. All Sheets = Workbook = The Whole Excel File = Workbook

	A	B	C	D	E	F	G	H	I	J
1	Excel Layout:									
2	Column Headers = Letters									
3	Row Headers = Numbers									
4	Cells = Intersection of Column & Row									
5	Worksheets = Sheet = All The Cells									
6	Sheet Tab Names = Name of Sheet									
7	Workbooks = All Sheets									
8	Move Between Sheets: Right-click Sheet Navigation Arrow									
9	File = Workbook									
10	Ribbon Tabs									
11	Quick Access Toolbar = QAT									

All The Cells = Worksheet (also called a "Spreadsheet")

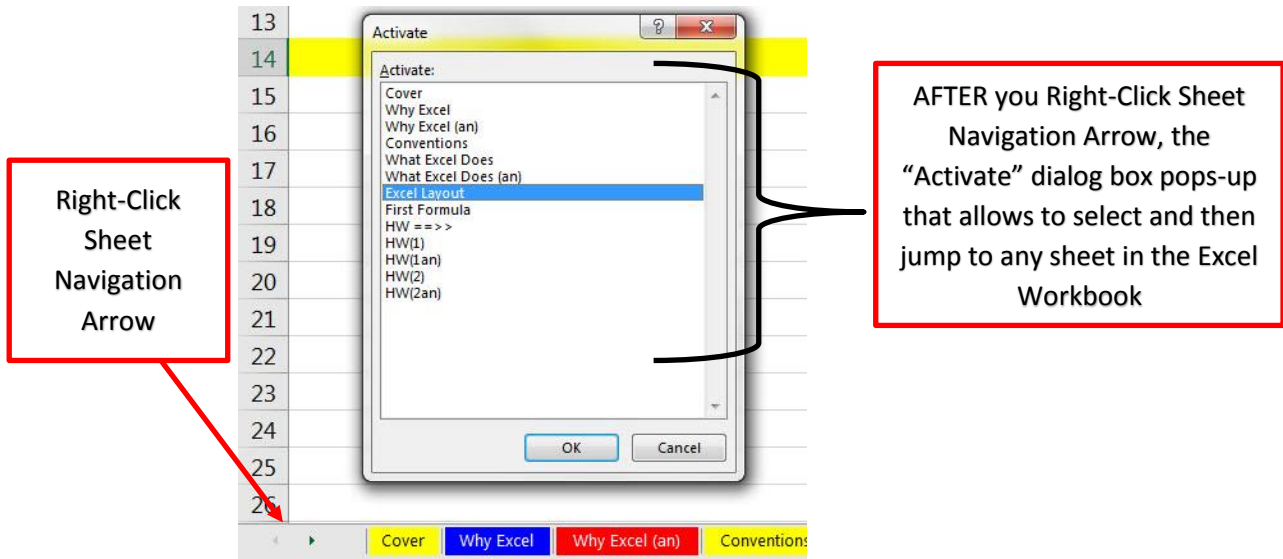
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										

Sheet Tab has "Name of Worksheet"

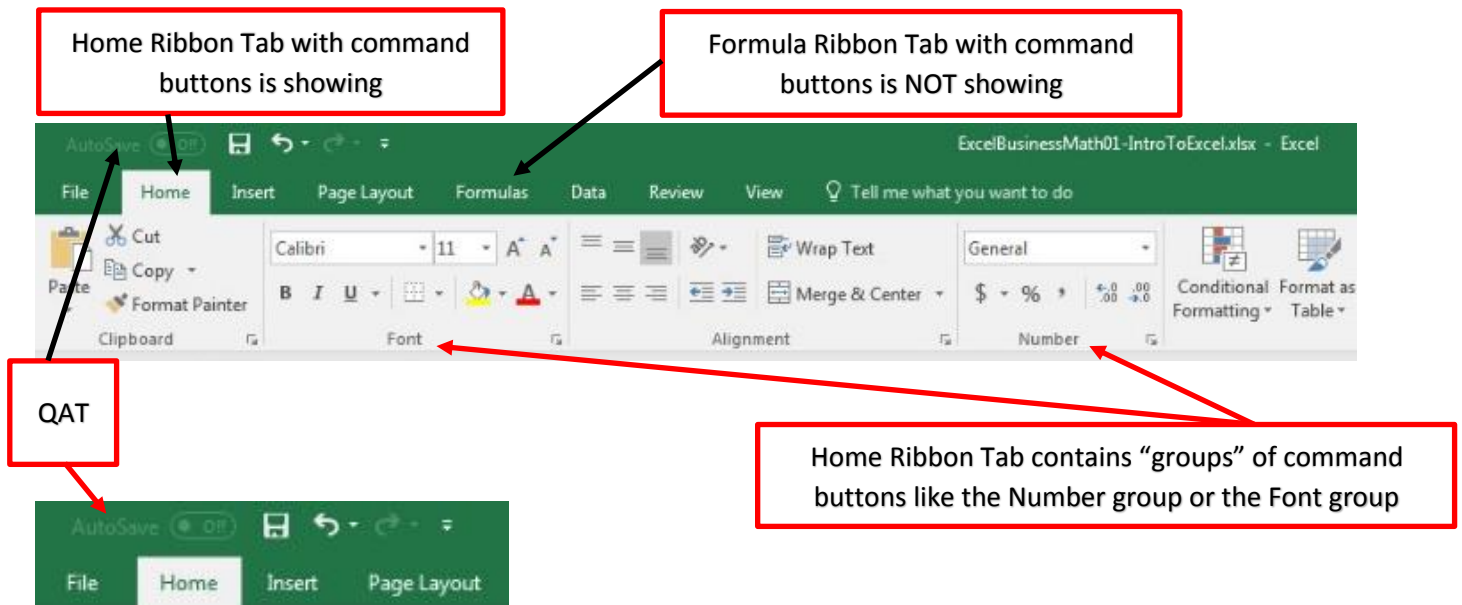
All The Sheets = Workbook = File

Conventions | What Excel Does | What Excel Does (an) | **Excel Layout** | First Formula | HW | ...

6. Move Between Sheets: Right-Click Sheet Navigation Arrow



7. Ribbon Tabs = Tabs at Top of Excel Window that contain the commands that we can use.



8. Quick Access Toolbar = QAT

- 1) We will not use it in this class.
- 2) We will use these keyboards for Save, Undo and Redo:
- 3) Ctrl + S = Save Changes in File
- 4) Ctrl + Z = Undo
- 5) Ctrl + Y = Re-do = Undo the Undo

9. Zoom in and out = Ctrl + Roll Wheel on Mouse

- 1) You can zoom the view of the Excel Worksheet by

9) First Excel Formula: Total Sales = Price * Number Units Sold

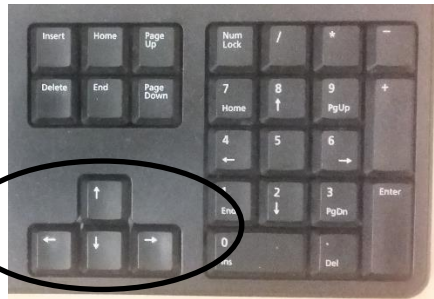
- Formulas always start with an Equal Sign as first character in cell. When you type an Equal Sign as first character in cell you are telling Excel that you want to create a formula.

	A	B	C	D	E
			Number		
1	Boomerang Sold Product	Price	Units Sold	Total Sales	
2	Sunset	21.95	5	=	
3	Flattop	29.95	2		

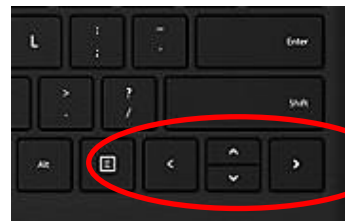
1) Equal Sign Starts All Formulas

- We use cell references to refer to cells that have numbers that we need in our formula.
You can use the Arrow Keys on the Navigation Pad on a Standard Keyboard (Or Arrow Keys on Laptop) to put Cell References into a Formula.

Arrow Keys on Standard Keyboard



Arrow Keys on Some Laptops



You can use the Mouse and the Selection Cursor to select Cell References for your formula. The Selection Cursor looks like this:



	A	B	C	D	E
			Number		
1	Boomerang Sold Product	Price	Units Sold	Total Sales	
2	Sunset	21.95	5	=B2	
3	Flattop	29.95	2		

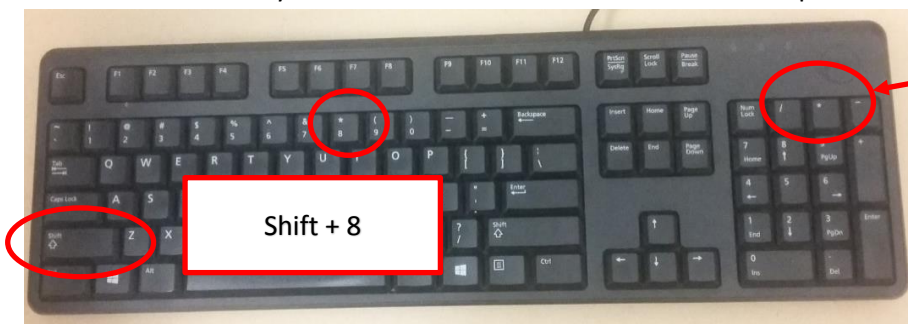
2) Cell References Refer to Numbers we use in our Formula

- Type a multiplication Symbol (asterisk key on Number Pad or Shift + 8)

	A	B	C	D	E
			Number		
1	Boomerang Sold Product	Price	Units Sold	Total Sales	
2	Sunset	21.95	5	=B2*	
3	Flattop	29.95	2		

3) Asterisk is the Multiplication Symbol

Note: Use asterisk key on Number Pad or Shift + 8 as seen in this picture:



Asterisk key on Number Pad

Shift + 8

4. Enter Cell Reference for Number of Units.

	A	B	C	D
			Number	
1	Boomerang Sold Product	Price	Units Sold	Total Sales
2	Sunset	21.95	5	=B2*C2
3	Flattop	29.95	2	

4) Cell References Refer to Numbers we use in our Formula

5. Use Ctrl + Enter to put the formula in the cell and keep the cell selected. We can see the answer from the formula in the Cell D2 and we can see the formula in the Formula Bar.

Name Box Shows which Cell is Selected

Formula Bar Shows the Formula.

5) Ctrl + Enter to put Formula in Cell and Keep Cell Selected

Formula Shows the Answer of 109.75 in Cell D2.

6. To Copy the formula down the column, you can Double-Click the "Fill Handle" with your Cross Hair or "Angry Rabbit" Cursor:

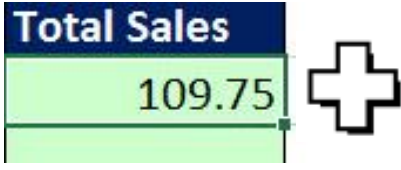
Fill Handle = Small Green Box in Lower Right Corner of Selected Cell

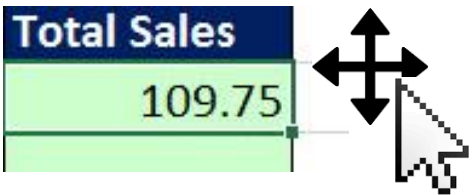
Fill Handle looks like this:

Angry Rabbit Cursor appears when you hover cursor over Fill Handle. It is a Black Cross.

Angry Rabbit Cursor looks like this:

6) To Copy Formula Down Column Double-Click Fill Handle with Angry Rabbit Black Cross.

DO NOT USE THE SELECTION CURSOR TO COPY FORMULA: 

DO NOT USE THE MOVE CURSOR TO COPY FORMULA: 

7. After you Double-Click the Fill Handle with your Cross Hair or "Angry Rabbit" Cursor the formula will copy down the column and stop at the last row because there are no more rows of data:

	A	B	C	D	E
1	Boomerang Sold Product	Price	Number Units Sold	Total Sales	
2	Sunset	21.95	5	109.75	
3	Flattop	29.95	2	59.9	
4	Flying Eagle	32.95	5	164.75	
5	Sunset	21.95	12	263.4	
6	Flying Eagle	32.95	5	164.75	
7	Flying Eagle	32.95	15	494.25	
8	Flattop	29.95	2	59.9	
9	Aspen	22.95	3	68.85	
10	Yanaki	25.95	12	311.4	
11	Yanaki	25.95	2	51.9	
12	Sunset	21.95	12	263.4	
13	Flying Eagle	32.95	23	757.85	
14	Flattop	29.95	19	569.05	
15	Aspen	22.95	13	298.35	
16	Yanaki	25.95	24	622.8	
17	Sunset	21.95	18	395.1	
18	Flattop	29.95	7	209.65	
19	Flying Eagle	32.95	19	626.05	
20					

7) The formula
"Total Sales = Price * Number Units Sold"
was copied through the Range of Cells D2:D19.

- After you copy a formula through a range of cells, ALWAYS select the last cell in the range and hit the F2 Key to verify that the formula is correct. F2 puts the cell in Edit Mode so we can visually see if Cell References are pointing to the correct Formula Inputs.

	A	B	C	D	E
1	Boomerang Sold Product	Price	Number Units Sold	Total Sales	
2	Sunset	21.95	5	109.75	
3	Flattop	29.95	2	59.9	
4	Yanaki	25.95	5	164.75	
5	Sunset	21.95	12	263.4	
6	Flattop	29.95	5	164.75	
7	Yanaki	25.95	15	494.25	
8	Sunset	21.95	2	59.9	
9	Flattop	29.95	3	68.85	
10	Yanaki	25.95	12	311.4	
11	Yanaki	25.95	2	51.9	
12	Sunset	21.95	12	263.4	
13	Flying Eagle	32.95	23	757.85	
14	Flattop	29.95	19	569.05	
15	Aspen	22.95	13	298.35	
16	Yanaki	25.95	24	622.8	
17	Sunset	21.95	18	395.1	
18	Flattop	29.95	7	209.65	
19	Flying Eagle	32.95	19	=B19*C19	
20					

NOTE: On a Laptop Computer you may have to use the Fn key to get the F2 key to work. See picture at end of this pdf file.

8) ALWAYS check last cell using the keyboard F2 to see if Cell References are pointing to the correct Formula Inputs

Notice that the formula always has Cell References that are looking two-cells-to-the-left (Price) times one-cell-to-the-left (Units). These types of Cell References are called **"Relative Cell References"**

10) Selecting a Range of Cells with the Selection Cursor

- Goal: Select all cells on range B31:I33.
- With Selection Cursor in middle of Cell B31, click and drag to the side.

	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	110404	130641	80258.55	144912	60882.33	83274	69274.44	148650.94
32	Expenses	76178.5	67933.32	44944.2	95641.81	34702.61	42469.9	47106.2	71352.15
33	Net Income								

- Drag the Selection Cursor until cell I33.

With Selection Cursor, click in Cell B31 and drag cursor to Cell I33

	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	110404	130641	80258.55	144912	60882.33	83274	69274.44	148650.94
32	Expenses	76178.5	67933.32	44944.2	95641.81	34702.61	42469.9	47106.2	71352.15
33	Net Income								

- DO NOT** USE THE MOVE CURSOR TO SELECT CELLS:

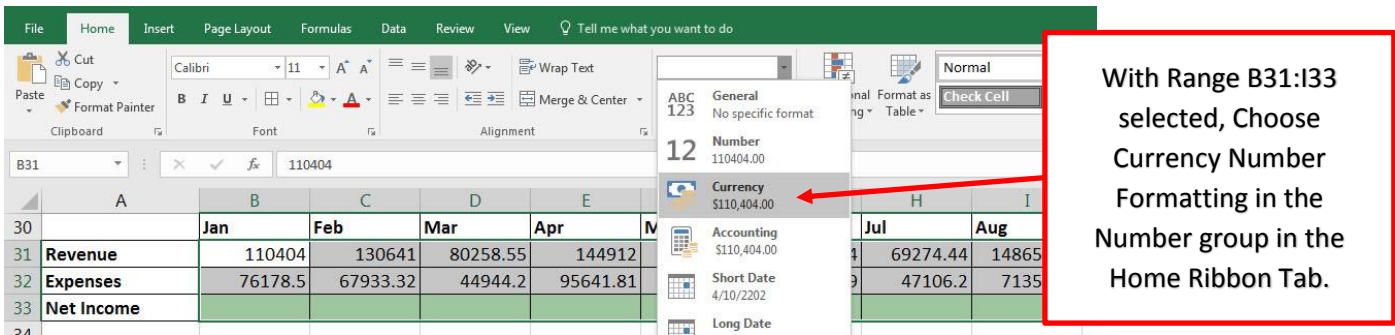


- DO NOT** USE THE "ANGRY RABBIT" CROSS HAIR CURSOR TO SELECT CELLS:

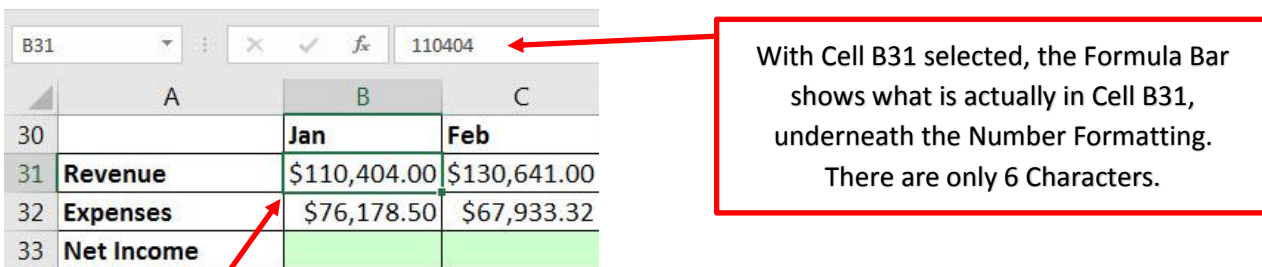


11) Number Formatting

1. Number Formatting = A Façade that sits on top of Number.
2. Number Formatting can be applied in the Number group in the Home Ribbon Tab.

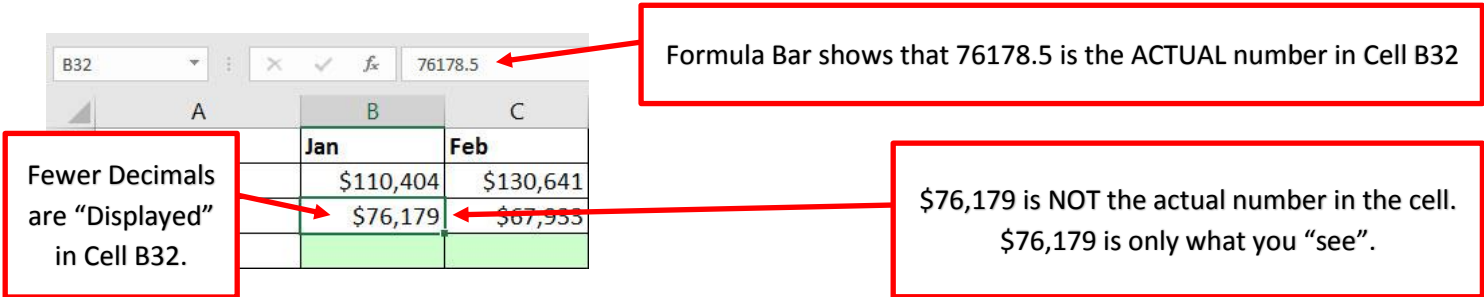


3. The number under the Number Formatting can be different than what you "see" on the surface of the cell.



With Cell B31 selected, we see "\$110,404.00", 11 characters. This is the façade, this is what you "see" on the surface of Cell B31.

4. Number Formatting can save us a lot of type because we don't have to type as many characters into the cell.
5. Be Careful!!!!
 - 1) Number Formatting is only a Façade.
 - 2) Number Formatting only changes what we "see".
 - 3) Number Formatting does not Change the underlying Number.
 - 4) If you decrease the decimals using the Decrease Decimal Button in the Number group in the Home Ribbon Tab, the decimals are not removed, they are just "displayed" with fewer decimals:



12) Second Excel Formula for Net Income & How To Copying Formula to the Side

1. With Cell B33 selected, create the formula =B31-B32. The displayed answer of \$34,226 is what we “see” in cell B33. The Formula Bar shows us the formula.

The screenshot shows the Excel interface. The Formula Bar at the top displays the formula `=B31-B32`. Below it, a table shows the following data:

	A	B	C
30		Jan	Feb
31	Revenue	\$110,404	\$130,641
32	Expenses	\$76,179	\$67,933
33	Net Income	\$34,226	

Red arrows point from the Formula Bar to the text "Formula Bar shows us Formula." and from cell B33 to the text "Displayed answer of \$34,226 in Cell B33".

2. To copy the formula to the side, hover your cursor over Fill Handle and when you see the “Angry Rabbit” Cursor, click and drag to the side until your cursor is over cell I33:

The first screenshot shows the Net Income cell (B33) with a red arrow pointing to the right, indicating the formula is being copied. The second screenshot shows the result of copying the formula across the months:

	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	\$110,404	\$130,641	\$80,259	\$144,912	\$60,882	\$83,274	\$69,274	\$148,651
32	Expenses	\$76,179	\$67,933	\$44,944	\$95,642	\$34,703	\$42,470	\$47,106	\$71,352
33	Net Income	\$34,226	\$62,708	\$35,314	\$49,270	\$26,180	\$40,804	\$22,168	\$77,299

3. Selecting Cell I33, use the F2 Key to put the cell in Edit Mode and verify that the Relative Cell References are pointing to the correct Formula Inputs.

The screenshot shows cell I33 selected and in edit mode. The formula bar displays `=I31-I32`, which is the result of copying the formula from B33 to I33.

	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	\$110,404	\$130,641	\$80,259	\$144,912	\$60,882	\$83,274	\$69,274	\$148,651
32	Expenses	\$76,179	\$67,933	\$44,944	\$95,642	\$34,703	\$42,470	\$47,106	\$71,352
33	Net Income	\$34,225	\$62,708	\$35,314	\$49,270	\$26,180	\$40,804	\$22,168	=I31-I32

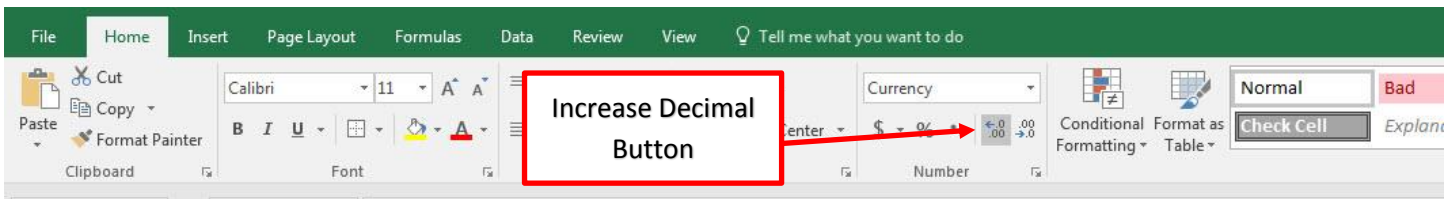
Use the F2 Key to put the cell in Edit Mode and verify that the Relative Cell References are pointing to the correct Formula Inputs

13) Verify that Number Formatting is NOT displaying a misleading Number

1. Notice that: **110404 - 76179 = 34225 NOT: 34226**
2. Number Formatting is "displaying" a misleading answer

	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	\$110,404	\$130,641	\$80,259	\$144,912	\$60,882	\$83,274	\$69,274	\$148,651
32	Expenses	\$76,179	\$67,933	\$44,944	\$95,642	\$34,703	\$42,470	\$47,106	\$71,352
33	Net Income	\$34,226	\$62,708	\$35,314	\$49,270	\$26,180	\$40,804	\$22,168	\$77,299
34									
35		110404 - 76179 = 34225 NOT: 34226							
36									
37		Number Formatting is "displaying" a misleading answer							

3. To fix this, selecting the Range of Cells B31:I33 with the Selection Cursor and use the Increase Decimal Button in the Number group in the Home Ribbon Tab.



	A	B	C	D	E	F	G	H	I
30		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
31	Revenue	\$110,404.00	\$130,641.00	\$80,258.55	\$144,912.00	\$60,882.33	\$83,274.00	\$69,274.44	\$148,650.94
32	Expenses	\$76,178.50	\$67,933.32	\$44,944.20	\$95,641.81	\$34,702.61	\$42,469.90	\$47,106.20	\$71,352.15
33	Net Income	\$34,225.50	\$62,707.68	\$35,314.35	\$49,270.19	\$26,179.72	\$40,804.10	\$22,168.24	\$77,298.79

14) PDF Notes

1. Be sure to read them because there are a written and pictorial description of what is shown in the Video.

15) Practice Homework & Answers to Homework

1. Practice Homework & Answers to Homework are always located on the Worksheets at the end of the Excel Workbook.

New Keyboard Shortcut & Mouse Tricks:

Save As Dialog Box or Windows Explorer:

- 1) **Ctrl + Shift + N** = Create a new folder
- 2) **Win + E** = Keyboard to open Windows Explorer

Excel:

- 3) Move Between Sheets = **Right-Click Sheet Navigation Arrow**
- 4) **Ctrl + S** = Save Changes in File
- 5) **Ctrl + Z** = Undo
- 6) **Ctrl + Y** = Re-do = Undo the Undo
- 7) **Ctrl + Roll Wheel on Mouse** = Zoom screen size in and out (Not Print Size)
- 8) **Arrow Keys** = Put Cell References into Formulas after you type an equal sign as first character in cell.
- 9) **Shift + 8** = Multiplication symbol in Math
- 10) *** on Number Pad** = Multiplication symbol in Math
- 11) **Ctrl + Enter** = When you have a single Cell in Edit Mode and
- 12) **F2** = Puts a cell in Edit Mode so we can visually see if Cell References are pointing to the correct Formula Inputs
 - i. **Note:** On a Laptop Computer you may have to use the Fn key to get the F2 key to work.
 - ii. As seen here from page 2 in syllabus:

3. Laptop computers have many different configurations. But if you have a laptop, you may have to access the F Keys using the Fn button (Function key). Here is a picture of a Surface Laptop Keyboard:

Fn Key
must be
used to
access F
Keys

4.



Page 2 of 12