Introduction to Spreadsheets

Introduction to Spreadsheets

FRAN WELLS, TOMPKINS CORTLAND COMMUNITY COLLEGE

Contents

PART I
WEEK 1

1. Week 1 Overview

As a new employee, you have been asked to learn about spreadsheets. The first task is to learn the vocabulary and how the information displays on a spreadsheet. Next you will practice building a practice worksheet from a blank form followed by using a spreadsheet to create your personal budget.

Learning Outcomes: The student will:

- Understand spreadsheet vocabulary
- Be able to label elements of a simple spreadsheet
- Be able to create a spreadsheet from a blank form by
- Enter and edit data in columns and rows
- Understand how to use the AutoSum key, as well as a simple formula

Tasks:

1. Spreadsheet Components – review the terms used for spreadsheets
2. Concepts Quiz. Using the Spreadsheet Components, take the concepts review quiz. (12 points)
3. Building a Spreadsheet – Information on how to create a spreadsheet.
4. Test Scores Assignment. Create your first spreadsheet (5 points)
5. Personal Budget Assignment. Create a Personal Budget based on what you have learned. (10 points.)

Submitting your work:

1. When completing each task, make sure to save your document to the desktop or your personal storage unit (memory stick, jump drive, etc.)
2. Click on the underlined word(s) at the top of each assignment. An "emaillike" format appears with the number of points possible in the upper left corner.
3. Find the box "Browse My Computer." Click on that and search for your saved document.
4. Click Submit.
5. For additional help, please see the EXTRA HELP folder in the CONTENT area called "How to Submit Your Work."

2. Vocabulary and Screen Components

Student Learning Outcome: The student will understand the components of a spreadsheet. **(**Students: You may want to print this page for reference. This information is also in the EXTRA HELP folder with the same name.

- **Document window**   This feature takes up most of screen. It displays the title bar, the document commands and tabs as well as sets of columns and rows with gridlines. (These additional features are described below.)
- **Title Bar** Located at the very top of the window, this feature shows the name of the document and type. When you save a document, the name of that document will display in this area.
- **Quick Access Toolbar** : Puts commonly used commands such as Save, Undo on a permanently visible tollbar. It is located in the top left corner of the window.
- **Ribbon**. This is the area below the Title Bar and the Quick Access Toolbar that contains **tabs**, **groups** and some galleries.
- **Tabs** . Tab names appear above the top of the Ribbon. Each tab name introduces a new Ribbon. The tabs are single words that are all uppercase. When the tab is active, a thin line appears on the top and down both sides of the tab name.
- **Groups** . As each tab is selected, related commands appear in the ribbon and are arranged in groups. Each group has a name which is show within the vertical line marks. For example. If you press the **HOME TAB**, the ribbon displays the following groups: Clipboard, Font, Alignment, Number, Styles, Cells and Editing. Each of these groups are broken down into elements that are related to those titles. For example, in the Clipboard group are icons with names such as paste, cut, copy, and

format painter. The groups and icons will be explain when your lessons begin.

- **Dialog Box Launcher**. Located in each group, to the left of the name of the group is a tiny square box with an arrow head pointing to the right corner of that tiny square. This is the dialog box launcher. When you click on that square, a pull down menu appears. This menu is ALL the possible commands for this group. The most frequent used commands are on the ribbon itself; however, when you use the dialog box launcher you will see additional related commands.

Quick Access Toolbar: Contains icons for Save (CTRL+S); Undo (CTRL +Z); Redo (CTRL+Y); Customize Quick Access (to add more commands).

Quick Access Toolbar: Contains icons for Save (CTRL+S); Undo (CTRL +Z); Redo (CTRL+Y); Customize Quick Access (to add more commands).

Tabs: Home, Insert, Page Layout, Formulas, Data,, View, Review and Format. The HOME tab is selected.

Tabs: Home, Insert, Page Layout, Formulas, Data,, View, Review and Format. The HOME tab is selected.

Title Bar: Shows name of document and type.

Title Bar: Shows name of document and type.

Dialog Box Launcher: Tiny square box with an arrow head point to bottom right corner.

Dialog Box Launcher: Tiny square box with an arrow head point to bottom right corner.

Groups: (With HOME tab selected): Clipboard, Font, Alignment, Number, [Styles, Cells & Editing Groups (not shown in this diagram)

Groups: (With HOME tab selected): Clipboard, Font, Alignment, Number, [Styles, Cells & Editing Groups (not shown in this diagram)

Ribbon: Located below Title Bar

Ribbon: Located below Title Bar

Groups: Related commands for each tab contained between

vertical lines. Show are HOME tab groups called Clipboard, Font, Alignment, and Number groups.

   Groups: Related commands for each tab contained between vertical lines. Show are HOME tab groups called Clipboard, Font, Alignment, and Number groups.

   Dialog Box Launchers: Tiny square box with an arrow head point to bottom right corner. (Shown for Font, Alignment and Number groups.

   Dialog Box Launchers: Tiny square box with an arrow head point to bottom right corner. (Shown for Font, Alignment and Number groups.

- **Mouse Pointer** As the mouse is moved around the Spreadsheet Window, the mouse takes on different pointer shapes and directions.
- **Zoom Slider** In the lower right hand corner on the blue bar, there is a horizontal line with a minus on the left side and a plus on the right side. To the right of this horizontal line is a percentage notation. In the center of the horizontal line is a small rectangular box. When you put your mouse pointer on this rectangular box and move it to the right, the print on your screen enlarges (and the percentage will increase). Moving the rectangular box to the left, reduces the size of the screen (and the percentage will lower). This operation is called Zooming In or Zooming Out.   This feature allows you to better view a portion of your worksheet making the font easier to see without changing the actual font size (Zooming Out). Additionally, to see the entire screen if the more columns have information in them than what appears in the given window, you can reduce the size of the screen (Zooming In).
- **Worksheet Window**. This contains a grid of columns and rows. The worksheet window of a spreadsheet can contain a total of 1,049,576 rows and 16,348 rows (See information about columns and rows below).
- **Columns**. Below the ribbon are columns which are labeled A,

B, C, etc. and then start again with AA, BB, CC, etc. and continue on. A column letter is one indicator where you are on the spreadsheet.

- **Rows**. Along the left side each row is labeled with a number. This number is the second indicator of where you are on the spread sheet. .
- **Cell** This is the intersection of a row and column. For example A1 would be the intersection of column A and row 1. Cells can contain text, numbers, formulas, or a combination of all three.
- **Cell Pointer** . A dark rectangle that outlines the cell you are working in. Also called the **Active Cell.**
- **Cell address** . The location of the intersecting rows and columns.
- **Name Box** . This feature is located under the ribbon on the far left side of the screen and above the column label indicates the position of the mouse pointer. It will record the cell address in this box.
- **Formula Bar** . Moving to the right of the Name Box, there is a bar with an "X:, a checkmark, and the letters "fx" (more on this bar later. However, the next clear bar is called the formula bar. Formulas put into the work sheet will appear here if the cell that contains the formula is active.
- **Sheet tabs** . These are found at the bottom of the worksheet grid. (It is a tab that says "Sheet 1.") More sheets can be added as needed. You can switch from one sheet to another in a workbook. By default, a workbook file contains one worksheet, but you can have as many as 255 sheets in a workbook.
- **Scroll Bars** . These allow you to move around in a worksheet that is too large to fit on the screen. The horizontal scroll bar is located above the zoom slider. The vertical scroll bar is to the extreme right of the worksheet grid.
- **Status Bar** . This bar is located to the right and on the same bar as the zoom slider.
- **Mode Indicator** . This feature is located in the lower-left corner of the status bar and provides additional information

about certain tasks. When a worksheet is first opened, the mode indicator indicates "READY."

- **Range** . If you click and hold the mouse button and drag it down, then release the mouse button, you have selected a range. For example, if you click in cell B1 and continue to hold down the mouse button to B14, you have selected a range. When a range is selected, the status bar displays "average", "count" (or number of items selected), and" sum" of the selected cells as a quick reference. (If there are no values in the cells, "average", "count", and "sum" do not appear?)

- **Backstage view** . By clicking the FILE tab, you will open a page that displays the Backstage view. The Backstage view offers many commonly performed tasks such as opening and saving a file, printing and previewing a document, defining document properties, sharing information, and exiting a program. You can return to your active document by pressing the Back Arrow button.

INDEX of Window Components (Listed by Page number first, followed by item number)

3. Building a Spreadsheet

Student outcomes:

Students will be able to create spreadsheets, enter data in rows and columns, copy and move data in rows and columns, use the AutoSum Key and apply a simple formula using cell referencing.

Steps referenced in this assignment:

- Opening a new blank document ("How to Open," #1) (Page 1)
- Saving a document (procedures and file names ("How to Open," #2) (Page 1)
- Definition of a Label and attributes, fonts and alignment ("Label," #2,) (Page 1)
- How to widen a column ("Labels," #3) (Page 2) Moving from cell to cell ("Labels," #4) (Page 2)
- Definition of a value ("Values,") (Page 2)
- Definition and instructions for the AutoSum key ("Cell Referencing,") (Page2)
- Definition of cell referencing ("Cell Referencing") (Page 2)
- Common Mouse pointers ("Table: Common Mouse Pointers") (Page 2)

How to open and save a blank spreadsheet

1. **Opening a new blank document:** When an assignments requires a blank spreadsheet, click on FILE tab then click NEW in the

navigation panel on the left. Click on the spreadsheet icon in your spreadsheet software.

2. **Saving a document (procedures and file names):**

- Once the blank spreadsheet displays on the screen, save the document with the title that will be provided to you by going to Step 3.
- Students should have some knowledge as to how to SAVE a document.)To Save a file, click on FILE tab (at the top of the screen) and from the Backstage navigation bar along the left side, click SAVE AS. The spreadsheet can be saved to the DESKTOP or to a STORAGE DEVICE.
- If a file name is not given to you, save the file with any name you wish as long as you name it in such a way for easy retrieval. A file name can be in capital or lower case letters and can include spaces as well as periods.
- There are only a select few symbols that can be used in a filename. Some symbols to avoid are diagonals, parentheses, commas. If you try to save a file with an unacceptable symbol, a dialog box will display indicating the file cannot be saved with that name. Simple delete the symbol from the file name.
- The file extension for spreadsheets (the information after the period) is usually.xlsx. The extension automatically attaches. You do not need to type it.

Basic Definition: Labels

1. Labels are entries that contain text and numerical information not used in calculations. They help to make the worksheet easier to read.
2. Labels can be typed in any cell.
3. Basic attributes (bold, underline, or italicize) as well as font type and size can be applied to any label. Labels can be aligned

by using the same alignment keys used for word processing (left, center and right alignments). These formatting choices are found on the HOME TAB in the Font Group.

4. To widen a column: If the label is too big for the cell size the column needs to be widened. To do this either double click in the cell that needs more room. The cell will automatically widen. This is called adjusting columns.

5. To move from one cell to the next, you can

   ◦ Click in the cell you want, or
   ◦ Use the TAB key on the keyboard to move into the next adjacent cell, or
   ◦ Use the arrow keys on the keyboard to move to various positions.

Basic Definition: Values

Values are numbers, formulas, and functions that can be used in calculations

Basic Definition: AutoSum Button

1. The AutoSum button is found on the HOME TAB in the Editing Group which is the last group to the right on this ribbon. The symbol before it looks a version of the capital letter "E".

2. AutoSum is used to quickly add columns or rows of data.

Basic Definition: Cell Referencing

Cell Referencing is identifying values by first identifying the column the value is in and then identifying the coordinating row

Columns are vertical and use letters (in the example, letters in red). Column references are given first.

Rows are horizontal and use numbers (in the example, numbers in blue) Row references are indicated after the column reference. (Example B1).

In the example below the Cell Reference would be B2, not 1000. Actual values are hardly ever used.

	A	B	C
1			
2		1000	
3			

Common Mouse Pointers for Spreadsheets

Names	Pointer	Use to	Visible over the
Normal	⇖	Select a cell or range; indicates Ready mode	Active Worksheet
Fill handle	+	Copy cell contents to adjacent cells	Lower-right corner of the active cell or range
I-Beam	I	Edit cell contents in active cell or formula bar	Active cell in Edit mode or over the formula bar
Move	✛	Change the location of the selected cell(s)	Perimeter of the active cell(s)
Copy	⇖+	Create a duplicate of the selected cell(s)	Perimeter of the active cell(s) when [Ctrl] is pressed
Column resize	↔	Change the width of the column	Border between column heading indicators

4. Test Scores Assignment

The purpose of this assignment:

1. Enter and change labels
   2. Enter and change values
   3. Use the AutoSum Key

Preparation: (Review these terms and readings)

- Read Building a Spreadsheet, pages 1 and 2
- Understand terms label, value, Cell Referencing

New terms: (Terms are bolded in the steps)

- AutoSum Key (#6 & 7)
- Shortcut to AutoFill (#8)

Helpful Hints:

Operator	Purpose	Example
+	Addition	=A15+B27
-	Subtraction or negation	=A15-C10 or =A15-12
*	Multiplication	=A15*C7
/	Division	=A15/B6
%	Percent	=35%

Narrative:

This first assignment will help you understand how to set up a typical spreadsheet. Following each assignment is a rubric explaining the points values for components of the assignment. (THIS ASSIGNMENT IS WORTH 5 POINTS. THE RUBRIC IS ON PAGE 3.)

Test Score Assignment

1. Open a blank worksheet and SAVE it with the name: Test Scores
2. Below is a diagram of a table. The words "column" and "row" are diagramed here for clarification only. On your spreadsheet, you will find only letters and numbers. Remember columns are horizontal and rows are vertical in a spreadsheet. Column letters are referenced before Row numbers. Go to step 3.

	Column A	Column B	Column C	Column D	Column E
Row 4	Name	Test 1	Test 2	Test 3	Total Points
Row 5	Susi Q	60	90	85	
Row 6	Cecelia	90	80	70	
Row 7	Jumping Bean	89	91	85	

3. Insert Labels in the Test Scores spreadsheet cells as indicated.

   ◦ Type Name in cell A4 (Column A, Row 4)
   ◦ Type Test 1 in cell B4 (Column B, Row 4)
   ◦ Type Test 2 in cell C4 (Column C, Row 4)
   ◦ Type Test 3 in cell D4 (Column D, Row 4)
   ◦ Type Total Points in cell E4 (Column E, Row 4)

4. Insert the names and test scores data in each of the cells as indicated. Do not put any information in the "Total Points" column at this time. Remember if all the information typed in a

cell, widen the cell. ([HINT: SEE BASIC DEFINITIONS: LABELS #3. ON THE "BUILDING A SPREADSHEET" INFORMATION SHEET]

5. Click your mouse pointer in cell E5. This makes the cell "active." You should be under "Total Points" for Susi Q.

6. Click on the AutoSum key. [HINT: SEE BASIC DEFINITION: AUTOSUM #1]

7. Press the AutoSum key found by clicking HOME tab, finding Editing Group, and clicking on AutoSum icon. The spreadsheet programs knows that from this position, values will be added horizontally. The AutoSum key placed a dotted line around the entire row. The formula in cell E5 that displays is also mirrored in the formula bar (fx) just under the ribbon. The formula that automatically shows up is =SUM(A5:D5). Press ENTER. A total appears of 235.

8. Once the formula has been placed in E5, we could use the AutoSum key again for the next row. = However, an excellent shortcut is called Auto Fill. [Directions: CLICK IN E5 WHERE THE ORIGINAL FORMULA IS. IN THE LOWER RIGHT CORNER OF CELL E5 THERE IS A TINY SQUARE. PLACE YOUR MOUSE CURSOR ON THAT TINY SQUARE. IT SHOULD TURN INTO A BLACK PLUS SIGN. WHEN IT DOES, HOLD DOWN YOUR LEFT MOUSE BUTTON AND DRAG THE FORMULA DOWN TO E7. RELEASE THE MOUSE. THE FORMULA HAS BEEN INSERTED INTO EACH OF THE OTHER CELLS.]

9. You will note that on each row, the Row Number changed automatically. For example: Celia's sum is =SUM(A6:D6); Jumping Bean is =SUM(A7:D7).

10. Put your name in cell A1 and save this table to your storage device once again as Test Scores.

11. If you are submitting your work through Blackboard, follow the instructions given to you for this assignment on the Blackboard screen.

12. If you are in a classroom, print this assignment out for your instructor.

Check the rubric below to be sure you have completed all the tasks.

Description	Points Possible
Typed labels in correct cells	1
Copied data of names and scores in appropriate cells.	1
Used AutoSum key correctly	3
Total Points Possible	5

5. Personal Budget

The purpose of this assignment:

1. Create a spreadsheet
2. Add, delete cell content
3. Copy, move cell content
4. Insert, delete cells, columns, rows
5. Create simple formulas
6. Format cell content

Preparation: (Review these terms)

- AutoSum
- Auto Fill

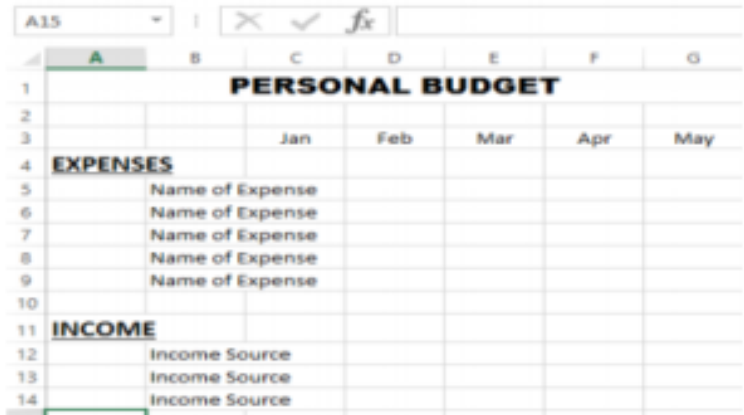## New terms: (Terms are bolded in the steps)

- Merge and Center a Title (#3)
- Center Column headings (#6)
- Widen column (#8)
- Insert New Row (#15)
- Insert Currency Symbols (#19)
- Create simple formula without using AutoSum (#24)
- Seeing a string of ####### signs in a column after a formula applied
- Wrap Text (#26)

Narrative:

A budget is a plan for your money. Sometimes, as individuals, sometimes we make purchases without remembering other obligations we already had. It is good to have a budget and to work within that budget. This exercise will give you the basics to set up your own budget. (THIS ASSIGNMENT IS WORTH 5 POINTS. THE RUBRIC OF THIS ASSIGNMENT IS ON PAGE 4.)

Personal Budget Assignment:

Create a worksheet for your personal budget following the instructions given below the illustration. After completing Steps 1 –11, your worksheet will look similar to the example shown below. Additional steps will add to this example.

	A	B	C	D	E	F	G
A15							
1			**PERSONAL BUDGET**				
2							
3			Jan	Feb	Mar	Apr	May
4	**EXPENSES**						
5		Name of Expense					
6		Name of Expense					
7		Name of Expense					
8		Name of Expense					
9		Name of Expense					
10							
11	**INCOME**						
12		Income Source					
13		Income Source					
14		Income Source					

1. Starting with a blank spreadsheet (see Review of Spreadsheet Features in this assignment), start in cell A1 type the words" Personal Budget" in ALL CAPS.
2. Select PERSONAL BUDGET and change the font to Arial Black 14 pt

3. Merge and Center a Title. Select cells A1 to G1. From the HOME tab, find the Alignment Group. Click on Merge &Center. The title, "Personal Budget", is now centered on the table.
4. In cell C3 type the abbreviation of January (Jan)
5. In cell D3 type Feb; in cell E3 type Mar; in cell F3 Apr; and in cell G3 type May.
6. Center Column Headings. Select C3 to G3. From the HOME tab, Paragraph group, click on the center alignment choice.
7. In cell A4 type the word EXPENSES in all capital letters. Select EXPENSES. Bold, underline and change the font to Calibri, 14 pt.
8. Widen column. Place your cursor between the letters A and B indicating the columns just below the ribbon. Double click your mouse. This will widen the column to accommodate the information in that cell.
9. In B5, listing five expenses you might have. Place each expense on a separate row. Expense examples might be rent, car insurance, phone, date night, gas, bus ticket, food, credit card, loan repayment, etc. Once all your expenses are listed, widen the column between B and C to accommodate the length of the words used for expenses.
10. After your last expense, skip a row and in cell A11 type the word INCOME in all capital letters. Bold, underline and change the font to Calibri, 14 pt.
11. Starting in column B12, list three income sources. For example, job, scholarship, parents, tips, loan, etc.
12. Next return to Cell C5 and start enter expense amounts for each month. Try not to use the same amount for each month. Be creative (it doesn't have to be accurate.)
13. Continue to enter different amounts for the other four expenses across the five months without duplicating numbers if you can.
14. Next move to the INCOME section. Enter some amount for each income source across the five months. Try to make your amounts for the income section a bit higher than your expense

amounts.

15. Insert a new row. Select the word "INCOME. Right-click the mouse and choose INSERT from the shortcut menu. This will insert one blank line above the word INCOME. INCOME should now be in cell A12.

16. In Cell A11, type the words Total Expenses capitalizing the first letter of each word. Bold these words.

17. AutoSum key. Click in Cell C11, add up the totals for January using the AutoSum key. Press the ENTER key or click the checkmark on the formula bar to display the Total Expenses for Jan.

18. Using AutoFill. Use the AutoFill square in the cell to drag the formula in Column C to columns D-G. If done properly, D11 formula should be =SUM(D5:D9)

19. Inserting currency symbols. You will be adding dollar signs and decimals points to C11 to G11 only. Select C11-G11. Click on the HOME tab and find the group labeled NUMBER.(the square with an arrow to the right of the word NUMBER). Look at the list of choices in the drop down dialog box and choose currency with 2 decimals.]

20. In Cell A16, type the words Total Income capitalizing the first letter of each word. Bold these words.

21. Using the same procedure used to AutoSum the total expenses for each month, total your income for the month. (See Step 17-18 for additional help.)

22. Select C18 to G18 and change the amounts to currency. (See Step 19).

23. Click in Cell A18 and type in the word BALANCE in all capital letters. Bold it and change the font to 14 pt.

24. Create simple formula without using AutoSum:

    ◦ In cell C21 Start with an equals sign (=) followed by the word SUM all in capital letters
    ◦ Without spacing, after the word SUM, place a forward parenthesis; example (.

- We want to subtract the Total Income in January with the Total Expenses in January. NEVER USE FIGURES. ONLY USE CELL REFERENCES.
- Following the forward parenthesis after the word SUM, click in the cell that contains the Total Income for January. The cell reference C18 should appear in the formula.
- Next input a minus sign (-) without spacing. Click in the cell for the Total Expenses for January. The cell reference C10 should appear.
- Insert a closed parenthesis. You should see the entire formula in the formula bar as well as in cell C21. (Note: If the resulting amount is in red or has a minus sign in front of it, it just means that your expenses are larger than your income. If this was really your personal budget, you would have to figure out how to make that a positive number. You might have to reduce your expenses or find other income sources.)
- ENTER. An amount should appear that is the difference between your income and your expenses. 25.

25. Using the AutoFill (see step 18), drag the formula from January to the other four months.
26. Note: Seeing a string of ####### signs in a column after a formula applied. This is the result of a number being larger than the space permitted in the column. Double click between the two columns to widen the space and the amount should appear
27. Select the BALANCE row and apply dollar signs and decimals to the figures.
28. Wrap Text. Type your name in cell A21. Use Wrap Text to keep your name in the cell without having to widen the column. The Wrap Text button is found on the HOME tab, Paragraph group.
29. Save your work and submit it through Blackboard where indicated.
30. If you are not using Blackboard, print your personal budget.

Your instructor may want to see the formulas you used. If that is the case, your instructor will tell you how to print the formulas used.

Check the rubric below to be sure you have completed all the tasks

Description	Points Possible
Title (centered, bold, Arial Black, 14 pt.)	1
The five month labels are centered	1
Listed five different expenses and three different income sources	1
Attributes and font changes on words Expenses, Income and Balance	1
Correct formula used to total expenses and income for five months	2
Formatted Currency for Total Expenses, Total Income and Balance	2
Used Cell References for the Balance	2
TOTAL POSSIBLE	10

PART II
WEEK 2

6. Week 2 Overview

Now that you have had experience building a spreadsheet, the next steps are to incorporate formulas that will quickly return the information you request.

In the Public Expenses by Quarter, you will learn to average string of numbers quickly. From a group of numbers, you will be able to find the largest and smallest number in just a few stokes as well as the ability to count how many numbers are in a column.

In the Sales Calculation, you will learn about Relative Referencing and Absolute Referencing.

Learning Outcomes: The student will:

- Apply AVE, MAX, MIN, Count features
- Understand the difference between relative and absolute referencing
- Apply the absolute referencing to find "What If?"
- Understand the Order of Precedence when it comes to creating complex formulas

Tasks and Assignments:

1. **Public Expenses by Quarter.** Student is introduced to new formulas, (AVE, MAX, MIN, COUNT) and these apply these formulas. (20 points)
2. **Relative Referencing and Absolute Referencing:** Read this informational
3. **Sales Calculation.** Developed a formula to answer the question "What If?" What if analysis is a decision-making tool in which

data is changed and formulas ae recalculated, in order to predict various possible outcomes. (20 points)

Submitting your work:

1. When completing each task, make sure to save your document to the desktop or your personal storage unit (memory stick, jump drive, etc.)
2. Click on the underlined word(s) at the top of each assignment. An "emaillike" format appears with the number of points possible in the upper left corner.
3. Find a box "Browse My Computer." Click on that and find your saved document.
4. Click Submit.
5. For additional help, please see the EXTRA HELP folder in the CONTENT area called "How to Submit Your Work.

7. Public Expenses by Quarter Assignment

The purpose of this assignment is to:

1. Format Cell Content
2. Use formulas for Min, Max, Ave, Count

Items to Review from previous lessons

- AutoSum Key
- Auto Fill key
- Currency and Decimal Points

New Terms:

- AVE – Average a row or column of numbers (Step , a-g) (Pages 1-2)
- MAX – Maximum – the largest number in a row or column (Step 5, a-e) (Page 2)
- MIN – Minimum – the smallest number in a row or column (Step 6a) (Page 2)
- Count – Count the number of entries in a row or column (Step 7) (Pages 2-3)

Narrative:

Understanding how simple formulas work is a building step in working with spreadsheets. These four formulas (Ave, Max, Min, Count) can quickly calculate information. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 3)

Assignment:

1. Download the file Public Expenses by Quarter and save it to your storage device
2. Put your name in cell A24
3. Using the AutoSum Key, determine the totals for each Quarter.
4. AVE. What is the Average (AVE) quarterly expense? Follow steps a-d below.

   ◦ Click in cell B12
   ◦ Click on FORMULA tab, the click More Functions in the Function Library Group and click on Statistical. Find AVERAGE.
   ◦ An argument box appears as pictured below.
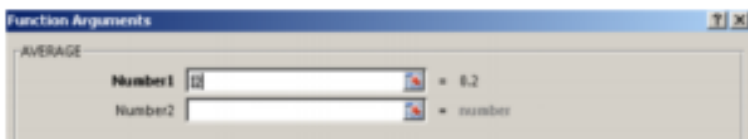
   ◦ In the space called Number 1, the computer is looking for what you want averaged.
   ◦ Select in your worksheet B4:B9. This selection will show after Number 1.
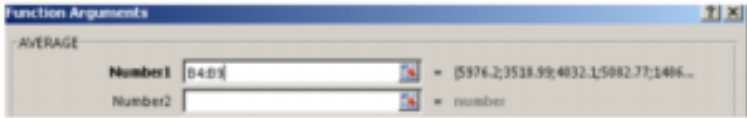
- ◦ Enter and the total should be: 4547.22833.
- ◦ Currency and Decimals. Select the answer. Change it to two decimal places by clicking on the HOME tab, click on the number launcher button in the number group. Then click on the selection Number that follows the word GENERAL. Change to 2 decimal places. Your answer should now be 4547.23.

5. MAX. What is the Maximum (the largest) amount in a list of numbers?

- Click in Cell B13
- Click on FORMULA tab. Click More Functions in the Function Library Group and click on Statistical. Find MAX for maximum. (They functions are all in alphabetic order so scroll down until you find it.)
- An argument box appears as pictured below, and looks similar to the one for Average.
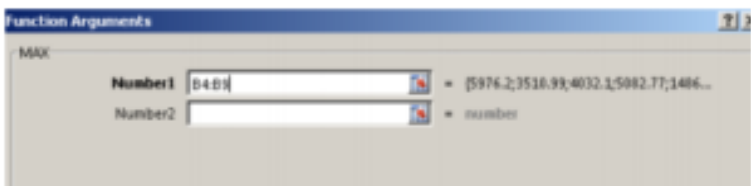
- ◦ Select cells B4:B9. ENTER. (Do not put any information in "Number 2" box.) e. The answer should be 7195.06.

6. MIN. What is the Minimum (lowest amount) in the list of numbers?

- Click on FORMULA tab. Click More Functions in the Function Library Group and click on Statistical. Find MAX for maximum. (They functions are all in alphabetic order so scroll down until you find it.)
- An argument box appears as pictured above in 3d but the Function Arguments are for MIN, and looks similar to the one for Average.
- Select cells B4:B9. ENTER. (Do not put any information in "Number 2" box.)
- The answer should be 1486.25.

7. Count. How can I Count the number of items in a list?

- Click on FORMULA tab and look to the left for another AutoSum Key. This is the same function, just in a different space.
- Click on the arrow beside the AutoSum Key to see some options. One of those options is Count.
- When you click on Count, you do not get the argument box as you have with the other functions. However, the formula is similar to MAX and MIN.
- Instead of using the Argument Box, type an equal sign followed by the word COUNT (in all caps) followed by an open parenthesis
- Select cells B4:B9 with your mouse so that these cell references become part of the formula. (Notice the formula in the formula box.
- Close the parenthesis and press the Enter key.
- Your answer should be 6.

8. Save the work you have completed to your storage device using the name Public Expenses by Quarter.
9. Submit it through Blackboard following the instructions.
10. If you are in a regular classroom, printing this document by following directions from your instructor.

Check the Rubric below to be sure you have completed all tasks.

Description	Points
Added totals for each quarter using formulas	2
Determined Average for each quarter using formulas	4
Applied currency and decimal places	2
Determine the Maximum (highest) amount in the table using a formula	4
Determined the Minimum (smallest) amount in the table using a formula	4
Determined the number of entries using the COUNT function	4
Total Points Possible	20

8. Sales Tax Calculation Assignment

The purpose of his assignment is to:

Apply Absolute Referencing in a spreadsheet problem

Preparation: (Items to review from previous lessons)

- Entering data in cells
- Applying attributes (bold, underline)
- AutoSum

New Terms:

- Absolute Referencing

Narrative:

Understanding how to calculate using absolute referencing saves a great deal of time in inserting formulas. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 2)

1. Start a new spreadsheet

2. Put your name in cell A1
3. In cell A2, put the title: Accrue Sales Tax, and center it over the table.
4. In cell G1 put the words Tax Rate
5. In cell H1 put in 0.8612
6. In cell B4 put in the heading Sales, and bold it.
7. In cell C4 put the heading Sales Tax, and bold it
8. In cell A5:A10 put in the words STORE 1 to STORE 6
9. In cell A11 put in the word Total and bold it.
10. In cells B5:B10 put in some sales amounts that are over between 40,000 to 100,000. Put different totals after each store.
11. Absolute Referencing. (Be sure to have read Relative Referencing vs. Absolute Referencing) Starting in C5 insert a formula that uses the absolute reference of H1 and multiplies that to the total sales figure.
12. In cell B11, sum column B. and sum Column C.
13. Save the document as Sales Calculation
14. Submit your document through Blackboard print at your instructor's suggestion.

Check the Rubric below to be sure you have completed all tasks.

Description	Points
Centered and merged title	2
Used correct percentage	2
Sales amounts between 40,000 and 100,000	3
Column headings bolded	1
Used an absolute reference formula using cell referencing for all the sales tax totals	12
Total Points Possible	20
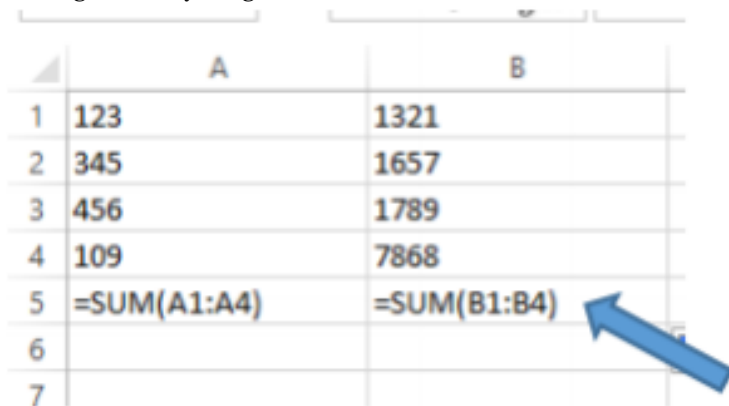
9. Relative and Absolute Referencing

Student Learning Outcome:

The student will understand the difference between Relative and Absolute Referencing and apply this information in an assignment.

Relative Referencing is what you normally do in a spreadsheet. If you add a column of numbers, (for example), and then pull the formula to the right, you are using a relative reference.
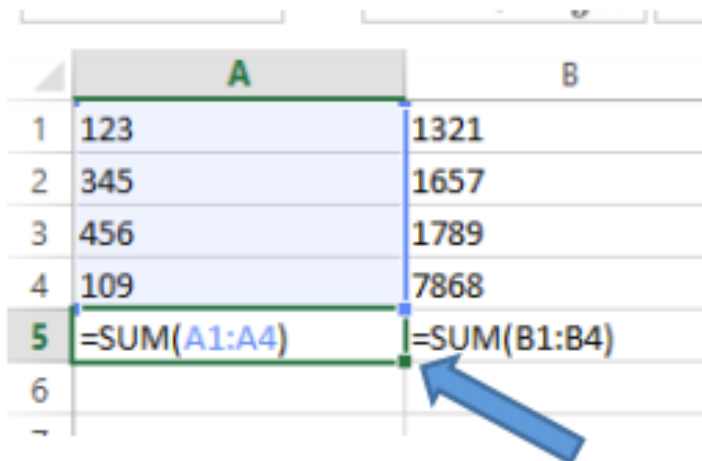
See illustration below: By using A1:A4, the formula adds column A: (A1+A2+A3+A4). Pulling the formula to the right into column B automatically changes the column reference letters to "B" without you having to do anything.

	A	B
1	123	1321
2	345	1657
3	456	1789
4	109	7868
5	=SUM(A1:A4)	=SUM(B1:B4)
6		
7		

To "pull" a formula, or move it into the next cell, move your insertion point (the arrow) – to the bottom right corner of the cell with the formula. There should be a small square box in that corner. (Notice where the arrow is pointing the illustration.) When the arrow turns into a black plus sign, left click and hold down the

left mouse. Then drag that box to the right. When you release the mouse, the formula has been placed in the next column and has automatically changed the letters.

Relative Reference means that the cells are relative – have a relationship with other cells. The spreadsheet program has created this relationship.

Absolute Referencing interrupts the relative referencing so that only chosen cell references can be used.

Using the dollar sign ($) makes a reference absolute.

Examples of absolute references.

1.)=A1 = relative reference

2.)=$A1 = Column is absolute, row is relative

3.)=A$1 = Row is absolute, column is relative

4.)=A1 = Everything is absolute

TRY THIS to understand how it works:

1. Open a blank spreadsheet and type in the annual Fees as noted in cells A4, A5, and A6.

	A	B	C	D
1	XYZ Corp			
2			Increase	0.25
3	Annual Fees	Increase		
4	102.5	=A4*D2+A4		
5	123.9			
6	201.89			
7				

2. In cell B4 type the formula as you see it here. (Note: the dollar signs – which make this reference absolute – are created by first clicking on cell D2 then pressing the F4 key which is located at the very, very top of the keyboard. There are other keys in this row such as F1 – which is the help key -, F2, F3, F5, etc. When F4 is pressed, dollar signs should appear before the column reference and before the row reference – in this case D2. (If the F4 key doesn't appear to work, make sure that the referenced cell (D2) is highlighted. Or you can type the dollar signs by hand.)

3. Press enter. The amount of 128.125 appears.

4. Additional Note: Why put in the cell reference C4 two times? This is because you are taking the A4 reference and multiplying it by 25%. Then you adding the original amount back in to get the whole increase amount. You are basically taking 1.25% of the Annual fee amount. (The math is like this: (A4) $102.50* ($D$2).25% (.25) = 25.625. This is the amount of the increase. Then you are adding back in the number you started with – the original annual fee of 102.50 to determine the total amount of the increase (25.625+102.50 = 128.125.

5. Pull the formula in B4 down to include B6. Look at the formula carefully. Notice that the Annual fee reference changed because it is relative (or references the next cell). However, the absolute reference (D2) did not change. If the dollar signs were removed, the formula in B5 would be =B5*D3+B5 because it would be relative, meaning it would go to the next cell (D3). The answer would not contain any increase because D3 cell reference is blank.

Correct spreadsheet. These are the same spreadsheet with absolute referencing:

With formulas shown

	A	B	C	D
1				
2			Increase	0.25
3	Annual Fees	Increase		
4	102.5	=A4*D2+A4		
5	123.9	=A5*D2+A5		
6	201.89	=A6*D2+A6		

Without formula shown

	A	B	C	D	E
1					
2			Increase	0.25	
3	Annual	Increase			
4	102.5	128.125			
5	123.9	154.875			
6	201.89	252.3625			

Incorrect spreadsheet: These are the same spreadsheets without absolute referencing. Compare the formulas.

	A	B	C	D
1				
2			Increase	0.25
3	Annual Fees	Increase		
4	102.5	=A4*D2+A4		
5	123.9	=A5*D3+A5		
6	201.89	=A6*D4+A6		

	A	B	C	D
1				
2			Increase	0.25
3	Annual	Increase		
4	102.5	128.125		
5	123.9	123.9		
6	201.89	201.89		

6. In the same worksheet you ae using, change the Increase amount in cell D2 to .35 (35%) Watch the amounts change automatically without pulling down the formula or putting in a different formula.

	A	B	C	D
1				
2			Increase	0.35
3	Annual Fees	Increase		
4	102.5	=A4*D2+A4		
5	123.9	=A5*D2+A5		
6	201.89	=A6*D2+A6		

	A	B	C	D
1				
2			Increase	0.35
3	Annual	Increase		
4	102.5	138.375		
5	123.9	167.265		
6	201.89	272.552		

7. If the amount .25 (25%) was used as a number instead of a cell reference, the formula would have to be changed to include the .35 (35%) to include the .35 (35%) in each cell that contained a total using this percent because it could not be done automatically.

PART III
WEEK 3

10. Week 3 Overview

This week you have three assignments. The first is divided into two parts called Payroll Report. In the first part of this assignment you will be computing Regular Wages, Overtime Wages, and Gross Pay. After totals are completed, you will move to the second portion. In this section you will be using your knowledge of Absolute Referencing learned the previous week to determine a "What If" situation regarding a pay raise.

The second and third assignments introduce you to the PMT function that is useful when determine how much interest you will pay on a loan. It is a useful function if you need a student loan, purchase a new car or plan to buy a house.

The second assignment called Advantage Loan is presented in a step by step instructions with full explanations.

The third assignment called Graphic Loans assumes you understand how to calculate Monthly payments, Total Payments and Total Interested introduced in the Advantage Loan assignment. No new concepts are given in this assignment.

Learning Outcomes: The student will:

- Calculate the overtime pay rate
- Calculate wages for regular and overtime pay
- Understand how to use conditional formatting to enhance the readability of the spreadsheet
- Understand the arithmetic functions and the Order of Precedence.

Tasks:

1. **Payroll Assignment.** Using calculations to determine wages, you will also be starting a new sheet, labeling it and use the Absolute Referencing to complete a What If? Scenario. There are two sections to this assignment. (25 points)
2. **Advantage Loan Assignment.** This assignment introduces the PMT function which can be used on any loan. (15 points)
3. **Graphic Loan Assignment.** This assignment reinforces what you learned in the Advantage Loans assignment. (15 points)

Submitting your Work:

1. When completing each task, make sure to save your document to the desktop or your personal storage unit (memory stick, jump drive, etc.)
2. Click on the underlined word(s) at the top of each assignment. An "email-like" format appears with the number of points possible in the upper left corner.
3. Find a box "Browse My Computer." Click on that and find your saved document.
4. Click Submit.
5. For additional help, please see the EXTRA HELP folder in the CONTENT area called "How to Submit Your Work.

11. Payroll Assignment

The purpose of this assignment is to:

1. Reinforce previous learning
2. Calculate regular wages, overtime wages and gross earnings
3. Introduce conditional formatting
4. Change page orientation
5. Create a new sheet
6. Add a header to the workbook

Preparation: (Review these terms)

- Formatting cell content
- Adjusting column width
- Creating simple formulas
- Centering column labels
- Using Auto Fill to drag formulas
- Using currency feature to add dollar signs and decimals
- Wrap Text
- Merge and Center
- Using the launcher button
- Use absolute cell references

New Terms: (Terms are bolded in the steps below.)

(THIS ASSIGNMENT IS DIVIDED INTO TWO PARTS; THE DOTTED LINE BELOW DIVIDES THE TWO SECTIONS.)

- Inserting blank column (Step #3, pages 1-2)
- Calculate Regular Pay (Step #5, page 2)
- Arithmetic Operators (Table mentioned In Step #5. Can be found on page 4)
- Calculate OT rate and OT pay. (Step #6, page 2)
- Calculating Gross Pay (Step #18, page 3)

————————————————————-

- Creating a new sheet (Steps #20, page 3)
- Inserting a header (Step #28, page 4))

Narrative:

Spreadsheets are often used to determine the company payroll. This assignment breaks down regular pay, overtime pay and gross earnings. Additionally, conditional formatting is introduced to enhance the years of service for each employee by using color. (THIS ASSIGNMENT IS WORTH 25 POINTS. THE RUBRIC IS ON PAGE 5.)

Payroll Assignment

1. Download and open the Payroll Form and save it to your storage device as Payroll. '

2. Adjust the columns if necessary to see all the data. (NOTE for clarification: in cell C4 the term Reg. means Regular; in cell D4, OT means Overtime.)

3. Insert new columns. Move your mouse cursor above the Years of Service to the letter "E" which signifies what column you are in. As you move your mouse upwards to that letter "E" it becomes a black downward facing arrow. Once you see the black arrow, right click your mouse to get the short cut menu. From the menu, choose INSERT. A new column appears. Staying in that same position, INSERT to add more columns for a total of three new columns between OT Hours and Yrs of Service.

4. Type the following: Reg. Pay in Cell E4; OT Pay in F4 and Gross Pay in G4.

5. Calculating Regular (Reg) Pay. Create a formula to multiply Reg (Regular) pay times the number of hours that person worked. (Arithmetic operators such as the multiply symbol can be found at the end of this assignment and in the Extra Help Content folder called TABLES.) Formulas always start with the equal sign, use the cell reference such as B5 times C5. Make sure you start your formula where you want the answer to be. In this case start your formula in E5. (Hint: John Adams' result will be 420.)

6. Calculate Overtime (OT) pay. Create a formula to calculate overtime pay and have the result show in cell F5. To determine the overtime rate, multiply the regular rate times 1.5 (means overtime pay is 1 ½ times the regular rate.) To calculate the overtime pay, multiply the rate times the overtime hours. Two multiplication operators can be in the same formula. It is similar to using a calculator, but amounts are cell references. (Hint: John Adams' Overtime pay should be 78.75.)

7. Calculate Gross Pay. Gross pay is found by adding the regular pay plus the overtime pay. Start the formula in the gross pay column G5 of the first employee.

8. Drag the formulas in E5, F5 and G5 down each column for each

employee.

9. In Cell A16 type the word TOTAL in all capital letter.
10. Using the AutoSum key, calculate the totals of Reg. Pay (E16), OT Pay (F16) and Gross Pay (G16).
11. Format these total as currency with two decimal places.
12. Apply Conditional Formatting. Conditioning formatting is used to highlight information by using color combinations.

   ◦ Select cells H5-H14.
   ◦ From HOME tab, find the Styles group. On the left side of that group, find Conditional Formatting.
   ◦ Click on the Color Scales Option and then click on "More Rules".
   ◦ In the lower box labeled "Edit Rule Description Box," select Format Style and change to the 3- color option. Choose red for the lowest, yellow for the mid color, and green for the highest. Then click okay.]

13. Adjust all columns to make sure all the headings and entries are displayed.
14. Center all entries and labels in columns B through H.
15. Type your name in cell A18. Use Text Wrap to keep it all in one cell.
16. Select the title "Payroll Report." Change the font to AHARONI, 14 pt.
17. Merge and Center the title between columns A-H.
18. Change Orientation. Pages can be viewed with the long side on the left (Portrait) or the long side can be across the top (Landscape). From the HOME tab, From the PAGE LAYOUT tab, find the group called Page Layout. In that group find Orientation. For this assignment, change the orientation of the worksheet to LANDSCAPE.
19. Save this worksheet as Payroll Report. Continue on to the second part of this assignment in the next steps.

————————————————————————————————

20. Creating a new Sheet. At the bottom of the worksheet you have been working on, click the plus sign next to Sheet named Payroll. A blank sheet appears

    ◦ Double-click on the new "Sheet 2." Type What If.
    ◦ Select Columns A1 to H18. From the HOME tab, Clipboard group, click COPY icon. You should see a dotted line around the section you selected.
    ◦ Place your cursor in cell A1 and press PASTE. The previous columns A1 to H18 appear on the What If sheet.
    ◦ Adjust any columns so that they are wide enough for all columns.

21. On the "What if" worksheet, type the words "What if" in cell I4. Widen the column if necessary
22. Type 0.05 in cell J3
23. In cell I5, use a formula that includes dollar signs in the formula (Absolute Referencing) to calculate the 5% pay raise in J3 times the Pay Rate in B5. YOU MUST USE ABSOLUTE CELL REFERENCING. [Hint: Use the decimal given Step-p 22]. Do you remember the formula used in Assign 3, Public Expenses by the Quarter Instructions to increase another value? IIf not, see Extra Help folder
24. Your correct answer should be 53 cents more than the regular pay rate.
25. Once you have the correct formula, use the short-cut menu to pull this formula down column from I5 to I14.
26. In Cell K4 type the label: Difference.
27. Insert a formula in K5 to determine the difference between the original Pay Rate and the "What If" increased pay rate. Once the formula is correct, drag the formula down K5 to K14. Make all amounts only two decimal places.
28. Insert a Header.

    ◦ A Header will appear at the top of every page, if there were

more than one page in the worksheet.
- ◦ A Header only appears in the Print Out or in Print Preview. Otherwise, you won't see it.
- ◦ Click the PAGE LAYOUT tab and find Page Setup Group.
- ◦ Click the launcher for Page Setup.
- ◦ Find the tab called Header/Footer and click on it.
- ◦ In the new dialog box that appears, click on Custom Header.)

29. In the Center section of the Header , type XYZ Corporation and then click OK.
30. Save this worksheet as Payroll and submit it through Blackboard. When you save this workbook, both the Payroll and the What If sheets will save together.
31. If you are not taking this class on line, ask the instructor for information on how to print both the Payroll and the What If sheets that display the formulas.

TABLE: Arithmetic Operators used in Spreadsheets

Operator	Purpose	Example
+	Addition	=A15+B27
-	Subtraction or negation	=A15-C10 or =A15-12
*	Multiplication	=A15*C7
/	Division	=A15/B6
%	Percent	=35%

TABLE: Order of Precedence in formulas

THE ORDER OF PRECEDENCE IS VERY IMPORTANT WHEN YOU WORK WITH FORMULAS THAT CONTAIN MORE THAN ONE OPERATOR. THIS IS BECAUSE IT AFFECTS THE FINAL VALUE (THE FINAL ANSWER).

The order	Operators	Explanation
1	Parentheses	First any operation inside parentheses are calculated before any other operator
2	Reference operators (ex. ranges)	Next reference operators are calculated
3	Multiplication and Division	Then any multiplication and division are calculated left to right
4	Addition and subtraction	Finally, any addition or subtraction calculated left to right

Check the Rubric below to be sure you have completed all the tasks

Description	Possible Points
Insert 3 columns between OT Hours and Years of Service	1
Inserted three new headings between OT hours and Years of service	1
Formula for Regular Pay using cell referencing	2
Formula for Overtime Pay using cell referencing	2
Formula for Gross Pay using cell referencing	2
Used correct formula for Totals of columns E5 to G5	2
Used Currency (dollar signs and decimal point) only for the TOTALS of row E	1
Use Conditional Formatting colors as indicated	3
Centered Title (Payroll Report) with format changes	2
Student name in A18	1
Created Sheet 2 and renamed it	2
Formula to show increase of 5% on the Pay Rate using ABSOLUTE REFERENCING	3
Formula for Difference between Pay Rate and What If rate	2
Header on Worksheet	1
Total Points Possible	25

12. Advantage Loans Assignment

The purpose of this assignment is to:

1. Introduce the PMT function
   2. Determine monthly payments
   3. Determine total cost of a loan
   4. Determine total interest to be paid

Preparation: (Review these terms)

- Arithmetic operators
- Wrap Text
- Setting up simple formulas

New Terms (Terms are bolded in the steps below)

- PMT Function (Step 10, page 2)
- How interest rates are presented (Step 10b, page 2)
- Insert a border around a table. (Step 14, Page 3)

Narrative:

Having access to more money than you have in your pocket seems

like a great deal. However, because it is someone else's money they you are using, they charge you a fee – interest – to use it. When you see interest rates of 1.2% or 3.5% what does that actually mean in dollar and cents? Also the length of time you decide to pay back the loaned money affects the amount of dollars that you are paying back. This assignment will help you set up three different loans. After applying the PMT function and using some simple formulas, you will determine how much your loan is actually costing you. (THE ASSIGNMENT IS WORTH 15 POINTS. THE RUBRIC IS ON PAGE 4)

Advantage Loan Assignment

1. Open a blank spreadsheet

   2. In A1 type Advantage Loans and Center it over the table. Make the font 14 pt.

   3. Starting in A4, type in the labels (column headings) below in the appropriate cells:

A4	B4	C4	D4	E4	F4	G4	H4
Lenders	Loan Amount	Terms Years	Interest Rate	Terms Months	Monthly Payment	Total Payments	Total Interest

   4. Select B4 to H4 and click on Wrap Text in the HOME tab, Alignment Group. This will allow two rows in one cell in the header so the columns can stay narrow.

   5. Starting in A5, type in these Lenders: Commercial Bank (A5), Credit Union (A6), Venture Capitalist (A7)
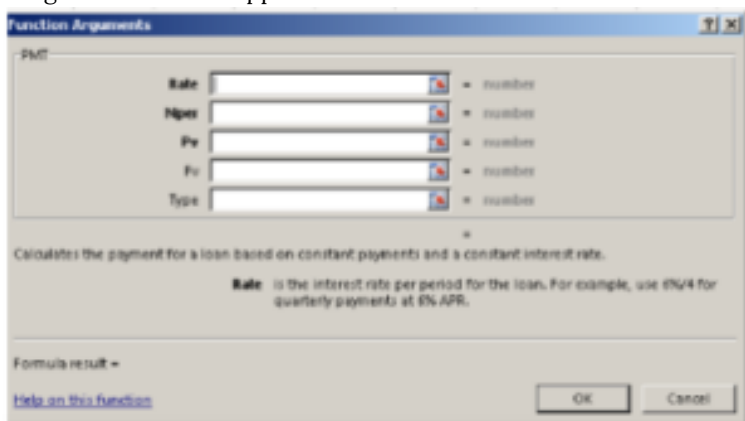
   6. In B5-B7 type $153,000 for each Loan Amount.

   7. Complete the worksheet as follows:

Terms Years	Interest Rates
5	5.05%
3	5.25%
2	5.15%

8. **Note:** when putting in the Interest Rates, use the percent sign or put the percentage into decimal form. If this isn't done, the answers will be incorrect.

9. Use a formula to compute the Term Months (the number of months for each of the 3 lenders). In our example, the first bank – commercial bank- will loan the money for five years. How many months in a year? Create a formula in E5 which will compute the number of months for the loan. When this is completed, go to the next step.

10. Using PMT function. Click in cell F5. Next click on the FORMULA tab. From the Function Library find the category "Financial". Scroll down the alphabetized list to find PMT. Below is the argument box that appears.

- Breakdown of the Arguments listed above.

> RATE: Interest Rate Per Month. Be aware interest rates are given by the year!
> NPER: Number of monthly payments
> PV: Present Value
> FV: Future Value and TYPE are not used for this formula.

- How interest rates are presented. Click in the box labeled Rate.

Because interest rates are given for 12 months (one year), and because you are trying get a monthly rate, you need to divide the Interest Rate by 12 months. In the Argument box for rate, click on D5 (cell reference) for first interest rate and divide it by 12 (months in a year). The formula in the argument box should be D5/12. (You do not need to first use the equal sign because this is an argument box, not a cell that you are inputting a formula.)

- Next click in the box labeled NPER. This is asking for the number of monthly payments. You have already calculated that in Step 9 and the answer is in E5. So click on E5 for the NPER box.
- The PV or present value, is the amount of the loan. This is found in column A, the amount of the loan that you want. Click on B5.
- Click OK at the bottom of the argument box.
- Your answer will appear in F5. The answer will be in red. This represents the negative cash flow the loan represents to the borrower. To show the monthly payment as a positive number, place a minus sign in front of the PV cell reference or B5. The formula will look like this:=PMT(D5/12,E5,-B5). The commas represent the three separate boxes that you typed in cell references in the argument box.

11. Click in cell G5 for Monthly payment. The monthly payment will be the number of months (E5) times the monthly payment (F5). Type your formula in G5.

12. To determine the total interest, this would be the difference between the total payments and the actual amount of the loan being taken. Type your formula in H5.

13. Select the entire table from A1 to H7.

14. Insert a Border around a table.

- Click on HOME tab
- Look to the right for the Cells group. Click on Format.

- At the bottom of the pull down list, find the words "Format Cells". Click on it.
- This takes you to a dialog box. Click on the tab for Borders. Put a border around the outside of the table only – no inside lines.

15. Put your name two rows below the bottom of the table.

16. Re-Save his worksheet Advantage Loans. Submit the assignment through Blackboard.

17. If you are not in Blackboard, ask your teacher how to submit this assignment so that the formulas display.

Check the Rubric below to be sure you have completed all the tasks.

Description	Possible Points
Centered the title and subtitle and used bolding, changed the size	1
Adjusted all columns for readability	1
Correct formula for Monthly Payment	3
Correct formula for Total Payments	3
Correct formula for Total Interest	3
Border around the table	3
Put your name two rows below	1
Total Possible Points	**15**

13. Graphic Loan Assignment

The purpose of this assignment is to:

Demonstrate your understanding of the use of the PMT function.

Preparation: (Review these terms)

Review the steps in the assignment called "Advantage Loan"

New Terms (Terms are bolded in the steps below)

No new terms for this assignment

Narrative:

From the previous assignment, Advantage Loan, you learned how the PMT function calculates the periodic payment amount for money borrowed. If you want to borrow money to buy a car, a house or a college education, you need to know the Basics: The principle amount, the interest rate and the number of months you wish to borrow. All of this can be put into a formula to quickly determine what your payments will be.

Graphic Loan Assignment

1. Open Graphic Loan Spreadsheet and save it to your storage device by giving it the name Graphic Loan.

   2. Complete the worksheet as follows:

- Over the table width, center Graphic Solutions and center the sub-title.
- Adjust the column widths so all information is visible
- Bold all the column headings
- Insert formula for Monthly Payment
- Insert formula for Total Payments
- Insert formula for Total Interest columns
- Box the table
- Put your name two rows below the bottom of the table.

3. Save this worksheet as Graphic Loan

   4. Check the rubric below to get your maximum points.

   5. Submit your completed Graphic Loan Solution to Blackboard.

   6. If you are not taking this course through Blackboard, check with your instructor

Rubric for Graphic Loan Summary

Description	Possible Points
Centered the title and subtitle and used bolding and changed the size	1
Adjusted all columns for readability	1
Correct formula for Monthly Payment	3
Correct formula for Total Payments	3
Correct formula for Total Interest	3
Boxed the table	3
Put your name two spaces below on the spreadsheet	1
Total Points Possible	15

WEEK 4

14. Overview Week 4

Week 4 introduces Charts and the IF AND functions. There are three assignments and three reading assignments.

Starting with Charts, you will be introduced to all the different possible charts and elements of these charts. Charts are very useful to express important aspects of a table. After you understand the purposes of charts there will be two assignments that apply the techniques of developing charts.

The second part of this week's work is to understand two new functions. One is called the IF function (If one of two statements is correct, a positive response will be given.). The other is called AND function (given two logical questions, both must be true to return a positive response.) The assignment applies both functions in the same problem.

Learning Outcomes: The student will:

- Understand what data to select when creating a chart.
- Create bar, column and pie charts
- Understand the vocabulary of charts.
- Understand the difference between IF and AND functions
- Understand the use of argument boxes.

Tasks:

1. Information for Spreadsheet Charts. The different charts are described as well as some of the new vocabulary used in creating charts.

2. Software Usage Assignment. This assignment has you putting three different charts on one page. (20 points)

3. Ford Sales Assignment. This assignment reinforces using charts and emphases Pie Charts. (20 points)

4. And function for Spreadsheet Information. This information explains the use of the AND function and provides an illustration that allows you to practice the concept.

5. IF function for Spreadsheet Information. This information explains the use of the IF function and provides and illustration that allows you to practice the concept.

6. East End Building Materials Assignment. This assignment helps you apply the IF and AND function to an actual situation. (20 points)

Submitting your Work:

1. When completing each task, make sure to save your document to the desktop or your personal storage unit (memory stick, jump drive, etc.)

2. Click on the underlined word(s) at the top of each assignment. An "email-like" format appears with the number of points possible in the upper left corner.

3. Find a box "Browse My Computer." Click on that and find your saved document.

4. Click Submit.

5. For additional help, please see the EXTRA HELP folder in the CONTENT area called "How to Submit Your Work.

15. Information for Spreadsheet Charts

Information for Spreadsheet Charts

Charts help express data in a table. Before creating a chart, consider the following:

1. Purpose of the chart – what information do you want to emphasize.

2. Results to display – which chart is appropriate.

3. Determine what data to illustrate in the chart – sometimes there is a need to select great quantity of data and other times just a small amount. Different chart types display in distinctive ways.

4. Understand of elements of a chart – (See 3-D cluster chart elements on page 2 for an explanation of terms for axis, legend, data labels, etc..)

Types of Charts

Type of Chart	What is compared
Column	Compares data using columns
Line	Compares trends over even time intervals
Pie	Compares sizes of pieces as part of a whole, used for a single series of numbers
Bar	Compares data using horizontal bars
Area	Shows how individual volume changes over time in relation to total volume
Scatter	Compares trends over uneven time or measurement intervals; used in scientific and engineering disciplines for trend spotting and extrapolation.

3D Cluster Chart – Chart Elements
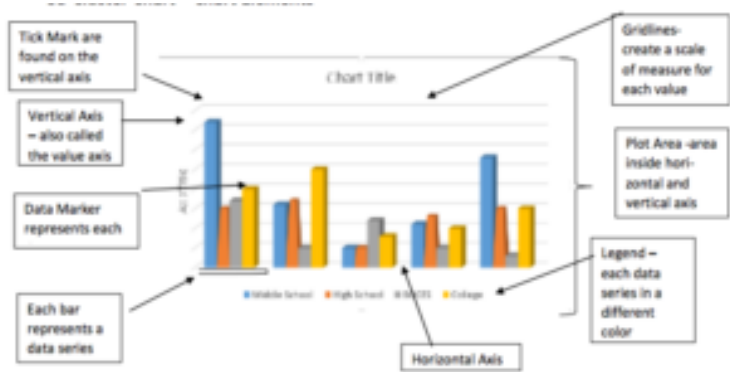
Adjustable Chart Elements

(Found by clicking on Chart Tools, Design, Chart Layout Group)

Axis	Primary Horizontal (X - axis) Usually the category axis Primary Vertical (Y-axis). Usually called the value axis
Axis Titles	Primary Horizontal Primary Vertical
Chart Titles	None Above Center
Data Labels	None Data Call Out
Data Table	None With Legend Keys With No Legend Keys
Gridlines	Primary Major Horizontal Primary Major Vertical Primary Minor Horizontal Primary Minor Vertical
Legend	None Right Top Left

16. Software Usage Assignment

The purpose of this assignment is to:

1. Create column, pie, and bar charts
    2. Determine what data to select for which charts
    3. Move and Resize Charts
    4. Place multiple charts on one page

Preparation: (Review these terms)

- Launcher Button
- Insert a Header

New Terms: (Terms are bolded in the steps in the Assignment below)

- Select data for a column chart. (Step #2, Page 1)
- Create a Cluster Column chart. (Step #3, Pages 1-2)
- Using a new toolbar called Chart Tools. (Step #4, Page 2)
- From Design tools – Add chart elements: Legend. (Step #6, Page 3)
- Change Chart Title to a new title. (Step #7, Page 3)
- Move a chart. (Step # 9, Page 3)
- Selecting the correct data for a Pie Chart. (Step #10, Page 3)
- Create a 3-D Pie Chart. (Step #11, Page 3)

- Exploding a pie slice. (Step #14, Page 4)
- Copy a chart. (Step #16, Page 4)
- Change an existing chart to a different type of chart. (Step #17, Page 4)
- Change the color of the bars of a chart. (Step #18, Page 4)
- Check the Page Orientation. (Step #21, Page 4)
- Adjusting the size of charts. (Step #22, Page 4)

Narrative:

Charts help explain data to those who are not familiar with reading spreadsheets. It is fun and easy to create charts. Using different techniques, charts can have different colors, styles, and layout. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 6)

Software Usage Assignment

1. Open the spreadsheet called SOFTWARE USAGE and save it by the same name.

2. Select data for a column chart. Select range A3 to F7. (Be sure NOT to include row 8)

3. Create a Cluster Column Chart.

- Click on the INSERT tab and find the Charts group.
- Click on the Charts launcher button.

- Click on ALL CHARTS.
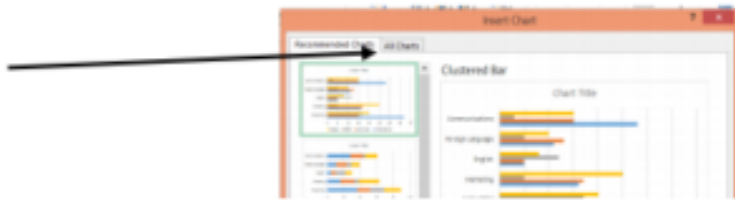
- Click on Cluster Column
- Click on the fourth example called 3D Cluster
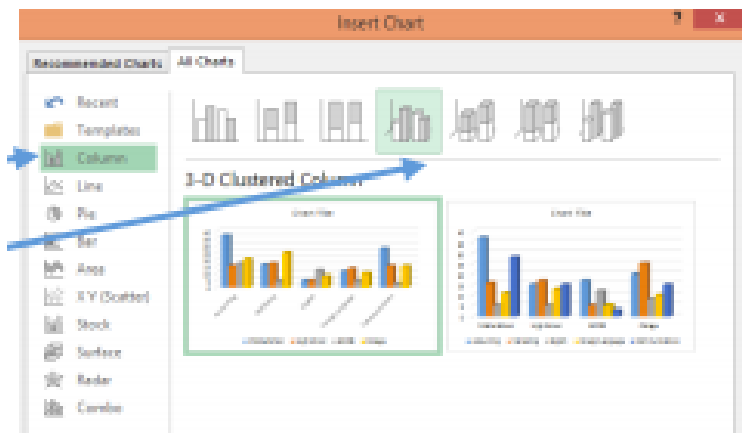
- Click OK

4. Chart Tools Toolbar. After selecting a chart, a new toolbar appears at the top of the screen called Chart Tools with the options of

On the Design portion of the Charts Tools Toolbar, the five groups are:

- Chart Layout
- Chart Styles
- Data
- Type
- Location

On the Format portion of the Charts Tools Toolbar, the five groups are

- Current Selection
- Insert Shapes
- Shape Styles
- WordArt Styles
- Arrange Size

5. Click on the Design tab and look to the left for the Chart Layouts group. Choose Add Chart Elements icon.

The list includes: Axis, Axis Titles, Chart Titles Data Labels, Gridlines and Legends.

6. Add chart elements: Legend. With the Add Chart Element displaying, click on Legend from the drop down menu. From the choices in the drop down menu. choose RIGHT to place the legend on the right side of the chart.

7. Change Chart Title to a new title. Click the "Chart Title" at the top of the graphic chart. A box appears around the "Chart Title"

8. Click in that box and change the title to "Software Usage."

9. Move a chart. Click on the chart.

- Four white circle should be seen in each of the four corners.

- Place your cursor in the upper left corner of the chart until the mouse becomes a four-headed arrow.
- Click and hold the left mouse and drag the chart so that the top left corner of the chart is in cell A10 and the bottom left corner is in about cell A24. (WARNING: If the chart is pulled too close to the left edge of A10, a red circle displays which will not allow the chart to be placed there. Instead move the chart a bit to the right of cell A10.
- The chart should only be slightly narrower than the data table we started with

Chart 2: Create a Pie Chart

10. Select specific data for Pie Chart. Pie Chart is used to emphasize one data point instead of an entire table. Select A3 to F4

11. Create a Pie Chart. Follow the Steps 3 a-c to INSERT and select ALL CHARTS. Then click Pie Chart. Click on the second example called 3D Pie Chart. Then click OK.

12. The Pie Chart appears and the title of the chart is Middle School (which the name in cell A3)

13. Move the chart to a clear space by clicking on the chart, holding down the left mouse button and dragging it a bit to the right so it is in its own space.

14. Exploding the Pie Slice.

- Click twice on the wedge labeled Foreign Language (it is a gold color). By clicking twice you should see three round white circles on just that slice – on the tip and one on either side of the wedge.
- Holding down the left mouse button, click and drag that wedge toward to the bottom left corner of the chart just a short distance so that it separates itself from the main pie. This is called Exploding the Pie Slice.

15. Move this chart under the column chart. Place the top left edge of the pie chart inside cell A26 and the bottom left on A49.

Chart 3: Create a Bar Chart and Change Colors

16. Copy a Chart. Click on the 3D Cluster Column chart so that the four corners have a white circle on each corner.

- Place the cursor in the upper left corner of the chart, opposite the title, and RIGHT click.
- A short cut menu appears. Choose COPY.
- Move the mouse to the clear area to the right of the other charts. RIGHT click again and this time choose PASTE.
- Remove the Shadow effects by clicking on each of the columns that have the shadow, then from the INSERT tab, Shape Styles Group, click Shape Effects.
- Choose Shadow and then the first choice No Shadow.

17. Change an existing chart to a different type of chart.

- Click in the graph part of the Cluster Column Chart in a white area so that the columns themselves are selected with only the four white circles in each corner.
- Click on INSERT tab, then in the Charts group, click the charts launcher button.
- Click on the tab ALL CHARTS (if it isn't already selected) and choose Bar Chart.
- Choose the second icon from the Bar Chart called Stacked Bar. The Column Cluster chart changes to the Stacked Bar chart.

18. Change the colors of the chart.

- Click on the white area of the bars of the chart so only four white circles are at each of the corners. (Don't select just one

particular bar.)

- Click on the Design Tab of the Chart Tools and find "Change Colors" in the Color Styles group. (It is to the left in that group)
- Change to Monochromatic Blue (your choice of which blue).

19. Move the legend to the top right.

20. Move this chart so the top corner is in H1 and the bottom in H13.

21. Checking the page orientation. From the PAGE LAYOUT tab, find the Orientation icon in the Page Set up Group. Make sure the spreadsheet is in Portrait view.

22. Adjusting the size of charts.

- Click on the Software cluster column chart. White circles should appear in each of the corners.
- Click on the bottom right corner (the white dot) and make the chart smaller. It should fit with the top in A10 and the bottom in A19.

23. Move the Pie Chart so that the top left corner is in cell A21. Click on the white circle of this chart at the bottom right corner and pull it up to about A31.

24. Move the Bar chart that is in H1 – H13 so it fits under the Pie Chart in about A31-A43. The chart may have to be adjusted. Do this from the bottom right corner.

25. Preview your spreadsheet by clicking on Print. You should see all three charts displaying in the Backstage View. (If you don't see all three charts, check and make sure not any one chart is selected (with the four white circles in the corners.)

26. Insert your name in a center Header.

27. Submit your charts in Blackboard if taking this course on-line.

28. Otherwise, follow your instructor's directions to print.

Completed Assignment

Check the rubric below to be sure you have completed all the tasks.

Description	Points
Created 3D Cluster Column Chart	3
Added a Legend and a Title	2
Added Shadow Effect to columns	2
Created 3D Pie Chart	3
Exploded a piece of the pie	2
Change the 3D Cluster Column Chart to a Bar Chart and changed color	3
Changed the color of the bars in the Bar Chart	2
Adjust size of charts to fit neatly on one page	2
Put name in header	1
Total Points Possible	20

17. Ford Sales Assignment

The purpose of this assignment is to:

1. Finish compiling a report
   2. Apply centering title
   3. Create two simple column charts
   4. Make changes to those charts
   5. Apply Currency to specific rows

Preparation: (Review of Terms)

- SUM and AVE function
- Merge and Center titles
- Apply Currency to specific rows
- Adjust column width
- Change a legend
- Create a Pie Chart
- Create a 3D Cluster Column Chart

New Terms: (Terms bolded in the steps)

- Chart Elements: Horizontal Axis Title (Step #13, Page 2)
- Select two columns that are not adjacent to each other. (Step #15, Page 2)
- Changing Chart Style (Step #16, Page 2)

Narrative:

This assignment is much shorter Working with a Pie Chart, other attributes are introduced to show the versatility of charts. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 3.)

Assignment:

1. Open Ford Motor Company spreadsheet and save it as Ford Sales.

2. Center the title, bold it and increase the size to 18 pt.

3. Center the subtitle, bold it and increase the size to 14 pt.

4. Bold all the Quarter headers and the makes of each Ford car.

5. Adjust the columns to see all the information.

6. Bold the word TOTAL in column A.

7. Complete the worksheet using formulas for the totals and average.

8. Insert dollar signs with two decimal places on all totals and averages, but not on the individual quarter sales.

9. Enter your name in cell A25.

10. Create a 3-D Clustered Column chart showing the quarterly sales for each car by selecting cells A3 – E7 to include the car names and the quarter headings.[Hint- Insert tab, Charts group, Column drop-down list, 3-D Clustered Column]

11. Move and size the chart to display in cells A10 – A23

12. Change the position of the Legend to the top. [Hint, Chart Tools, Design, Add Chart Elements, Legend]

13. Add Chart Elements: Horizontal Axis Title to state Sales By Ford.

14. Add a Title: Ford Motor Company.

15. Select two columns that are not adjacent to each other

- Select A4 to A7. Hold down the CTRL key and select G4-G7. Two separate columns are selected.
- Select 3-D Pie.

16. Changing a chart style. From the Chart Tools, Select Design

and view the Chart Styles. Choose the third option that will have percentages on the wedges. (See example below)

17. Move this chart to about F10- F23.
18. Change orientation to Landscape.
19. Again save your work as Ford Sales.
20. Submit through Blackboard.
21. If not on Blackboard, follow instructor's submitting directions.
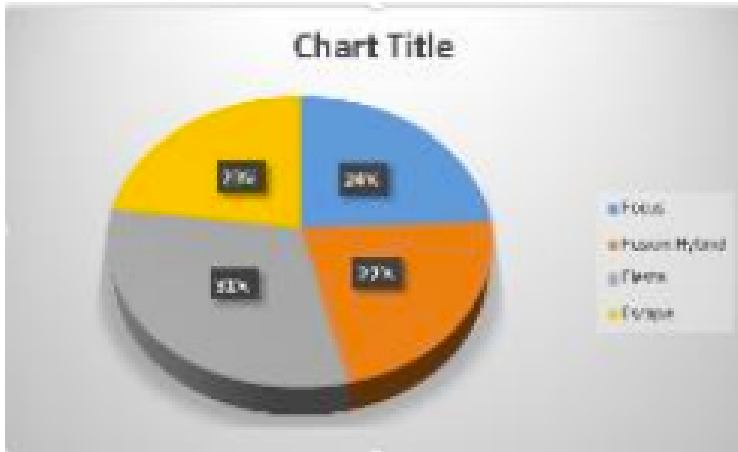
Check the rubric below to be sure you have completed all the tasks.

Description	Points Possible
Centered, bolded and changed pt size of title and subtitle	1
Bolded column headings and models of cars	1
Totals and Average formulas correct	4
Dollar signs on Totals and Averages only	2
Created 3D Column chart	3
Changed legend, title and horizontal axis title	3
Selected correct columns for Pie Chart	3
Created Pie Chart with Averages displaying	3
Total Possible Points	**20**

18. AND function for Spreadsheets: Information

OVERVIEW:

Where to find AND function: **FORMULA** tab, **Logical** in the Function group, then find **AND** in the pull down menu.

Purpose of AND function: To evaluate all of its arguments. It returns, or displays **True** for **every** logical test in the formula..

Return Value – the result of the evaluation is TRUE or FALSE

Syntax: =AND (logical test, [value all values TRUE],[if one or more value is not true FALSE)

Arguments:

Logical test: A value or logical expression that can be evaluated as TRUE or FALSE

Value if true: [optional] The value to return when logical test evaluates all to TRUE.

Value if false: [optional] The value to return when logical test evaluates one or more is FALSE

EXERCISE (This isn't graded, but you might find it useful before completing your assignment.)

If evaluating a student based on lab scores and test scores, this function will automatically assign a True or False to that student. You would be testing the scores themselves for each student and then returning either "True" or "False"

AND Function Test

Name	Lab Score	Test Score	Result
Anderson	92	60	FALSE
Bell	85	79	TRUE
Cartridge	65	92	
Delaney	79	61	
Finberg	99	89	

- Create a little spreadsheet like the one above with the headings Name, Scores and Results. Type in five or six students and give them scores – you don't have to use the same ones as I did. Also you will not have any "Results" until you put the formula in.
- Click in cell D4 (in this example) to insert the formula result. Click on the **FORMULA** TAB, then click the **Logical** icon from the Function Library Group. Once you click on the Logical icon a menu appears with various Logical functions. Choose **AND**. The result is an argument box as seen below. Argument boxes are easier to work with because they show you where to put the information needed to complete the test.

- We need to complete two **logical tests**. The first box (Logical Test) is asking for information for the lab scores. We want to set parameters on what is a passing grade. In that logical box, click **cell** B5 on the spreadsheet you created (first score of the people you entered.). Next put in the **symbols** (in the same box) that mean greater than and equal to (>=). This is followed by a grade of 70. (See other Logical Operators at the bottom of this page.)
- In the second box (Logical Test) click

cell C3 on the spreadsheet you created. Next put in the **symbol** (in the same box) that means greater than or equal to (>=), follow by the grade 70. Then click ENTER. If both instances are true (both the lab score and test score are greater than or equal than 70), the result will be TRUE. If one or both are not greater than 70, the result will be FALSE.

- Another logical test box may open, but you need only complete two of them.
- If one of the two scores is not greater than or equal to 70, the result will be FALSE.
- The formula in the formal function bar will be =AND(B3>=70,C3>+70)

Only complete the first two logical tests for this example; although you can use several when using the AND function.

Only complete the first two logical tests for this example; although you can use several when using the AND function.

- Click OK. The formula now appears in cell D4 and on the formula bar.

- Pull the formula down for the other students and watch as either "TRUE" or "FALSE" appears for each student.

Notes: More Logical Operators

Comparison Operator	Meaning	Example
=	Equal to	A1=D1
>	Greater than	A1>D1
>=	Greater than or equal to	A1>=D1
<	Less than	A1<D1
<=	Less than or equal to	A1<=D1
<>	Not equal to	A1<>D1

19. IF function for Spreadsheets: Information

OVERVIEW:

Where to find IF function: FORMULA tab, Logical in the Function group, then find IF in the pull down menu.

Purpose of IF function: To test for or evaluate specific conditions and then react differently depending on whether the test was TRUE or FALSE.

Return Value – the values you supply for TRUE or FALSE

Syntax: =IF(logical test, [value if true], [value if false])

Arguments:

- Logical test: A value or logical expression that can be evaluated as TRUE or FALSE
- Value if true: [optional] The value to return when logical test evaluates to TRUE.
- Value if false: [optional] The value to return when logical test evaluated to FALSE

EXERCISE (This isn't graded, but you might find it useful before completing your assignment.)

If evaluating a student based on test scores, you want to assign either "Pass" or "Fail" to that student. You would be testing the score itself for each student and then returning either "Pass" or "Fail".
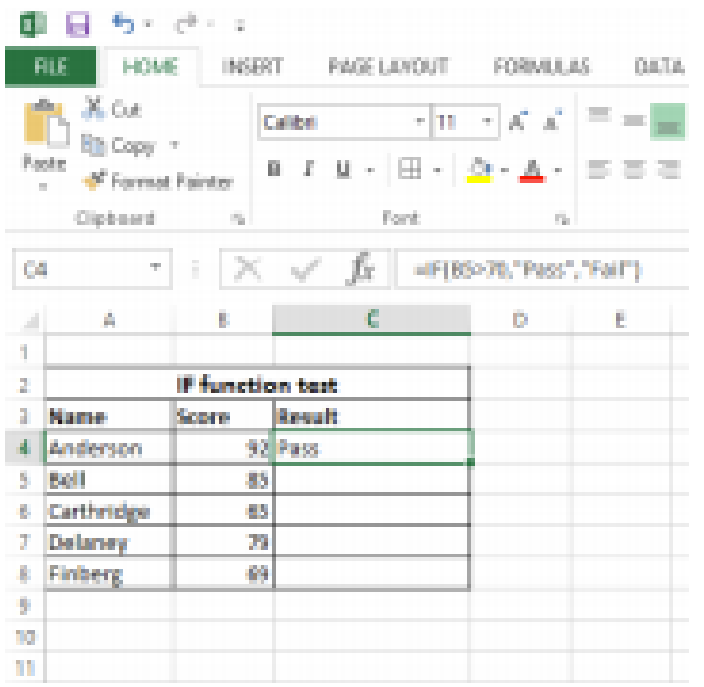
1. Create a little spreadsheet like the one above with the headings Name, Score and Result. Type in five or six students and give them scores.

2. Click in cell C4 (in this example) to insert the formula result. Click on the FORMULA TAB, then click the Logical icon from the Function Library Group. Once you click on the Logical icon a menu appears with various Logical functions. Choose IF. The result is an argument box as seen below. Argument boxes are easier to work with because they show you where to put the information needed to complete the test.
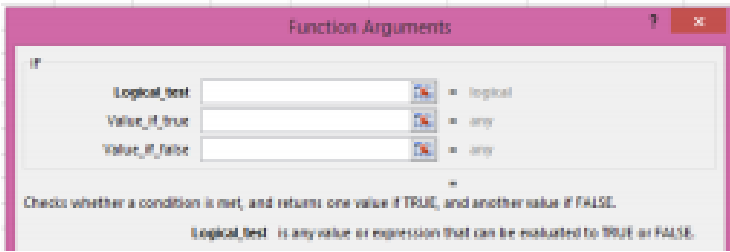
3. The first box (Logical Test) is asking for information for the test you want to perform. In this case, we want to set parameters on what is a passing grade. In that logical box, click cell B5 on the spreadsheet you created. Next put in the symbols (in the same box) that mean greater than an equal to (>=). This is followed by a grade of 70. (See other Logical Operators at the bottom of this page.)

4. In the next box (Value if true) type the word PASS without any quotation marks. The quotation marks will automatically be assigned to that text string when you click in the next box.

5. In the last box (Value if False), type the word FAIL without any quotation marks. The quotation marks will automatically be assigned to that text string when you click the OK button.

6. Below is what you will see if you followed these directions.
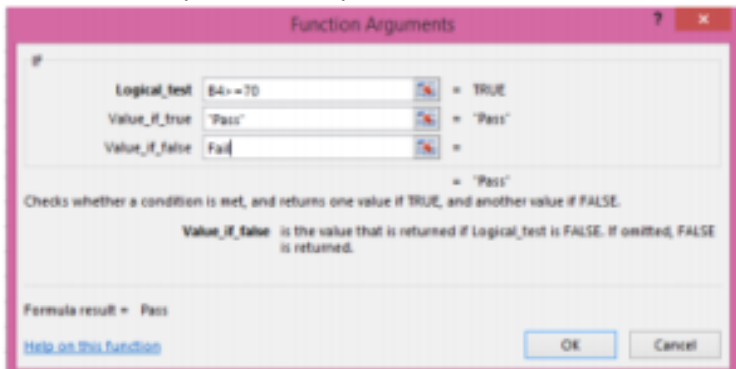
7. Click OK. The formula now appears in cell C4 and on the formula bar.

Formula displayed

Name box with IF listed

Formula Bar

IF function test
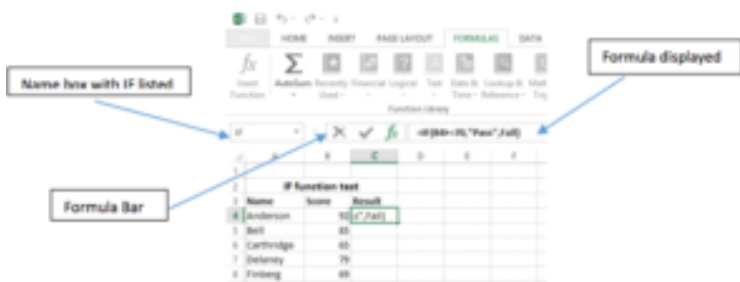
8. Pull the formula down for the other students and watch as either "Pass" or "Fail" appears for each student.

Notes: More Logical Operators

Comparison Operator	Meaning	Example
=	Equal to	A1=D1
>	Greater than	A1>D1
>=	Greater than or equal to	A1>=D1
<	Less than	A1<D1
<=	Less than or equal to	A1<=D1
<>	Not equal to	A1<>D1

20. East End Building Materials Assignment

The purpose of this assignment is to:

1. Apply the AND formula
   2. Apply the IF formula
   3. Use argument boxes successfully

Preparation: (Review these terms)

- Insert extra rows
- Change font and size
- Adjust columns as needed

New Terms: (Terms are bolded in the steps in the assignment below)

- Apply the AND function (Step 12, page 2)
- Apply the IF function (Step 13, page 2)

Narrative:

It is one thing to understand a formula and quite another to apply that formula. This exercise allows you to practice the If and AND

functions and to view the results. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 2.)

East End Building Materials Assignment

1. Open the spreadsheet called East End Building Materials and save it as East End.

2. Center the title (East End Building Materials) over the entire table and change the font to 14 Aharoni,

3. Center the sub title (Bonus Pay Summary) over the entire table and change the font to 12 pt Aharoni.

4. Insert an extra row below the sub title but above the column headings. In that row, type your name and center it. Choose the font and size you would like

5. Select the Title, Sub Title, Your Name and the column headings (entire rows of each) and shade them in light gray.

6. With that section still highlighted, place a border underneath the column headings.

7. Select the column headings and bold them.

8. Adjust the columns as necessary

9. Adjust the Performance Rating column heading using the Wrap Text so the heading is on two lines.

10. Adjust the Bonus Amount heading to display two lines

11. Select the numbers in the Performance Rating column and center those numbers within the column.

12. In Cell E6 insert an AND formula that will determine if the employee is eligible for a bonus. An employee is eligible if Sales exceeded Quota AND if the performance rating was greater than 6. (Hint: The end result should only be three TRUE's once the formula is pulled down.)

13. To figure the bonus amount for those employees who ARE eligible, use all three boxes of IF formula. In the first box, response in the Eligibility should be equal True (no quotation marks needed).

If true, then the second box should be a calculation of two percent of the sales amount. If the statement is FALSE, (third box) the bonus amount is 0. (Hint: Only those employees with True in the Eligible column should have Bonus Amount, the rest are 0.)

14. Save this worksheet as East End.
15. Submit this worksheet in the East End Submit box.

Check the rubric below to be sure you have completed all the tasks.

Description	Possible Points
Centered Title and Subtitle	1
Added a row and inserted your name	1
Made the font changes	2
Bolded column headings	1
Used Wrap Text for Performance Rating and Bonus Amount	2
Centered Performance Rating numbers	1
Formula for "Eligible" is correct	6
Formula for" Bonus Amount" is correct	6
Total Possible Points	20

WEEK 5

21. Week 5 Overview

This is the last week of instruction. Three different topics are introduced, with only two assignments due.

The first two topics are required for the exercised called Student Gradebook Assignment. They are 3-D referencing and VLOOKUP. The 3D referencing allows you to add up figures in multiple sheets and place the results on a Summary Sheet. The VLOOKUP allows you to locate specific values in a table. The computer will read across the row and finds the value in a column you specify. Be sure to do the practice parts before completing the assignment. There are new formulas for both topics.

The last topic is creating a Subtotal Sheet. Steps are outlined for creating Sheet Names, changing a spreadsheet into a table and then into a range as well as using a dialog box to create Subtotals and Grand Totals automatically.

Learning Outcomes: The student will:

- Understand the concept of 3-D referencing
- Understand the VLOOKUP function.
- Apply the 3D Referencing and VLOOKUP functions
- Understand the difference between IF and the AND functions
- Apply the IF and the AND functions
- Understand the use subtotals
- Apply the subtotal feature to actual data.

Tasks:

1. 3D Referencing Sheet Information and Practice. This information

explains the formula used for 3D Referencing and gives a short practice exercise to try

2. VLOOKUP Information. Another new formula that allows creates a way to look up information and deliver that information back to a cell reference point.

3. Student Gradebook Assignment. This assignment reinforces both the 3D Referencing and the VLOOKUP features. (20 points)

4. Subtotals Information and Practice. This information directs you step by step to create a subtotal sheet. There is a practice to complete before doing the assignment.

5. Employees Assignment. Follow the steps and complete the Subtotal. Sheet. (20 Points)

Submitting your Work:

1. When completing each task, make sure to save your document to the desktop or your personal storage unit (memory stick, jump drive, etc.)

2. Click on the underlined word(s) at the top of each assignment. An "email-like" format appears with the number of points possible in the upper left corner.

3. Find a box "Browse My Computer." Click on that and find your saved document.

4. Click Submit.

5. For additional help, please see the EXTRA HELP folder in the CONTENT area called "How to Submit Your Work.
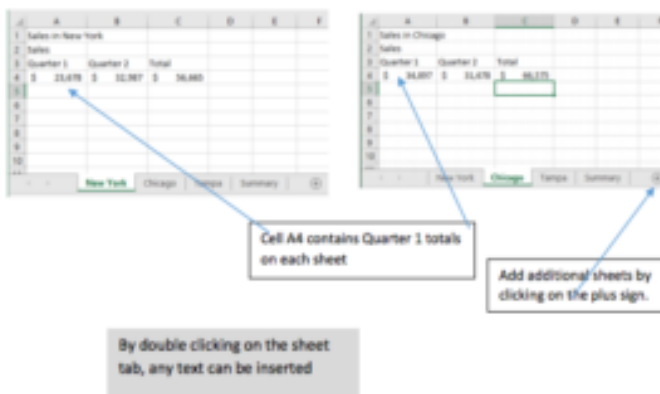
22. 3-D Reference Sheet – Information and Practice

What are sheets?

Sheets are separate, individual spreadsheets. To access sheets, look at the bottom of the screen of a spreadsheet and notice the tab called "Sheets." A "workbook" is comprised of any number of sheets. Sheets can be added by clicking the plus sign next to the tab "sheets."

Sheet tabs can be changed from the word "sheets" to any label. To change a name on a sheet, double click the sheet tab and insert a new label name.

In the example below, a company has business in several cities. Each city has a separate sheet in a workbook. The sheets have been renamed New York, Chicago, Tampa and Summary. Each sheet has the same format, that is each sheet is set up with the same cell references. Notice that Quarter 1 sales for New York is in cell A4; Quarter 1 sales for Chicago and Tampa are also in A4 on that sheet.


Cell A4 contains Quarter 1 totals on each sheet

Add additional sheets by clicking on the plus sign.

By double clicking on the sheet tab, any text can be inserted

What is 3-D referencing?

The 3-D referencing is used to summarize specific information on each of the sheets and place the total on a separate summary page.

For example, in the illustration above, the total of Quarter 1 in cell A4 for each of the cities can be quickly summarized and placed on the Summary sheet in a different position such as B3.

It would look like this:

Result in B3 on the summary sheet came from totals in cell A4 from three different sheets.
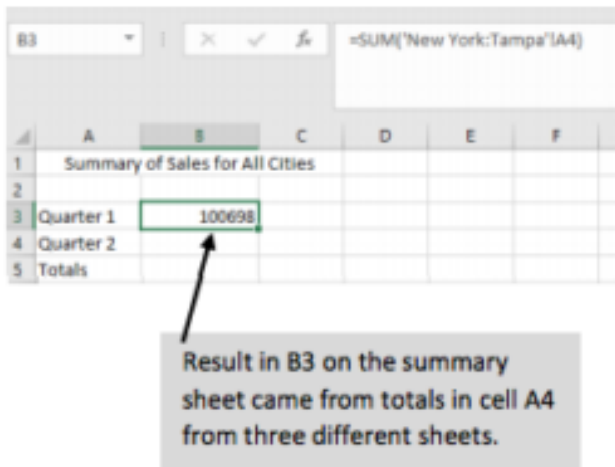
How do I develop the formula?

When summarizing data, you are actually adding. The SUM formula works well for a 3-D referencing exercise. In a regular worksheet when one adds multiply columns, a range is selected. When AutoSum is used, that automatically references a range of numbers. If AutoSum is not used, a range of numbers can be selected by highlighting the column or row to add. In both the AutoSum feature or using the SUM feature, the formula shows a colon between the

first and the last cell reference. For example, =SUM(B4:B10) would add up rows 4 through 10 in column B.

The part that is different is 3-D referencing is incorporating the different sheets. To get the Quarter 1 Sales for three different cities-New York, Chicago, and Tampa – (in the example above), start by placing your mouse cursor in the cell of the Summary sheet where you want the result to show. In the example above, I put my mouse cursor in B3. It doesn't matter what cell, but you do have to start on the Summary Sheet. Then follow the next steps.

1. Type the equal sign followed by the word SUM and an open parenthesis.

2. Click the first city sheet (New York). Hold down the SHIFT key and click the last city (Tampa). In the formula, you will notice that the colon was placed automatically between New York and Tampa which would also include Chicago.

3. Next click the cell reference on the New York, or first sheet, that contains the amount you want to total. In this case, click on A4.

4. Enter.

5. The total (100698) appears on the Summary Sheet in cell B3 where you started the formula.

6. The formula displays in the formula bar above the worksheet.

The formula is =SUM('New York:Tampa'!A4)

7. Notice the exclamation point before the cell reference. This indicates a 3-D Reference. The apostrophes automatically appear when a 3-D reference is used.

PRACTICE EXERCISE: (This isn't graded, but you might find it useful for understanding 3-D Referencing.)

1. Create a spreadsheet using the information below. Merge and Center the title.

	A	B	C	D	E
1		Revenue Projections			
2		Quarter 1	Quarter 2	Quarter 3	Quarter 4
3	Ford				
3	Kia				
5	Subaru				
6	Totals				

2. At the bottom of the screen, double-click on the tab "Sheet 1" and type Alaska. This spread sheet will be used for Alaska. Please see illustration below Step 5.

3. Next click the circled plus sign at the very bottom of the window next to the tab "Sheet" and create a "Sheet 2". Name this sheet Arkansas.

4. Once again click the plus sign at the bottom for "Sheet 3" and name that sheet Alabama.

5. Finally click the plus sign again for "Sheet 4" and name it Summary.
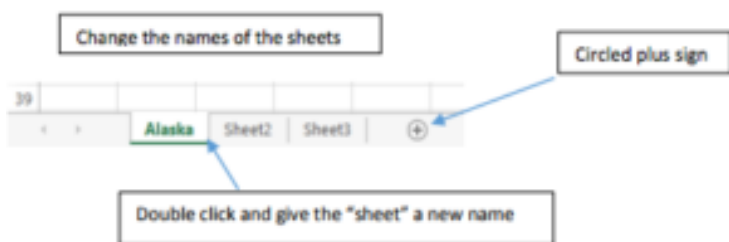
6. Click on the Alaska tab.

7. On the sheet for Alaska, insert a SUM formula to add the total for Quarter 1. Although there are no amounts at this time, you can insert a formula which will compute totals after you put in the figures. A zero will show for now indicating there is a formula in that cell.

8. Using AutoFill, pull the formula from B6 to E6.

9. After the formula has been inserted, select A1 to E6. Release the mouse then right click on the selected columns and rows. From the short cut menu that displays, click COPY. (You can also select A1 to E6 and click on COPY from the HOME tab, Clipboard Group.)

10. Click Arkansas tab then click in cell A1.

11. Click paste (either from the short cut menu or from the ribbon). An exact duplicate of information on the Alaska sheet including a SUM formula is now on the Arkansas sheet.

12. Follow steps 7 to Step 9 to paste the formatted table to the Alabama sheet.

13. Next, insert different amounts in the four Quarters for the three different car types on ALL three sheets. As you put the amounts in, notice that you are also getting a total for the columns.

14. Next click on the Summary sheet tab.

15. In cell A3 on the Summary sheet, type "Ford." In cell A4 type "Kia." In cell A5 type "Subaru." In cell A6 type "Total." (See the illustration below.)

16. In cell A1 give this table a title: "Summary 4th Quarter Total Sales."

17. Use the merge and center feature to center the title over the table between columns A to D.

18. In cell B 2, type the heading "Quarter 4".

19. Create a 3-D Reference formula by clicking in cell B3. Start with an equal sign followed by the word SUM. (=SUM). See the instructions for 3D formulas on the 3-D Reference Sheets Information Step 1.

20. Follow Steps 2-6 to create a 3D Referencing formula.

21. The formula and summary sheet should look like this one: (although the total will be different depending on the amounts inputted for each city

B3	▾	⋮	✕	✓	*fx*	=SUM(Alaska:Alabama!E3)		

	A	B	C	D	E	F	G
1	Summary 4th Quarter Total Sales						
2		Quarter 4					
3	Ford	11539					
4	Kia						
5	Subaru						
6	Total						
7							
8							

16. Once the formula in B3 on the SUMMARY sheet is inserted, use the AutoFill to pulled down the 3D Referencing formula from B3 to B6. Notice that the formula cell reference changed for each city but the rest of the formula stated the same. You have completed a 3D Referencing exercise!

23. VLOOKUP Information

VLOOKUP is one of the lookup and reference functions, when you need to find things in a table or a range by row. For example, use VLOOKUP to find a price of an automotive part or the letter grade of a final average.

VLOOKUP location: Click **FORMULA** tab, **Lookup and Reference** icon in the **Function Library** group. Find VLOOKUP option at the bottom of the list.

VLOOKUP argument box: When you click on VLOOKUP, an argument box appears like the one below:

Taking one box at a time:

Lookup Value: The value you want to look up.

Table array. The column number in the range that contains the return value.

Col Index num (meaning Column Index Number)

Range Lookup: We do not need to use this box

EXERCISE (not graded but helpful to you if you work your way through it.)

• Prepare a simple spreadsheet like the one below.

24. Student Gradebook Assignment

Student Learning Outcomes:

1. Create 3D formulas across multiple worksheets
   2. Use the VLOOKUP function
   3. Use the IF function

Preparation: (Review these terms)

- 3-D Reference Information
- VLOOKUP Information
- IF function Information

New Terms:

- 3-D Referencing used in Step 5 (reference the information sheet) ? Calculate grade earned (Step- 9, page 2)
- VLOOKUP (Step 11, page 2)
- VLOOKUP argument box (Step 12, page 2)

Narrative:

This assignment has many steps. All cells that you will work in must

have formulas. Hopefully you will give yourself time to complete this exercise. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON MAKE 3)

Grade Book Assignment

1. Download and open the 'StudentGradebook.xlsx' file.

2. In cell B1 replace "CIS 101 Intro. to Computers" with the title of your class.

3. In cell B2 replace "Student's Name Here" with your actual name.

4. Become familiar with the workbook by reviewing the Final Grade, Lab Assignments, and Tests worksheets names found at the bottom of the screen.

5. Create a 3-D Reference in cell A6 in the Final Grade Sheet. You will be referencing the Lab Assignment sheet and choosing the total points earned. (Hint: See 3-D Referencing Instruction Sheet and follow the example.]

6. Repeat the steps above for a 3-D Reference in cell B6 in the Final Grade Sheet. You will be referencing the Test Sheet and the total points earned.

7. In cell C6 use the SUM function to add cells A6 and B6 together.

8. In cell C8 create a formula to calculate the Total Points Possible. (Hint: you are creating another formula that uses 3D references. You need to add the Total Points Possible in cell C2 on the Lab Assignments worksheet to the Total Points Possible in cell C2 in the Tests worksheet. Just use the plus sign between the formula of the sheets.)

9. In D6 create a formula to calculate the % earned. This formula requires the total points earned to be divided by the total points possible for the Lab Assignments and Test sheets.

10. In cell E6 create a formula to look up the letter grade in the Grade Scale table. You will be referencing the table without the title from A11 to B16.

11. Use the VLOOKUP function. (Hint: Use the VLOOKUP instruction sheet. Follow the example on the sheet to make sure you know how to do this formula.)

12. In cell C9 create a formula using the IF function to determine

whether the student is passing the class with 70% or better. If the student is passing, the cell should display "Yes". If the student is not passing, then the cell should display "No". (Hints: Use the argument box for the IF Function. For more help with this, be sure to find IF Function Instructions in the Extra Help Folder and follow the example.)

13. Print the document if your instructor requires a hard copy or submit it online.

14. Your finished spreadsheet should look like the worksheet below. Please be sure to use formulas based upon the above instructions. Your instructor will check your formulas and take points off if you just type in the results and not a formula.

15. Save your work and submit to instructor

Completed Worksheet Assignment

◢	A	B	C	D	E	F
1	**Class:**	CIS 101 Intro. to Computers				
2	**Name:**	Student's Name Here				
3						
4			*What is my grade?*			
5	**Lab Assignments**	**Tests**	**Total Points Earned**	**% Earned**	**Letter Grade**	
6	162	166	328	86.32%	B	
7						
8	**Total Points Possible:**		380			
9	**Passing (70%)?:**		Yes			
10						
11	**Grade Scale**					
12	0%	F				
13	60%	D				
14	70%	C				
15	80%	B				
16	90%	A				
17						

◄ ◄ ► ► | **Final Grade** | Lab Assignments | Tests | ᵗ⅃

Check the rubric below to be sure you have completed all the tasks.

Description	Points Possible
Heading done correctly with course and student name	2
Used correct 3D references in formulas in A6 and B6	4
Used correct 3D reference in C10	2
Use correct formula in D6	2
Created the VLOOKUP formula correctly.	5
Created the IF formula correctly.	5
Total:	20

25. Subtotals Information and Practice

A large range of data can be summarized according to criteria supplied. In a large range of data, groups can be established within that data. For example, if the spreadsheet had data several cities each of the cities could be subtotaled for comparison with each other.

To accomplish subtotaling, the spreadsheet data must be first converted to a table then converted to a range. The next step is to use the Subtotal Next button in the Outline group and complete Subtotal Dialog Box.

The steps are:

A. Start with a spreadsheet with data that needs to be sorted. In this example, the months are sorted by the Type and Category are not.

|	A	B	C	D
1	Month	Type	Category	Sale
2	April	Online	New	$ 94,217
3	April	Online	Used	$ 29,754
4	April	Online	Lease	$ 15,847
5	April	Phone	New	$ 54,021
6	April	Phone	Used	$ 32,541
7	April	Phone	Lease	$ 14,322
8	April	Store	New	$ 50,257
9	April	Store	Used	$ 29,874
10	April	Store	Lease	$ 32,004
11	May	Online	New	$ 48,557
12	May	Online	Used	$ 22,414
13	May	Online	Lease	$ 4,217
14	May	Phone	New	$ 2,574

B. Create a new sheet tab called Subtotal

C. Copy the original spreadsheet into the Subtotal tab created in #2.

D. Remaining in the Subtotal tab, select the entire table.

E. Click INSERT tab, and look for the Tables group. Click on the Table icon

F. A Create Table dialog box appears.
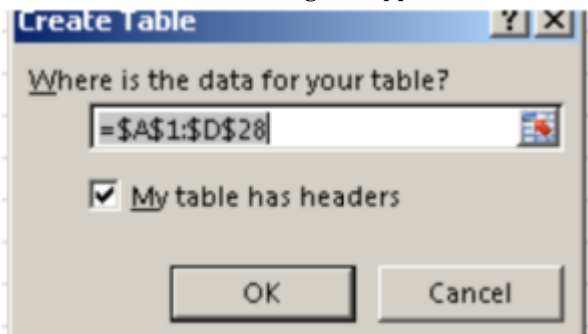
G. Notice the range is recorded using absolute references.

H. Be sure that there is a checkmark in front of "My table has headers.

I. Click Ok.

J. The data is now in a table and usually the rows are changed to a variegated color.

K. Notice, also, that a new tool bar has appeared at the top of screen called Table Tools, with a tab for DESIGN.

L. Look for the Tools group, and click on Convert To Range.

Table Tools Design button
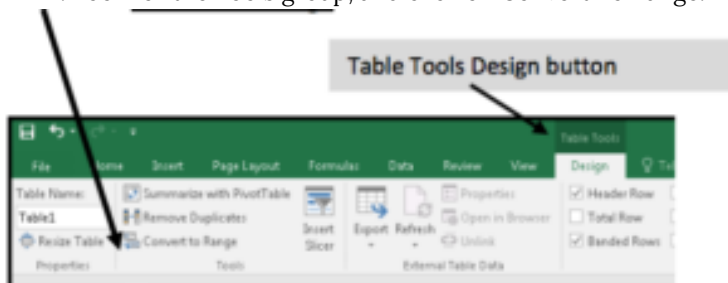
M. A question comes up whether to convert the table to a normal range. Answer YES.

N. Click in any cell in the table.

O. Click the DATA tab. Then look for the Outline group and choose Subtotal.

P. A dialog box appears that looks like this:
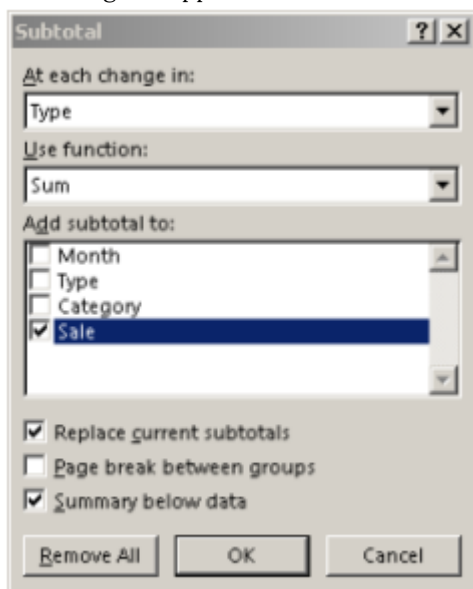
Q. At the change in: there is an arrow by which you can chose any heading.

R. Use function: SUM , COUNT, AVE, MAX, MIN are some of the choices

S. Add subtotal to: Click where the subtotal should appear.

T. Be sure that the other two items are checked as shown.

U. Click OK.

V. In the Practice Exercise, the values to use will be given to you.

W. The result appears as follows. (The entire worksheet is not shown.) Notice the subtotals are divided by TYPE, and the Sales are totaled for that type.

Month	Type	Category	Sale
May	Store	New	$ 32,557
May	Store	Used	$ 17,258
May	Store	Lease	$ 5,214
	Store Total		$ 55,029
June	Online	New	$ 40,335
June	Online	Used	$ 27,554
June	Online	Lease	$ 17,874
	Online Total		$ 85,763
June	Phone	New	$ 42,335
June	Phone	Used	$ 21,554
June	Phone	Lease	$ 7,984
	Phone Total		$ 71,873
June	Store	New	$ 47,625
June	Store	Used	$ 26,557
June	Store	Lease	$ 4,324
	Store Total		$ 78,506
	Grand Total		$741,408

Practice Exercise : Sales Rep

1. Open the file called Sales Rep and save it to your Desktop or storage device.

2. Create a new Sheet called Subtotal. Copy the original spreadsheet and paste it to the new Subtotal sheet. (Follow instructions for Letter B-D in the Information and Practice section page 1).

3. Continue to follow Letters E- O on Pages 1-2.

4. Starting with Letter P, complete the information for the Subtotal dialog box as follow:

- At each change in: choose .
- Use function: choose
- Add subtotal to: choose
- Make sure the other two boxes are checked.
- Click OK

5. The result should appear as follows:

The total count appears at the bottom of the sheet.

26. Employees Assignment

The purpose of this assignment is to

1. Understand how to create a table from a spreadsheet
   2. Understand how to Convert the table to a Range.
   3. Understand the how to insert subtotals in the table.

Preparation: (Review these terms)

- Insert a Header
- Inserting rows

New Terms:

- Create a Subtotal Sheet (Step7, Page 1. (Reference the Subtotal Information Sheet)

Narrative:

Learning to divide a table in to subtotals helps display a large range of data into manageable summaries. Following the steps in the Subtotal Information pages and doing the practice exercise, will help you quickly create this last assignment. (THIS ASSIGNMENT IS WORTH 20 POINTS. THE RUBRIC IS ON PAGE 2.)

Employees Assignment

1. Open the file called Employees and save it to your storage device using the same name.

2. Rename Sheet 1 as Employees.

3. In Cell A1 type the label Department; in B1 type the label Job Title; in C1 type Last Name; in D1 type First Name; in E1 type Extension.

4. Center and bold all the labels in Step 3.

5. Center the data in Columns C, D and E.

6. Insert a Header with the following words on two lines in the center and your name on the right side:

<div align="center">College of Importance
Honored Employees</div>

7. Create a Subtotal Sheet following the steps to make anew sheet, copy and paste information to this sheet, create a table, and Convert to Range. These are Steps B – M on the Subtotal Information sheet. Adjust the columns if necessary.

8. Click in any cell in the range table. Click the DATA tab and choose Subtotals from the Outline Group.

9. In the Subtotal Dialog box complete the information as follows:

- At each change in: Department
- Use function: COUNT
- Add subtotals to: Job Title

10. Make sure Replace current Subtotals and Summary below data are checked.

11. Compare your worksheet to the Completed Subtotal Sheet below.

12. Save this document again as Employees.

13. Submit the document through Blackboard or print if instructor requests it

Completed Subtotal Sheet

	A	B	C	D	E
1	**Department**	**Job Title**	**Last Name**	**First Name**	**Extension**
2	Accounting	Accountant	Nelson	Richard	423
3	Accounting	Accountant	Parks	Linda	424
4	Accounting	Accountant	Hage	Steven	426
5	**Accounting Count**	3			
6	Administration	Secretary	Boxer	Judy	236
7	Administration	Secretary	Wayland	Joe	412
8	Administration	Secretary	Miller	Lillie	267
9	**Administration Cour**	3			
10	Customer Service	Service Rep	Baker	Susan	351
11	Customer Service	Service Rep	Nicholas	Vincent	350
12	Customer Service	Service Rep	Thomas	Carol	352
13	**Customer Service Co**	3			
14	Payroll	Payroll Clerk	Poole	Karen	337
15	Payroll	Payroll Clerk	Homer	George	338
16	Payroll	Payroll Clerk	Jones	Veronica	339
17	**Payroll Count**	3			
18	**Grand Count**	12			
19					

Check the rubric below to be sure you have completed all tasks.

Description	Points Possible
Inserted column headings	2
Bolded column headings	1
Centered columns C, D, E	2
Created a Header and inserted the information requested including your name	3
Created the Subtotal Sheet correctly (looks like the one called "Completed Subtotal Sheet	12
Total Possible Points	**20**