Kennesaw State University

University Information Technology Services

Microsoft Office

Excel 2016 for Windows

Advanced Functions & Modifying Spreadsheets

University Information Technology Services

Learning Technologies, Training & Audiovisual Outreach

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University Information Technology Services

Microsoft Office: Excel 2016 for Windows
Advanced Functions & Modify Spreadsheets

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Introduction

The Excel 2016 Advanced Functions and Modifying Spreadsheets booklet provides the user with the necessary skills to create more detailed and extensive spreadsheets, and enhance their visual impact with charts and other graphic objects.

Learning Objectives

- Using the IF Function.
- Using the PMT Function.
- Working with Frequencies.
- Inserting Headers and Footers.
- Creating Hyperlinks.
- Use drawing objects to add visual appeal to spreadsheets.
- Insert screenshots into the spreadsheet.

The IF Function

The **IF** function is a useful tool that allows you to see if a certain condition in a spreadsheet is *true* or *false*. If a condition is *true*, the function will carry out one action. If the condition is *false*, it will carry out a different function. (e.g. If students have a test score above 75, then they will be marked as pass).

The syntax for the IF function is as follows: =IF (logical_test, value_if_true, value_if_false)

- **Logical_test** - a value or expression that is tested to see if it is true or false.
- **Value_if_true** - the value that is displayed if the logical_test is true.
- **Value_if_false** - the value that is displayed if the logical_test is false

The following example explains how to use the IF function. Cells *A3* through *A12* contain exam grades. We will use the IF function to create a formula in cells *B3* through *B12* that will indicate if the corresponding grade is a *Pass* or a *Fail*.

	A	B
1	**Exam Grades**	
2	**Grade**	**Pass or Fail**
3	90	
4	83	
5	78	
6	75	
7	54	
8	48	
9	84	
10	90	
11	95	
12	61	

Figure 1 - Grades Example

1. Click on **cell B3**.
2. In the *Formula Bar,* click on **Insert Function**.

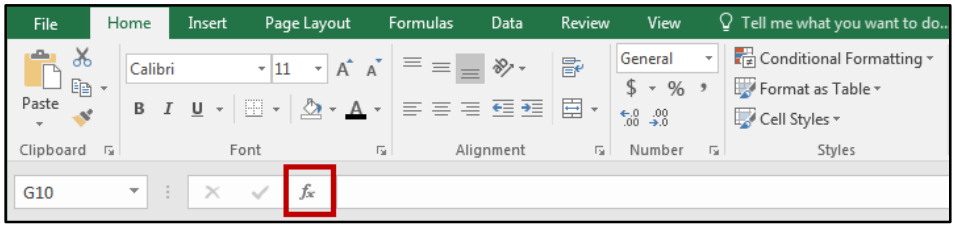


Figure 2 - Insert Function

3. The *Insert Function* window appears. In the *Search for a Function* field, type **IF.**

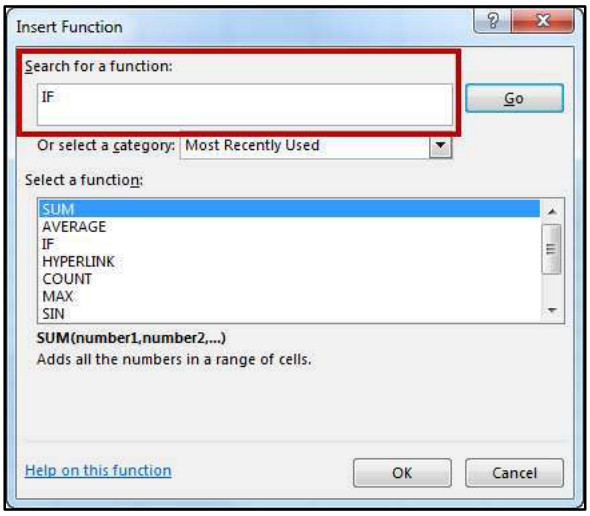


Figure 3 - Search for Function

4. Click **Go**.

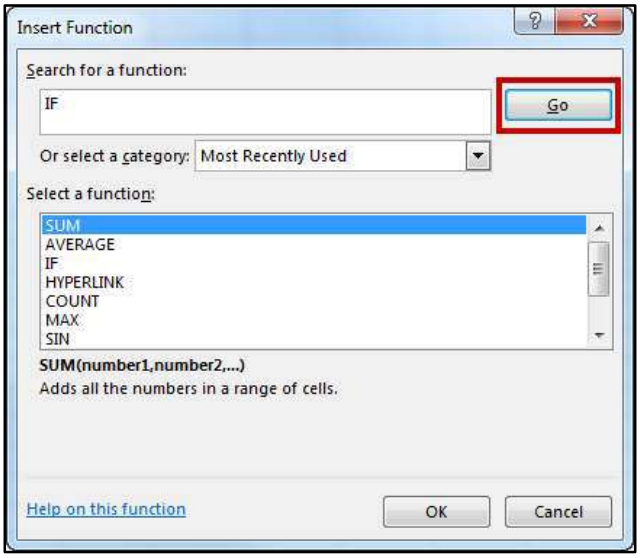


Figure 4 - Click Go

5. The IF function will appear in the *Select a Function* results. Click the **IF** function.

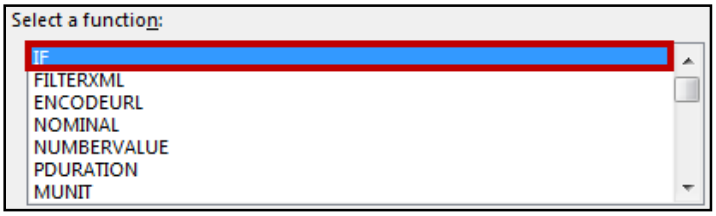


Figure 5 - Select a Function Field

6. Click **OK**.

7. The *Function Arguments* window will open. In the *Logical_test* field, type **A3>=70** (See Figure 6).
8. In the *Value_if_true* field, type **"Pass"** (See Figure 6).
9. In the *Value_if_false* field, type **"Fail"** (See Figure 6).
10. Click **OK** (See Figure 6)**.**

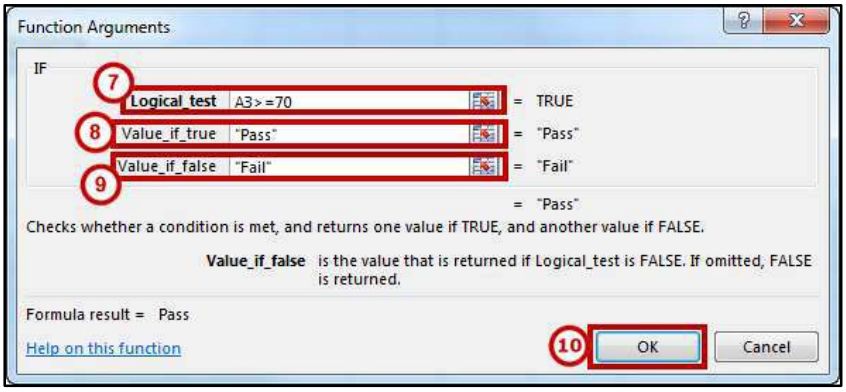


Figure 6 - Complete the IF Function Argument

11. The word *Pass* should now appear in cell *B3*.

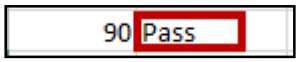


Figure 7 - Logical Test

12. Copy the formula in cell B3 to cells B4 through B12 using *Excel's* autofill feature.

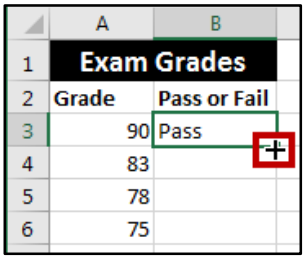


Figure 8 – Use AutoFill to Copy the Function

Note: To activate *AutoFill*, hover the mouse in the **lower-right corner** of a cell until it turns into a black crosshair. Then left-click and hold as you **drag your mouse** down to select the cells to copy the formula into. When you release, *Excel* will copy the formula into the selected cells.

Note: You can also type the formula out in the *Formula Bar* by starting with an equals sign (=), then typing out the function, followed by your formula [e.g. =IF(A3>=70,"Pass","Fail")].

The PMT Function

The Excel PMT (payment) function is an incredibly easy tool to use when calculating financial data. Assuming that payments are made consistently (repayment frequency and amount remaining constant) at a constant Interest rate, we can use the PMT function to calculate monthly repayments of loans.

The PMT function uses the following syntax: **=PMT(rate,nper,pv,[fv],[type])**

- **Rate** - the Interest rate per period.
- **Nper** - the number of periods.
- **Pv** - the present value or the amount the future payments are worth presently.
- **Fv** (optional) - The future value or cash balance that you want after the last payment is made.
- **Type** (optional)- when you wish to make the payments. The value 0 is for payments made at the end of the period. A value of 1 is for payments made at the beginning of the period. If you omit the *type* argument in the function, Excel assumes that the payment is to be made at the end of the period.

The following explains how to use the PMT Function to calculate the monthly payments of a 5-year loan worth $100,000, with an interest rate of 12%.

Loan Amount	Loan Years	Interest Rate	Monthly Payments
$100,000.00	5	12%	

Figure 9 - Loan Payment Table

1. In the *Formula Bar,* click on the **Insert Function** button.

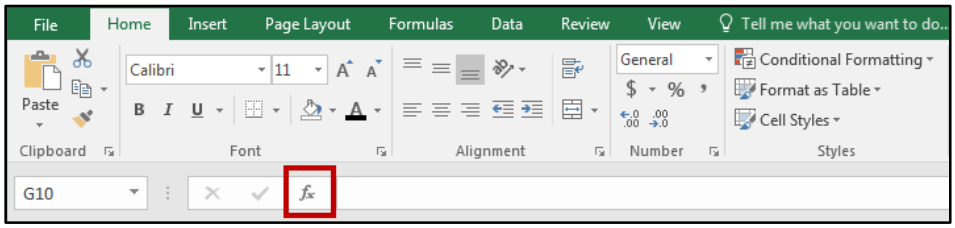


Figure 10 - Insert Function

2. In the *Search for a function* field, type **PMT**.

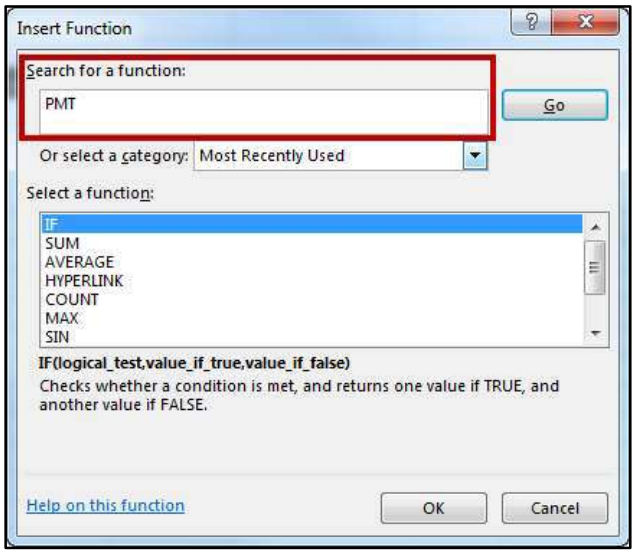


Figure 11 - Search for a Function

3. Click **Go.**

Figure 12 - Click Go

4. The PMT function will appear in the *Select a Function* results. Click the **PMT** function.

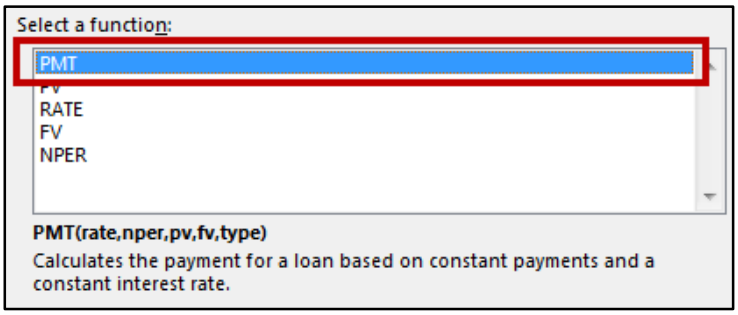


Figure 13 - Select a Function

5. Click **OK.**

6. The *Function Arguments* window will open.

7. In the *Rate* field, we are looking for the interest rate which in this example is 12%. We will take this interest rate of 12% and divide it by the number 12 (12 months in a year). To have excel calculate this value for us, we will type in .**12/12** (See Figure 14).

8. In the *Nper* field, we are looking for the number of payments during the lifetime of this loan of 5 years. In the *Nper* field, type **5*12** (where 12 is the number of months in the year) (See Figure 14).

9. In the *Pv* field (Present Value), enter the present value of the loan ($100,000) (See Figure 14).
10. Click **OK** (See Figure 14)**.**

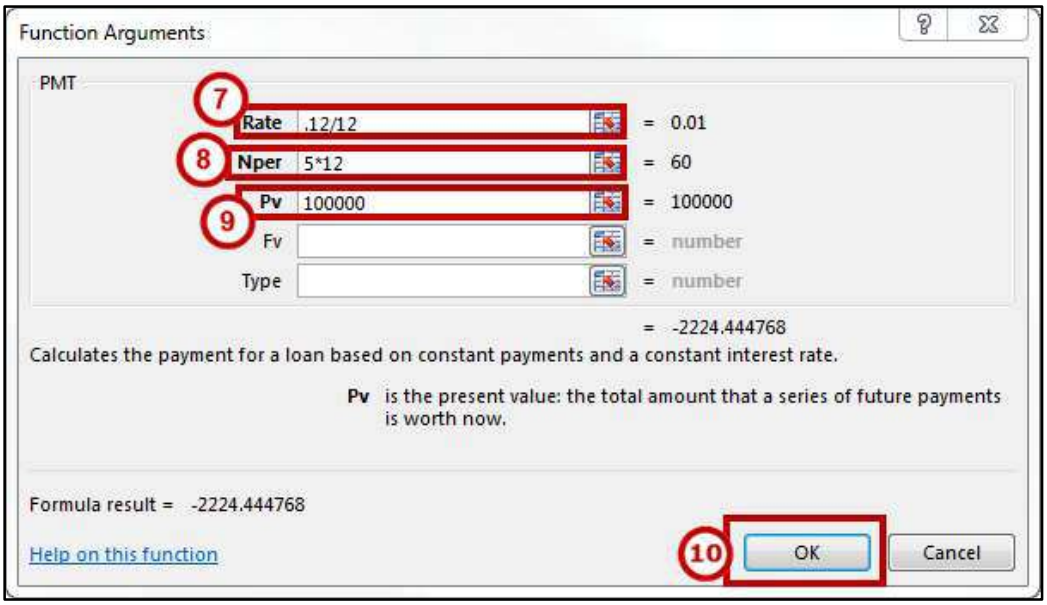


Figure 14 - Complete the PMT Function Argument

11. The **Monthly Payments** will appear in the spreadsheet.

Loan Amount	Loan Years	Interest Rate	Monthly Payments
$100,000.00	5	12%	($2,224.44)

Figure 15 - Monthly Payments

Headers and Footers:

Headers and Footers are lines of information that will appear at the top or bottom (respectively) of every page. The following explains how to add Headers and Footers into your *Excel* workbook.

1. On the *View* tab, select **Page Layout**.

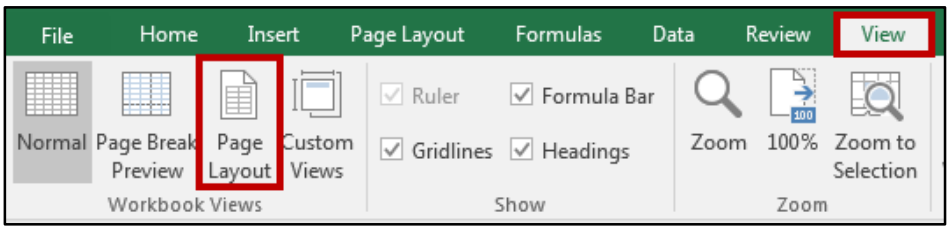


Figure 16 - Page Layout

2. The *Page Layout* view will display. Click in the area marked **Add header.**

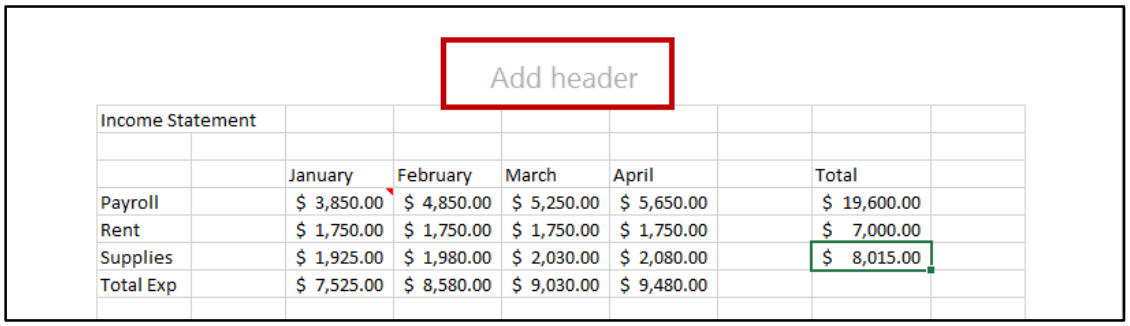


Figure 17 - Add Header

3. The *header* will be selected and show three sections. Click on the **left, center, or right section** to select it.

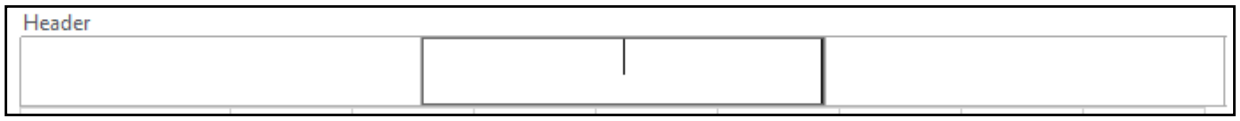


Figure 18 - Select a Section

4. Type your **text** to enter the header.

Figure 19 - Enter Your Text

5. To format the text, **select the text** and select your preferred formatting options from the *Home* tab.

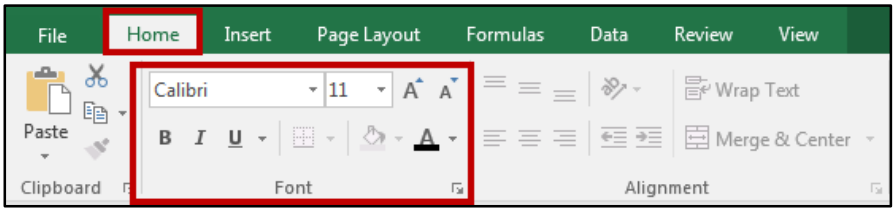


Figure 20 - Editing Font

6. To leave *Header/Footer* editing and return to your document, click a **cell** within the spreadsheet.

Saving the Entire Workbook as an HTML File

You can save your Excel workbooks, spreadsheets, and graphs as HTML files (Hypertext Markup Language) so that they can be viewed on the Internet. The following instructions explain how to save the entire work book as an HTML file:

1. On the *Ribbon,* click the **File** tab.
2. In the *Backstage* view, Click **Save As**.

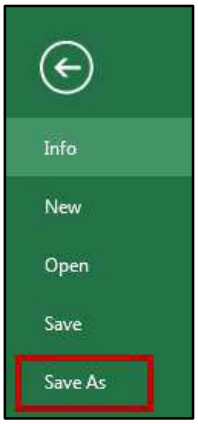


Figure 21 - Click Save As

3. The *Save As* tab will open. Click **Browse** to select a location on your computer.

Figure 22 - Click Browse

4. The *Save As* window will open. Navigate to the location on your computer where you want to save your document.

5. In the *File name* field, enter a **file name** (See Figure 23).
6. From the *Save as type* drop-down menu, select **Web Page** (See Figure 23)**.**
7. Click **Save** (See Figure 23).

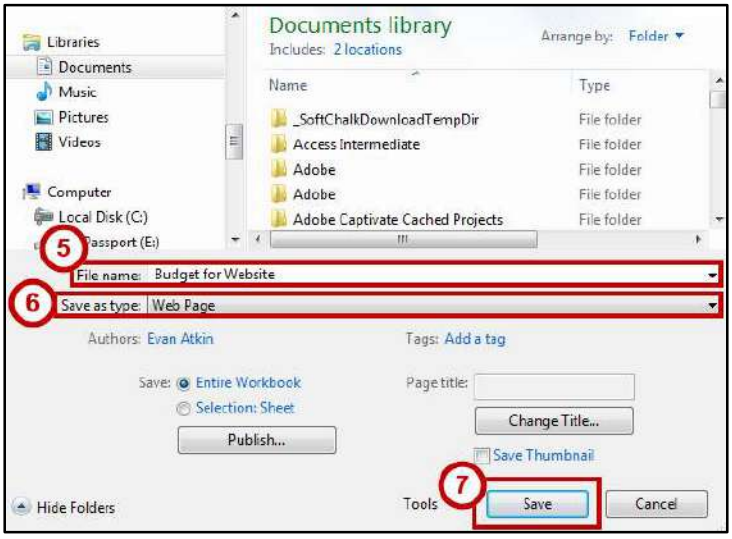


Figure 23 - Save as type

8. If you receive a message indicating that some features might be lost if saved as a Web Page, click **yes** to keep using the Web Page format.

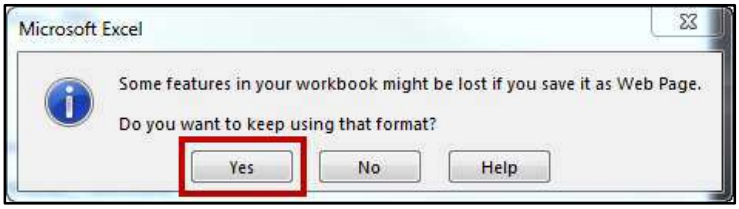


Figure 24 - Use Web Page Format

Note: You can also save the currently selected sheet in your workbook as an HTML file by selecting **Selection: Sheet** from the *Save* options that appear after choosing Web Page from the *Save As Type*.

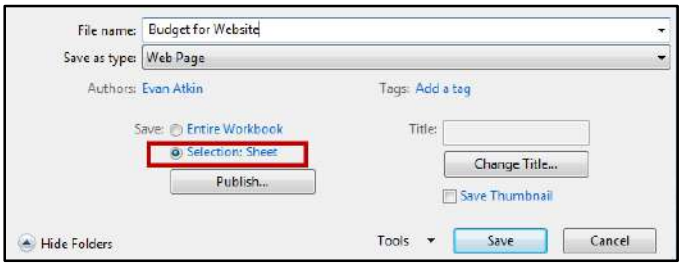


Figure 25 - Save Sheet as HTML

Inserting a Hyperlink

Hyperlinks are colored and underlined text or graphics that you click to go to a file or a website. The following explains how to create hyperlinks to go to files and websites.

Creating a hyperlink to an existing file

As an example, we will create a link to another spreadsheet within our workbook. The following explains how to create a hyperlink to another spreadsheet:

1. On *Sheet 1*, type **Go to Sheet 2** in an empty cell.
2. Select the **cell** containing the text.

Name	January	February	March	April		Total
Eastern Region	110	175	140	168		593
Western Region	200	210	240	288		938
Southern Region	300	180	295	354		1129
Northern Region	220	195	185	222		822
Total	830	760	860	1032		3482
Average	207.5	190	215	258		870.5
Go to Sheet 2						

Figure 26 - Go to Sheet 2

3. From the *Insert Tab*, click **Hyperlink.**

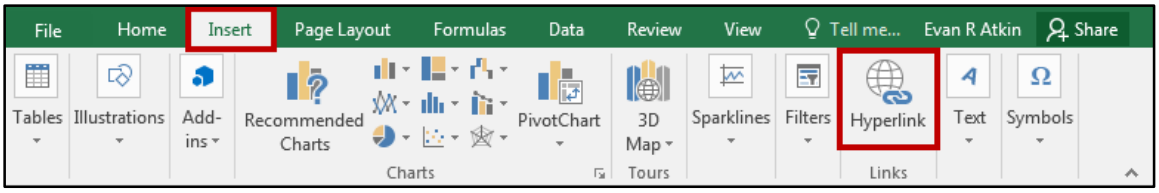


Figure 27 - Hyperlink

4. The *Insert Hyperlink* window will appear. Click **Place in this document**.

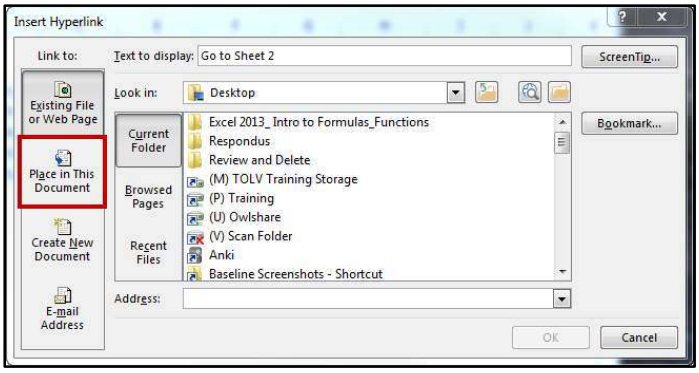


Figure 28 - Place in this document

5. In the list under *Cell Reference*, click **Sheet 2.**

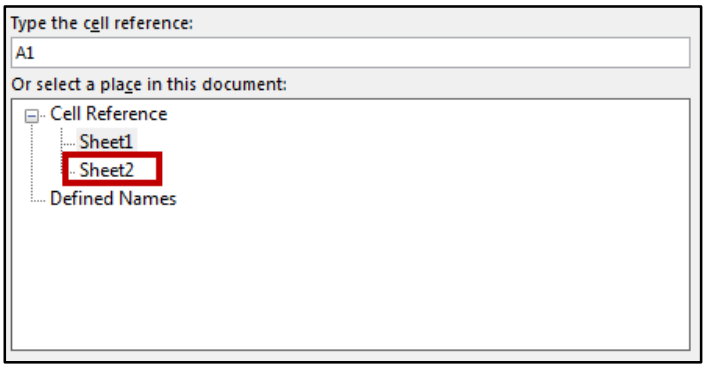
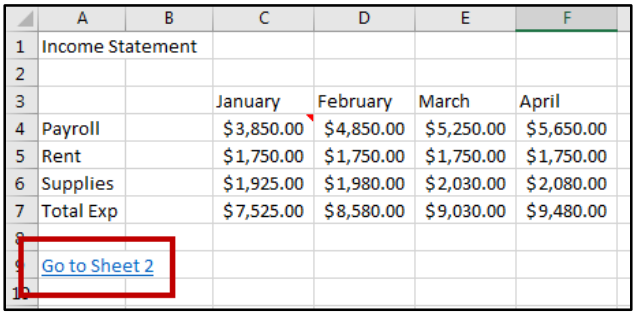


Figure 29 - Cell Reference

6. Click **OK.**
7. The hyperlink will be created and displayed in blue on your sheet.



	A	B	C	D	E	F
1	Income Statement					
2						
3			January	February	March	April
4	Payroll		$3,850.00	$4,850.00	$5,250.00	$5,650.00
5	Rent		$1,750.00	$1,750.00	$1,750.00	$1,750.00
6	Supplies		$1,925.00	$1,980.00	$2,030.00	$2,080.00
7	Total Exp		$7,525.00	$8,580.00	$9,030.00	$9,480.00
8						
9	Go to Sheet 2					
10						

Figure 30 - Hyperlink Created

Creating a hyperlink to a web page

The following explains how to create a hyperlink to a web page. As an example, we will create a hyperlink to the *Kennesaw State University* web site:

1. In a empty cell, type **Kennesaw State University.**
2. Select the **cell** containing the text.
3. From the *Insert Tab*, click **Hyperlink.**

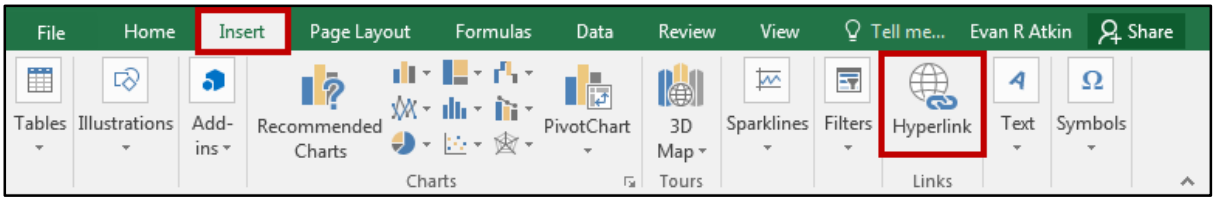


Figure 31 - Hyperlink

4. The *Insert Hyperlink* window appears. Under *Link to:*, click **Existing file or Web page**.

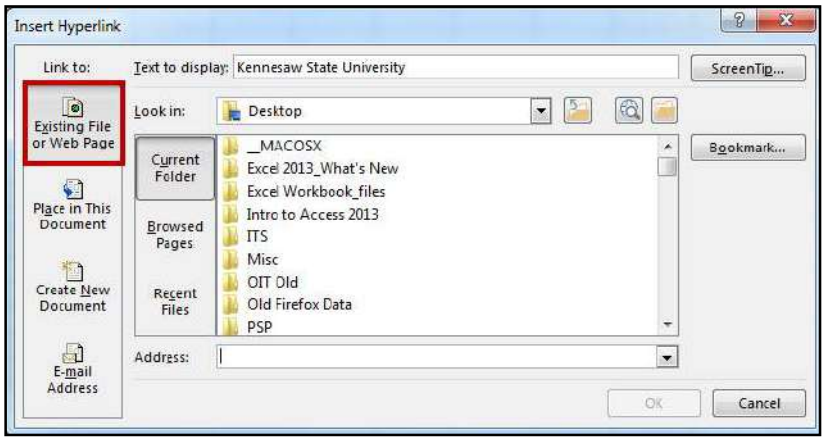


Figure 32 - Existing File or Web Page

5. In the *Address* field, enter the web address for Kennesaw State University **http://www.kennesaw.edu**.

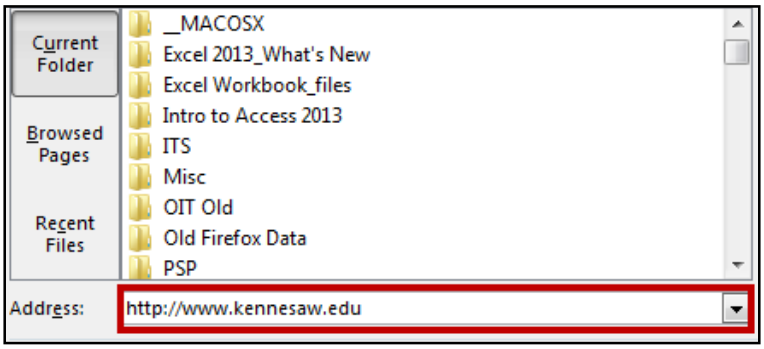


Figure 33 - Enter the Address

6. Click **OK.**
7. The hyperlink to the Kennesaw State University webpage will be created.

Note: When you hold the mouse pointer over the text *Kennesaw State University*, the arrow will change to a pointing finger. This indicates that the text is now a hyperlink. If you click on the hyperlinked text, a browser will open on the computer. The browser will open to the Kennesaw State University website.

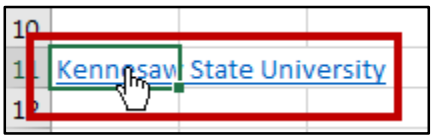


Figure 34 – Hyperlink

Using the Graphical Tools

You can use *Excel's* graphical tools to enhance the look of a spreadsheet or chart, or make it more understandable. The graphical tools allow you to add shapes (such as arrows and lines) and text boxes.

Drawing Shapes

The following section describes how to draw shapes using *Excel's* drawing tools:

1. On the *Insert* tab, click the **Shapes** tool.

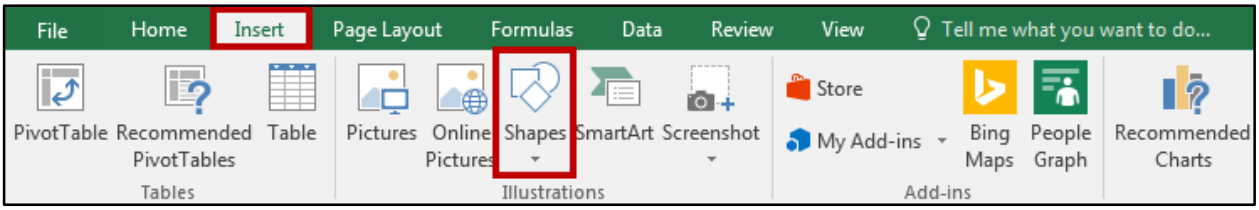


Figure 35 – Shapes

2. The *Shapes Gallery* will appear. Click the **shape** that you want to draw in the spreadsheet.

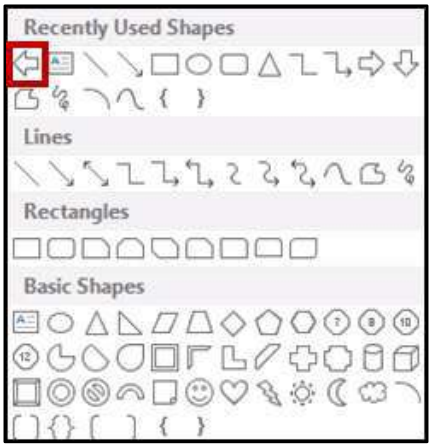


Figure 36 - Shapes Gallery

3. Your mouse cursor will change to a crosshair and you are ready to draw the shape. Hold left-click and drag in your **spreadsheet** where you want the shape to go.

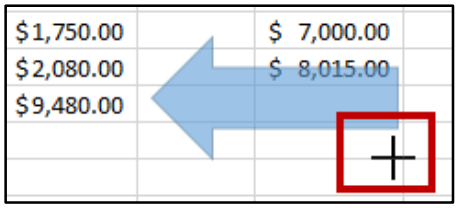


Figure 37 – Drawing a Shape

4. As your mouse moves over the spreadsheet, it will create the shape. Release the **left mouse button** when finished drawing your shape.

Modifying Shapes

Once a shape is placed on the spreadsheet, you can modify the shape in a number of ways, such as resizing, reshaping, adding fill and outline colors, adding shadows, and adding text.

Resizing Shapes

Shapes are resized in the same way as clip art and pictures. The following explains how to resize a shape:

1. Click on the **shape** that you wish to resize. *Sizing handles* will appear as circles around the shape.

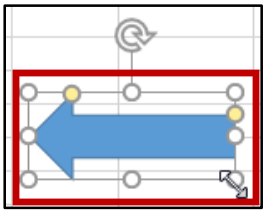


Figure 38 –Sizing Handles

2. Hover your mouse cursor over a **sizing handle**. The mouse pointer will change its appearance to a *double-arrow* to indicate which direction the shape will be resized.
3. Hold left-click and drag the **mouse** to increase and decrease the size of the shape.
4. Release the **mouse button** when you have adjusted the shape to a larger or smaller size.

Reshaping

Some shapes have yellow reshaping points that you can click and drag to alter a certain aspect of the shape, such as the arrow point in the arrow shape.

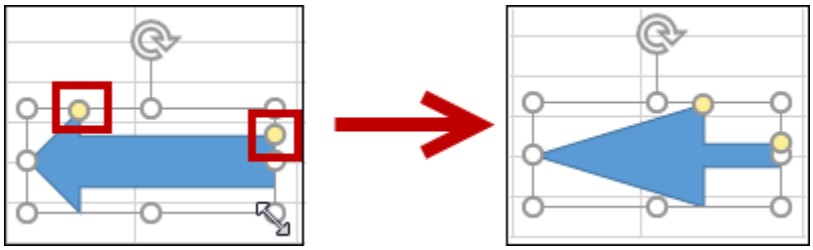


Figure 39 - Yellow Reshaping Points

Adding a Shape Style

Shape styles are presets that will apply a specific format to your shape. The following explains how to add a shape style:

1. Click on the **Shape** so that it is selected.
2. In the *Ribbon, c*lick the **Drawing Tools – Format** tab.

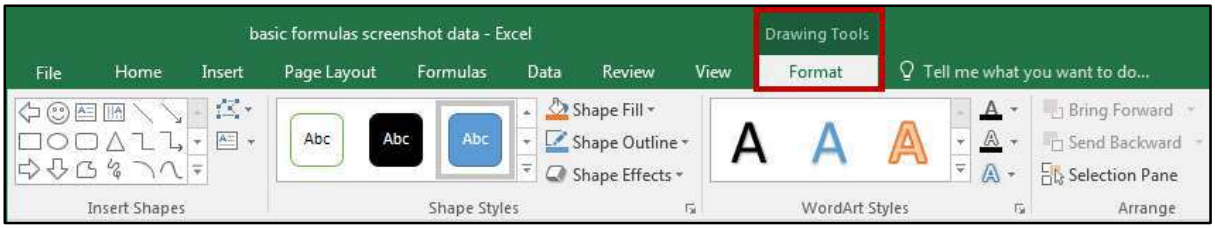


Figure 40 - Drawing Tools: Format Tab

3. In the *Shape Styles* group, click the **More** button.

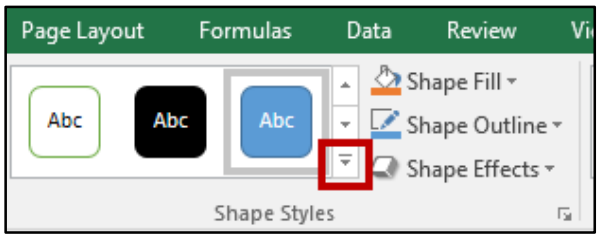


Figure 41 - More Button

4. The *Shape Styles* gallery will open. Click the **Style** of your choice.

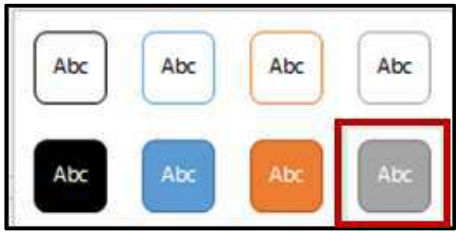


Figure 42 - Select the Style

5. Your selected style will be applied to the shape.

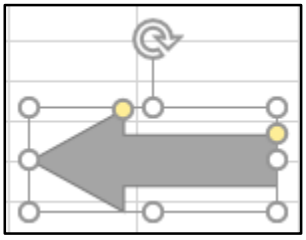


Figure 43 – Applied Shape Style

Quick Shape Formatting

New in *Excel 2016* are *Quick Shape formats.* This feature increases the number of default shape styles by introducing new "preset" styles grouping when accessing shape styles. To apply a quick shape format:

1. After drawing your shape, the *Drawing Tools - Format* tab will appear.
2. On the *Drawing Tools - Format* tab, click the **drop-down** arrow in the *Shape Styles* box.

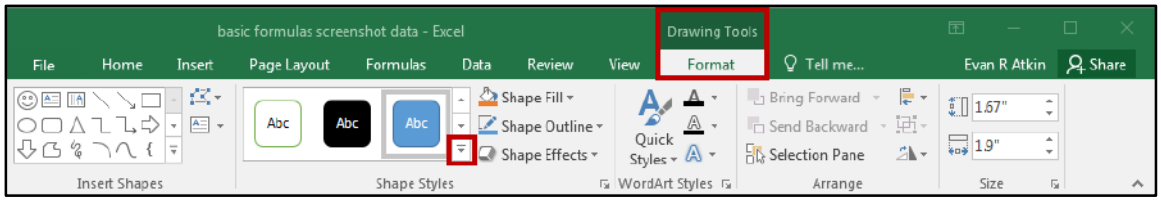


Figure 44 - Accessing Quick Shape Styles

3. A drop-down will appear displaying all styles. New preset styles can be found under the *preset* grouping.

Figure 45 - Preset Shape Styles

Adding Fill Color

The following explains how to add a fill color to a shape:

1. On the *Drawing Tools – Format* tab, under the Shape *Styles* group, click the **drop-down arrow** next to the *Shape Fill* icon.

Figure 46 - Shape Fill

2. A list of colors will be displayed. Click the **color** of your choice.

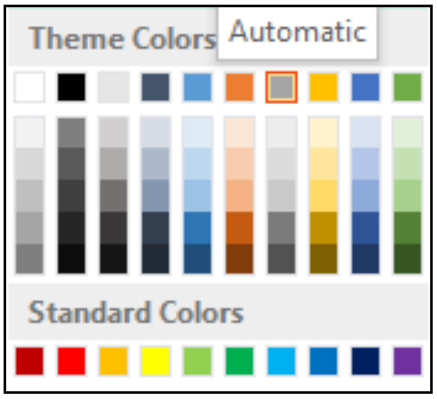


Figure 47 - Select your color of choice

Changing the Outline of a Shape

The following explains how to change the outline of a shape:

1. On the *Drawing Tools – Format* tab, under the *Shape Styles* group, click the **drop-down arrow** next to the *Shape Outline* icon.

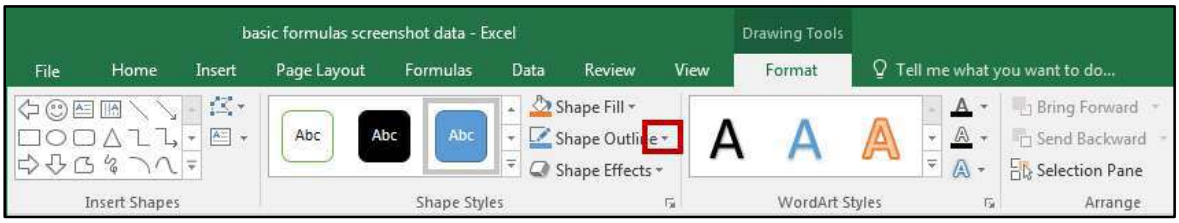


Figure 48 - Shape Outline

2. A list of colors will be displayed Click the **outline color** of your choice.

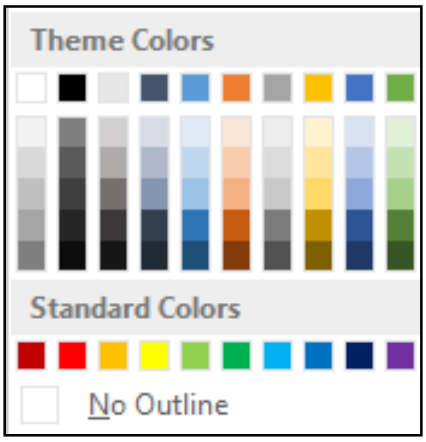


Figure 49 - Select a Color

Changing a Selected Shape

You can change an existing shape into a different one without having to delete the existing shape. The following explains how to change a shape:

1. On the *Drawing Tools – Format* tab, under the *Insert Shapes* group, click **Edit Shape**.

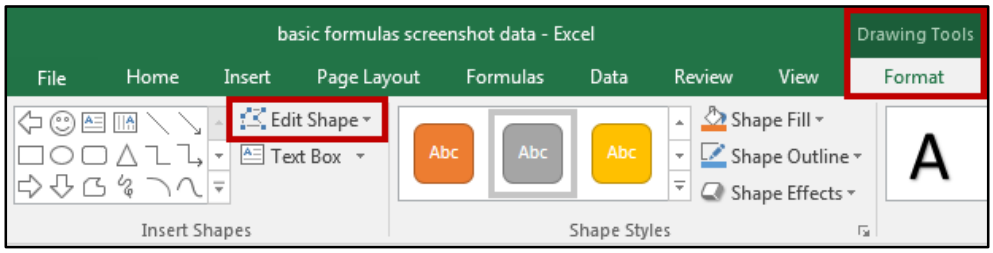


Figure 50 - Edit Shape Icon

2. A *drop-down menu* will appear. Click **Change Shape**.

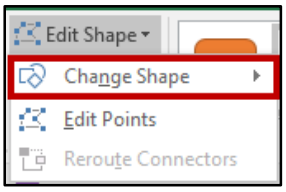


Figure 51 - Change Shape

3. The *Shapes Gallery* will appear. Select the **new shape** to replace the existing one.

Adding Text to a Shape

Shapes are helpful in pointing out information on a spreadsheet, and they can also be used as a text box. To add text to a shape:

1. Select the **shape** you wish to add text to.
2. Begin typing your **text.** The text will appear within the shape. Text can be formatted just like regular text in the spreadsheet.

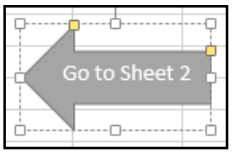


Figure 52 - Text in the Shape

Inserting Screenshots

You can also use *Excel* to grab a screenshot of an open window. The following describes how to capture and insert a screenshot from the Kennesaw State University website:

1. Navigate to the **website** you wish to take a screenshot of (e.g. www.kennesaw.edu).
2. In *Excel*, under the *Insert* tab, click **screenshot**.

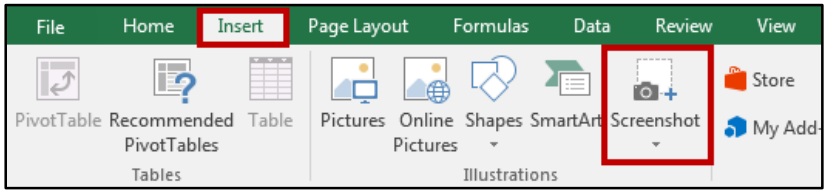


Figure 53 – Screenshot Tool

3. The *available windows* drop-down will appear, displaying all windows currently open on your desktop. Click the **image** that you want to insert into your spreadsheet.

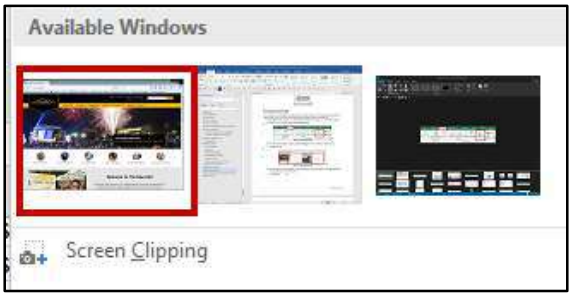


Figure 54 - Select your image

4. Your screenshot will be added into the spreadsheet. Here, you may resize and reposition your image to your preference.

Capturing and Inserting a Specific Area of the Screen

If you wish to grab a screenshot of a portion of an open window, you can use the *screen clipping* tool to make your selection. The following describes how to capture and insert a specific area of the screen:

1. Minimize all **windows** except for the one you wish to take a screenshot of.
2. Navigate to the **website** you wish to take a screenshot of (e.g. www.kennesaw.edu).
3. In *Excel*, under the *Insert* tab, click **screenshot**.

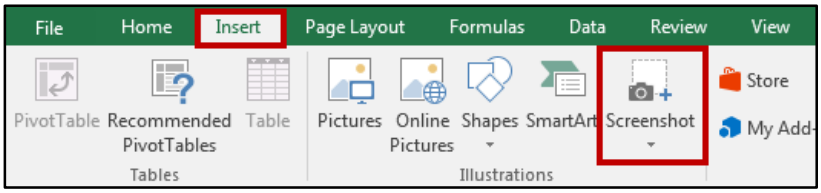


Figure 55 – Screenshot Tool

4. The *available windows* drop-down will appear. Click **Screen Clipping**.

Figure 56 - Screen Clipping

5. Your screen will turn gray and your mouse cursor will turn into a *crosshair*. Hold left-click and drag to **frame the area** of your screen that you want to capture.

6. Release the mouse button. The selected area that you captured will appear in your spreadsheet.

Additional Help

For additional support, please contact the KSU Service Desk:

KSU Service Desk for Faculty & Staff

- Phone: 470-578-6999
- Email: service@kennesaw.edu
- Website: http://uits.kennesaw.edu

KSU Student Helpdesk

- Phone: 470-578-3555
- Email: studenthelpdesk@kennesaw.edu
- Website: http://uits.kennesaw.edu