



University Information
Technology Services

Microsoft Excel 2013

Advanced Functions and Modifying Spreadsheets

University Information Technology Services

Training, Outreach, Learning Technologies and Video Production

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University Information Technology Services

Microsoft Office Excel 2013

Advanced Functions and Modify Spreadsheets

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Introduction

The Excel 2013 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. For example, if a condition is true, the function will carry out one action. If the condition is false, it will carry out a different function. The syntax for the **IF** function is as follows:

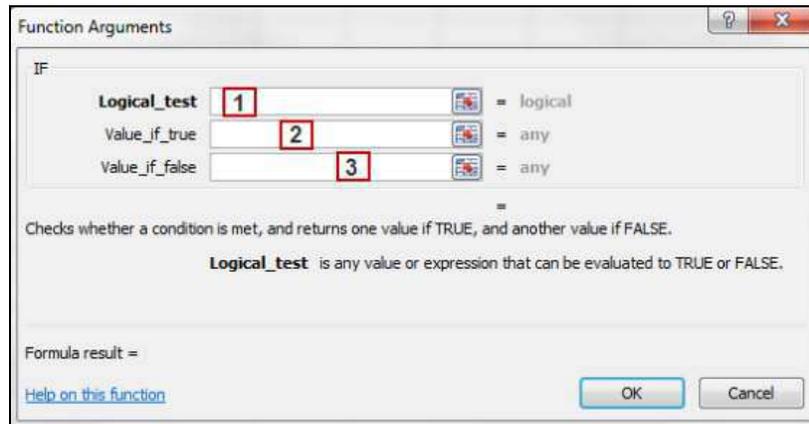


Figure 1 - The If Function Arguments

=IF (logical_test, value_if_true, value_if_false)

1. Logical_test – a value or expression that is tested to see if it is true or false.
2. Value_if_true – the value that is displayed if logical_test is true.
3. Value_if_false – the value that is displayed if logical_test is false

The following explains how to use the IF function. In this example, 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” (see Figure 2).

	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 2 - Grades Example

1. Click on Cell B3.
2. Click on the **Insert Function** icon that is located on the *Formula Bar* (see Figure 3).

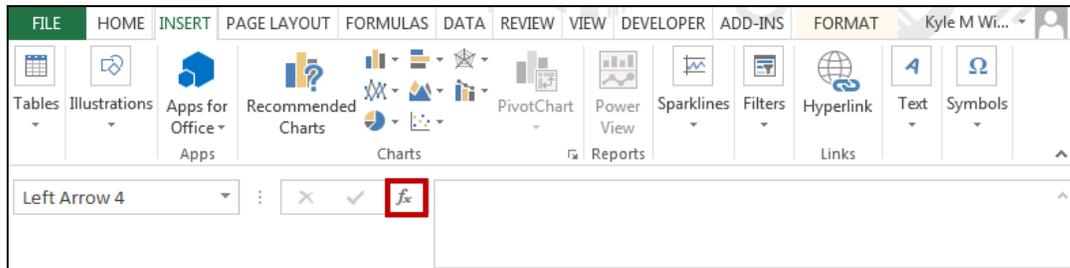


Figure 3 - Insert Function

3. In the *Search for a Function* field, type **IF** (see Figure 4).

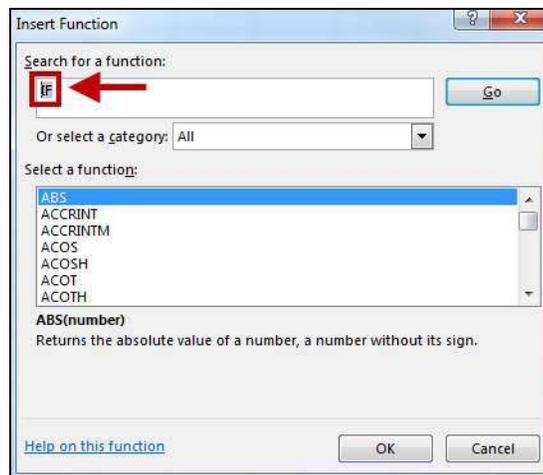


Figure 4 - Search for Function

4. Click the **Go** button (see Figure 5).

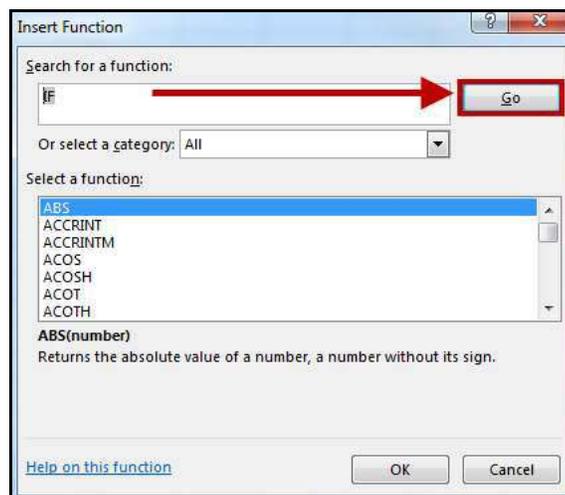


Figure 5 - Click Go

5. In the *Select a function field*, click on the **IF** function (see Figure 6).



Figure 6 - Select a function field

6. Click **OK** (see Figure 7).



Figure 7 - Click OK

7. In the **Logical_test** field, type "A3>=70" (see Figure 8).

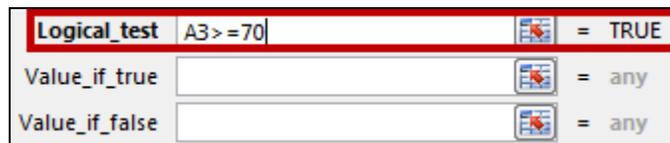


Figure 8 - Logical Test Field

8. In the **Value_if_true** field, type Pass (see Figure 9).

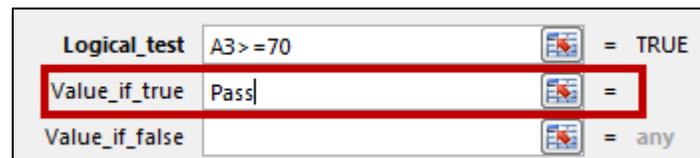


Figure 9 - Value_if_true field

9. In the Value_if_false field, type fail (see Figure 10).

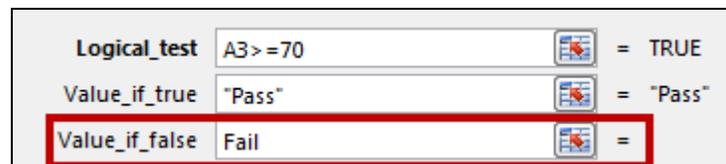


Figure 10 Value_if_false field

10. Click **OK** (see Figure 11).



Figure 11 - Click Ok

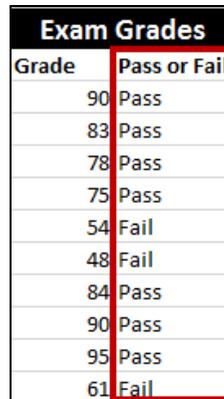
11. The word “Pass” should now appear in cell B3 (see Figure 12).



90	Pass
----	------

Figure 12 - Logical Test

12. Copy the formula in cell B3 to cells B4 through B12 (see Figure 13).



Grade	Pass or Fail
90	Pass
83	Pass
78	Pass
75	Pass
54	Fail
48	Fail
84	Pass
90	Pass
95	Pass
61	Fail

Figure 13 - Copy the Function

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])

1. Rate – the Interest rate per period.
2. Nper – the number of periods.
3. Pv – the present value or the amount the future payments are worth presently.
4. Fv - The future value or cash balance that you want after the last payment is made. This value is optional.
5. Type – 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. This value is optional.

The following explains how to use the PMT Function to calculate our loan payment based on a 5 Year loan worth 100000 at an interest rate of 12% (see Figure 14).



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

Figure 14 - Loan Payment Table

1. Click on the *Insert Function* button, located next to the Formula Bar (see Figure 15).

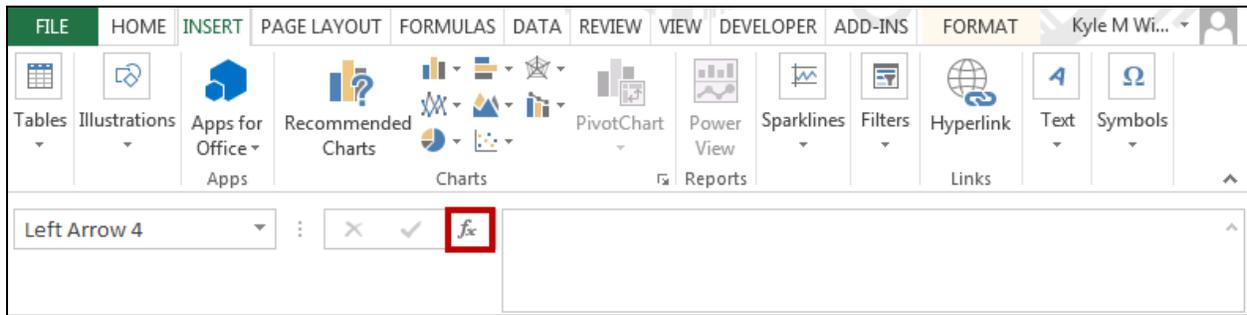


Figure 15 - Insert Function

2. In the *Search for a function* field, type **PMT** (see Figure 16).



Figure 16 - Search for a function

3. Click **Go** (see Figure 17).



Figure 17 - Click Go

4. Select the **PMT** function under the *Select a function* field (see Figure 18).



Figure 18 - Select a Function

5. Click **OK** (see Figure 19).

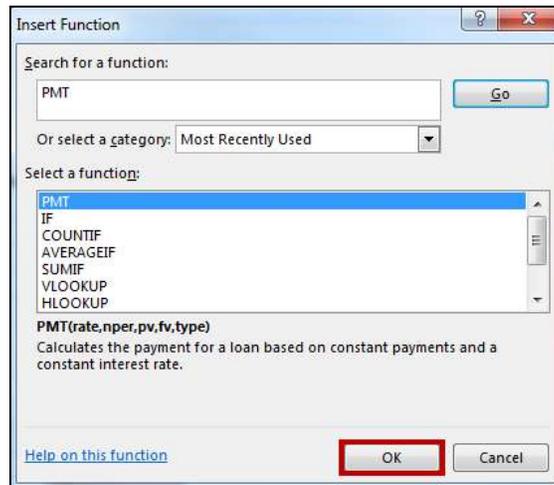


Figure 19 - Click OK

6. 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 (the number of months in a year.) To have excel calculate this value for us, we will type in the following string in the **Rate** field. $.12/12$ (see Figure 20).

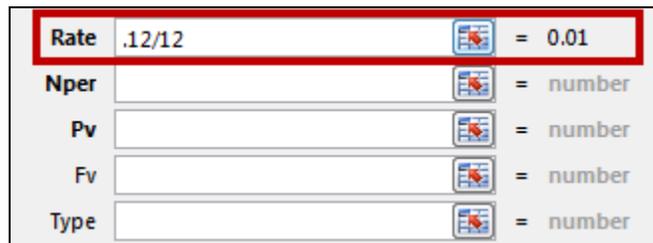


Figure 20 - Rate Field

7. In the *Nper* field, we are looking for the number of payments during the lifetime of this loan of 5 years. To find this, type the following string into the **Nper** field: $5*12$ where 12 is the number of months in the year (see Figure 21).

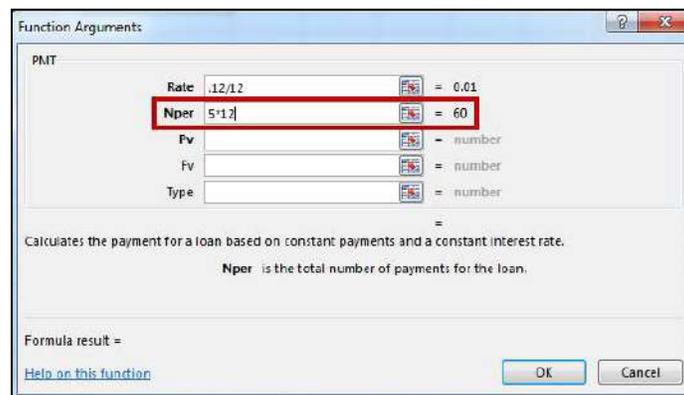


Figure 21 - Nper

8. For the *Present Value*, we are looking at the present value of the loan which is \$100,000. As such, type 100000 in the **Pv** field (see Figure 22).

Rate	.12/12	=	0.01
Nper	5*12	=	60
Pv	100000	=	100000
Fv		=	number
Type		=	number

Figure 22 - Pv Field

9. Click **OK** (see Figure 23).

Function Arguments

PMT

Rate	.12/12	=	0.01
Nper	5*12	=	60
Pv	100000	=	100000
Fv		=	number
Type		=	number

= -2224.444768

Calculates the payment for a loan based on constant payments and a constant interest rate.

Pv is the present value: the total amount that a series of future payments is worth now.

Formula result = -2224.444768

[Help on this function](#) OK Cancel

Figure 23 - Click OK

10. The **Monthly Payments** will appear in the spreadsheet (see Figure 24).

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

Figure 24 - Monthly Payments

Headers and Footers:

The following explains how to add Headers and Footers in your Excel Document.

Term	Definition
Header	A line of information that appears at the top of every page.
Footer	A line of information that appears at the bottom of every page.

1. On the *View* tab, select **Page Layout** (see Figure 25).



Figure 25 - Page Layout

2. Click in the area marked **Click to add header** (see Figure 26).

The screenshot shows an Excel spreadsheet with a table. The table has the following data:

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	
Average					

A red box highlights the area above the table with the text "Click to add header". A red arrow points to this box from the right.

Figure 26 - Add Header

3. Click to enter the text either in the *left*, *center*, or the *right* section (see Figure 27).

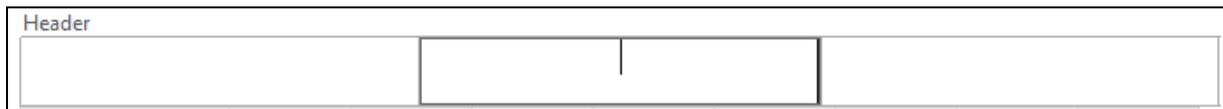


Figure 27 - Select a section

4. Begin typing your text to enter the header (see Figure 28).

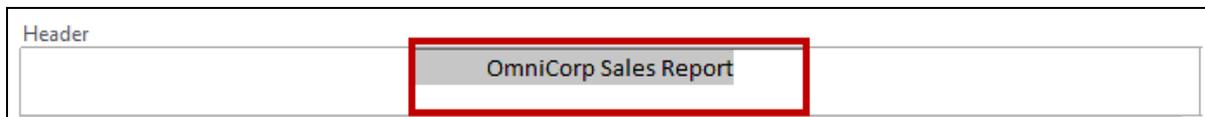


Figure 28 - Enter your text

5. **Select the text** that you have typed and click the *Home* tab to format the text (font, bold, color, etc) (see Figure 29).

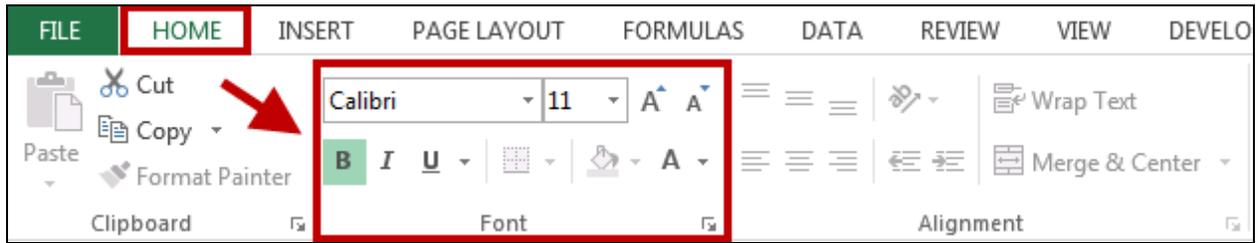


Figure 29 - Editing Font

6. To leave the *Header/Footer* editing and return to your document, just click on one of the cells in the spreadsheet.

Excel on the Internet

You can save your Excel workbooks or separate spreadsheets and graphs as HTML files so that they can be viewed on the Internet.

Term	Definition
HTML	Hypertext Markup Language---the language of the Internet.

Saving the entire work book as HTML

The following instructions explain how to save the entire work book as HTML:

1. Click the **File** tab in the upper-left corner of the ribbon.
2. In the *Backstage* view, Click **Save As** (see Figure 30).

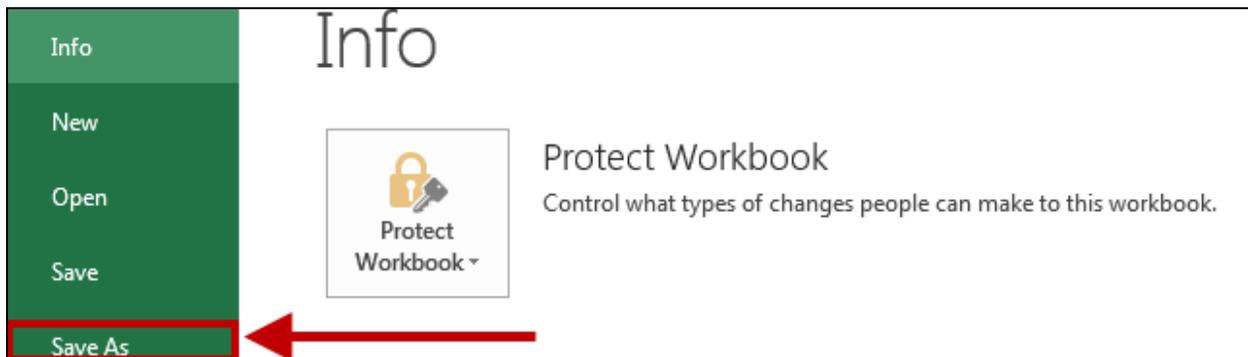


Figure 30 - Click Save As

3. Click on **Browse** (see Figure 31).

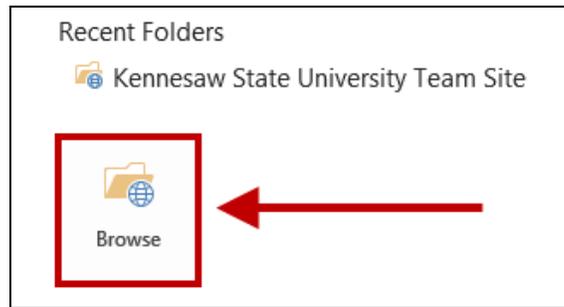


Figure 31 - Click Browse

4. Navigate to the desired destination in which you would like to save your document.
5. Enter the **file name**.
6. Click on the *Save as type* dropdown menu and select **Web Page** to change this from *Excel Workbook* to *Web Page* (see Figure 32).



Figure 32 - Save as type

7. Click **Save**.
8. If you receive a message indicating that the file may contain features that are not compatible with a Web Page, click **yes** to keep the workbook in this format.

Saving one sheet and its contents as HTML

The following instructions explain how to save one sheet as HTML:

1. Go to the sheet that is to be saved as HTML.
2. Click the **File** tab in the upper-left corner of the screen.
3. Click **Save As** (see Figure 33).



Figure 33 - Save As

- Click on the **Computer** icon (see Figure 34).



Figure 34 - Click on Computer

- Click on **Browse** (see Figure 35).

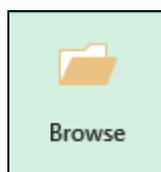


Figure 35 - Click Browse

- In the *Save As* window, click the option **Selection: Sheet** (see Figure 36).

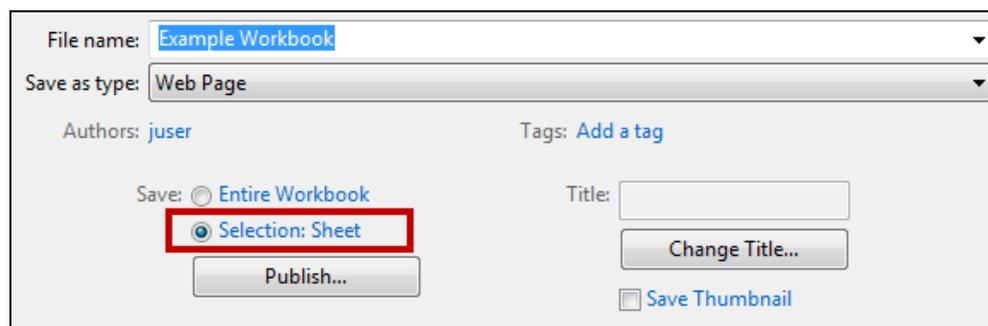


Figure 36 - Selection Sheet

- Enter a new file name.
- Change *Save as type* to **Web Page** (see Figure 37).



Figure 37 - Save As Web Page

- Choose the location to save the file.
- Click the *Save* button.

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 sheet*. The following explains how to create a hyperlink to an existing file:

1. On *Sheet 1*, type the following text: *Go to Sheet 2*.
2. Select the cell containing the text to be used as the hyperlink (see Figure 38).

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 38 - Go to Sheet 2

3. From the *Insert Tab*, select **Hyperlink** (see Figure 39).



Figure 39 - Hyperlink

4. From the Insert Hyperlink dialog box, click **Place in this document** (see Figure 40).

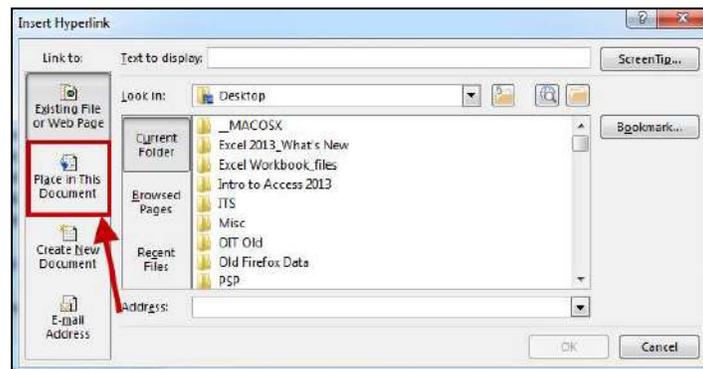


Figure 40 - Place in this document

5. In the list under *Cell Reference*, click **Sheet 2** (see Figure 41).

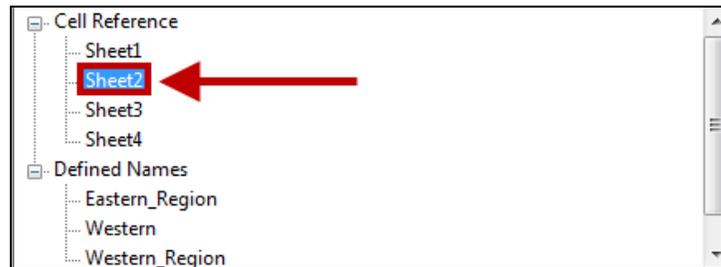


Figure 41 - Cell Reference

6. Click **OK** (see Figure 42).



Figure 42 - Click OK

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 *Blank Spreadsheet*, type the following text: *Kennesaw State University*
2. Select the cell containing the text to be used as the hyperlink (Kennesaw State University).
3. From the *Insert Tab*, select **Hyperlink** (see Figure 43).

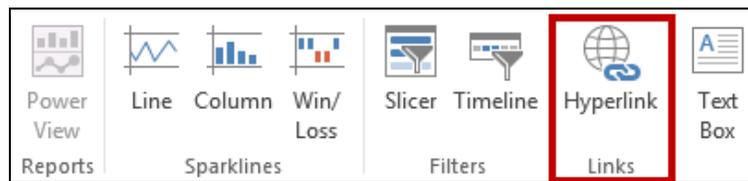


Figure 43 – Hyperlinks

4. In the *Insert Hyperlink* dialogue box under *Link to*, click **Existing file or Web page** (see Figure 44).

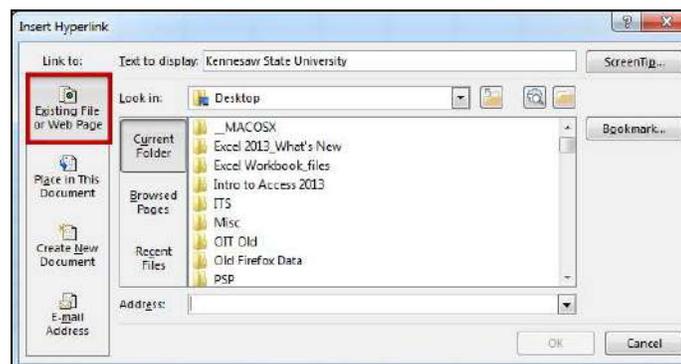


Figure 44 - Existing File or Web Page

5. In the *Address* field, enter the *Kennesaw State University* Website address: <http://www.kennesaw.edu> (see Figure 45).

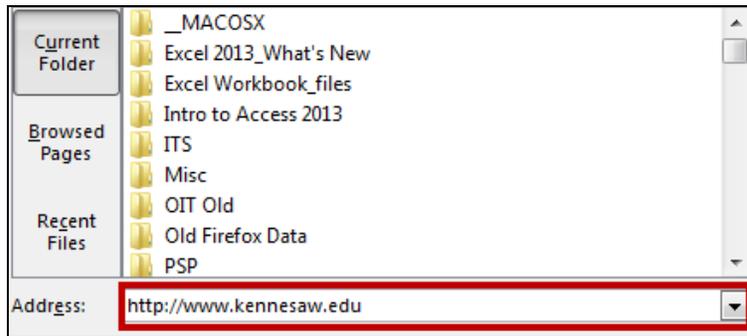


Figure 45 - Enter the Address

6. Click **OK**.

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 (see Figure 46).



Figure 46 - Hyperlink

Using the Graphical Tools

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

Drawing Shapes

The following section describes how to use Excel's drawing tools:

1. Click the *Insert* tab (see Figure 47).

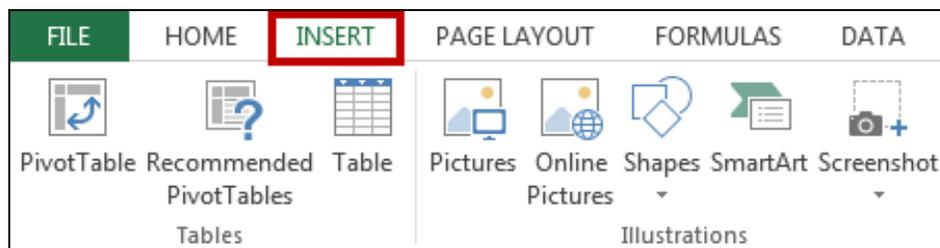


Figure 47 - Insert Tab

2. In the *Illustrations* group, click **Shapes** (see Figure 48).



Figure 48 – Shapes

3. The *Shapes Gallery* will appear. Click the shape that you want to add to the spreadsheet (see Figure 49).

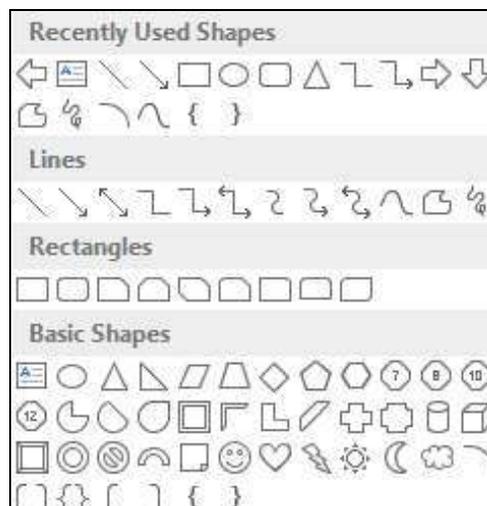


Figure 49 - Shapes Gallery

4. You are now ready to draw the shape on the spreadsheet. As your mouse pointer hovers over the spreadsheet, it will appear as crosshairs (see Figure 50).

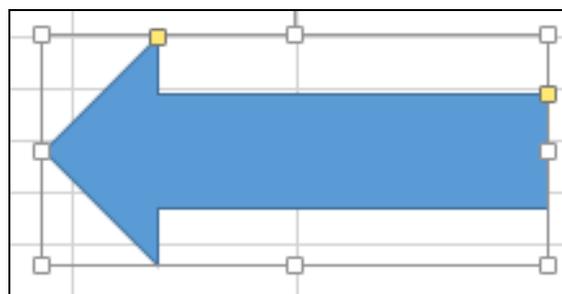


Figure 50 - Shape

5. Hold the mouse button down and drag the mouse pointer across the screen to draw the shape.

Modifying Shapes

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

Re-sizing Shapes

Shapes are re-sized in the same way as clip art and pictures. The following explains how to re-size a shape:

1. Click on the **shape** that you wish to re-size.
2. Anchor points will appear as circles and squares around the shape (see Figure 51).

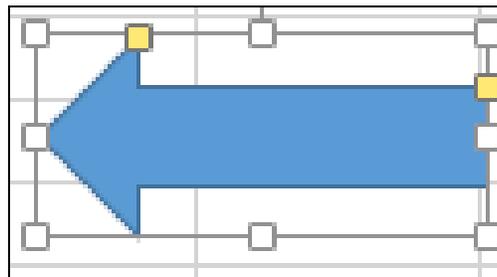


Figure 51 – Anchor Points

3. Allow your mouse pointer to hover over any of the anchor points, and the mouse pointer will change its appearance to a double-arrow.
4. As the double-arrow appears, hold down the mouse button. As the mouse button is held down, move the mouse to increase and decrease the size of the shape.
5. Release the mouse button when you have adjusted the shape to a larger or smaller size.

Re-shaping

Some two-and-three-dimensional shapes have a yellow squares that you can click and drag to alter a certain aspect of the shape, such as the arrow point in the arrow shape (see Figure 52).

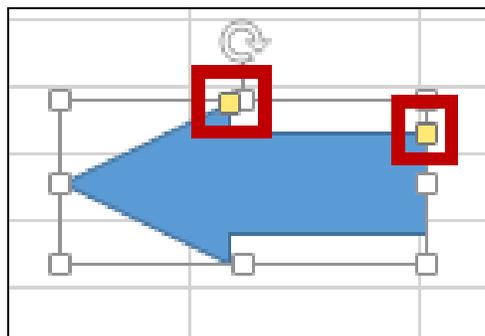


Figure 52 - Yellow Re-shaping Points

Adding a Shape Style

The following explains how to add a shape style:

1. Click on the **Shape** so that it is selected.
2. Click the **Drawing Tools** contextual tab (see Figure 53).

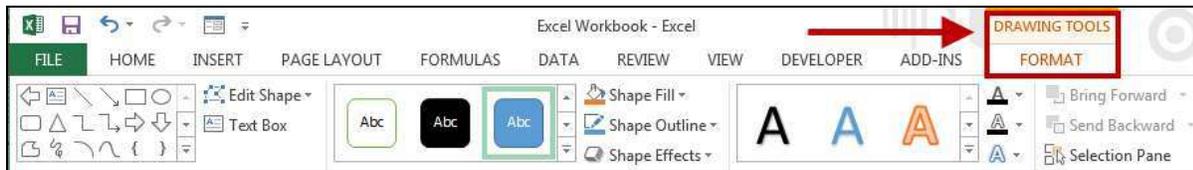


Figure 53 - Drawing Tools

3. In the *Shape Styles* group, click the **More** button to open the *Shape Styles* gallery (see Figure 54).

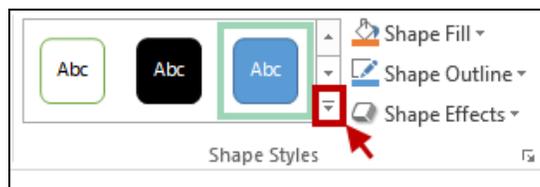


Figure 54 - More Button

4. Click the **Style** of your choice (see Figure 55).

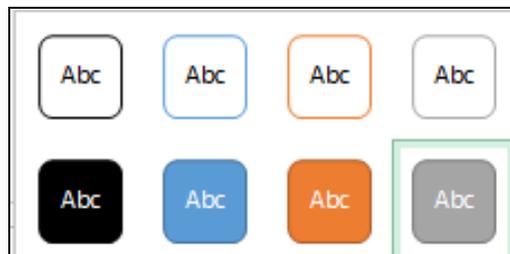


Figure 55 - Select the Style

5. Your *Style* will be applied to the shape (see Figure 56).

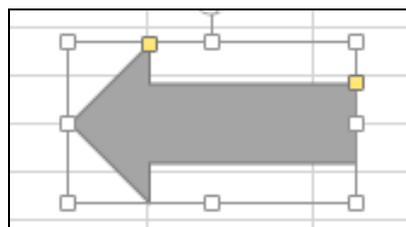


Figure 56 – Applied Shape Style

Adding Fill Color

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

1. In the *Shape Styles* group, click the arrow in the **Shape Fill** icon (see Figure 57).

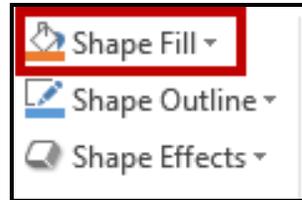


Figure 57 - Shape Fill

2. Click the color of your choice (see Figure 58).

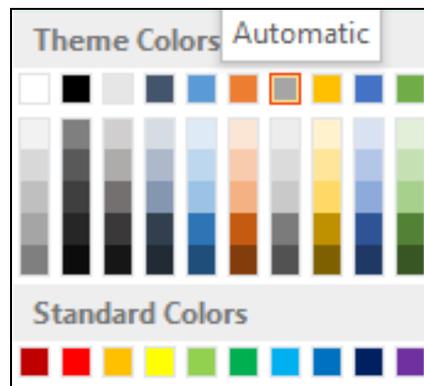


Figure 58 - Select your color of choice

Changing the Outline of a Shape

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

1. In the *Shape Styles* group, click the **arrow** next to *Shape Outline* (see Figure 59).

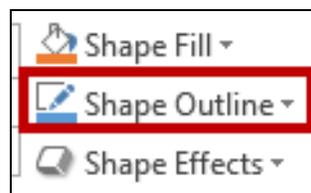


Figure 59 - Shape Outline

2. Click the **outline color** of your choice (see Figure 60).

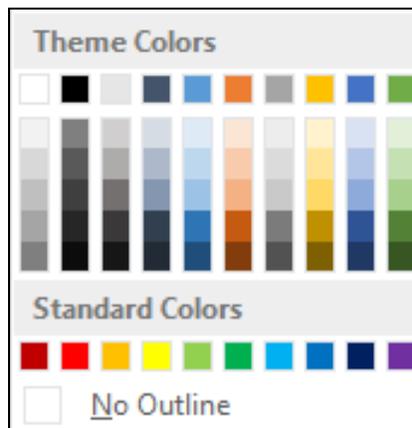


Figure 60 - Select a Color

Changing the Shape

The following explains how to change a shape:

1. In the *Insert Shapes* group, click the arrow for **Edit Shape** (see Figure 62).

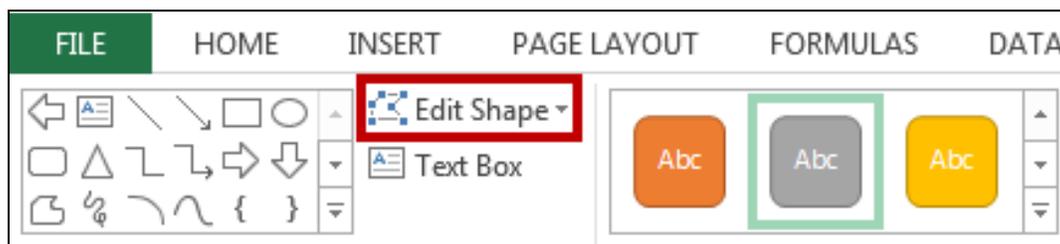


Figure 61 - Edit Shape Icon

2. Next, click **Change Shape** (see Figure 62).

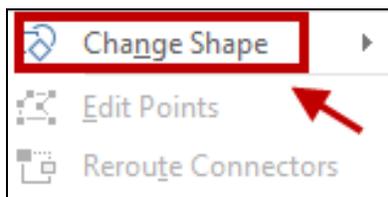


Figure 62 - Change Shape

3. Select the shape of your choice.

Adding Text to a Shape

The following explains how to add text to a shape:

1. Select the shape.
2. Click the **Drawing Tools** contextual tab (see Figure 63).



Figure 63 - Drawing Tools

3. Click **Text Box**. A text box is overlaid on the shape, and the cursor appears inside the shape (see Figure 64).

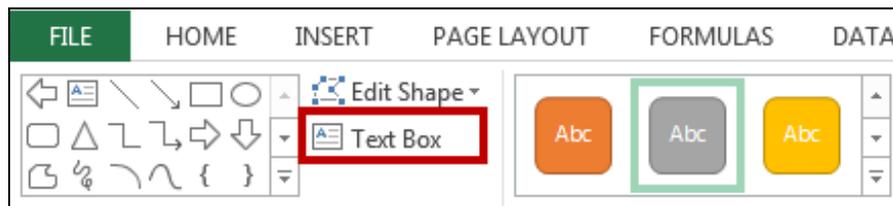


Figure 64 - Text Box

4. Type the text. Text can be formatted just like regular text in the spreadsheet (see Figure 65).

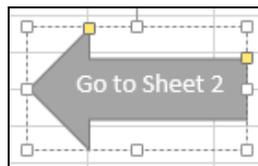


Figure 65 - Text in the Shape

Inserting Screenshots

The following describes how to capture and insert the screenshot of an open window:

1. Open the window where you want to capture a screenshot.
2. In Excel, select the **Insert** tab on the ribbon.
3. Click **Screenshot** (located in the *Illustrations* section) (see Figure 66).

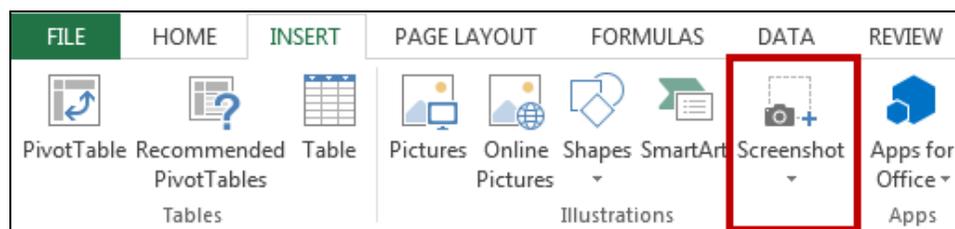


Figure 66 – Screenshot

- Underneath available windows, click the **image** that you want to insert into your spreadsheet (see Figure 67).

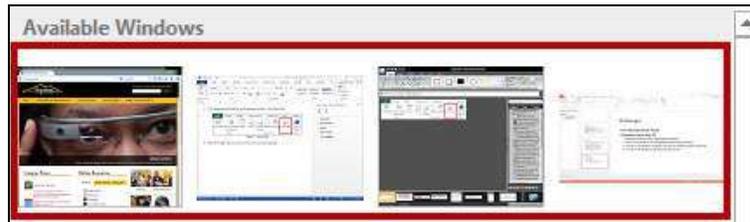


Figure 67 - Select your image

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

Capturing and Inserting a Specific Area of the Screen

The following describes how to capture and insert a specific area of the screen:

- Open the window that shows the area you would like to capture.
- In Excel, select the **Insert** tab (see Figure 68).

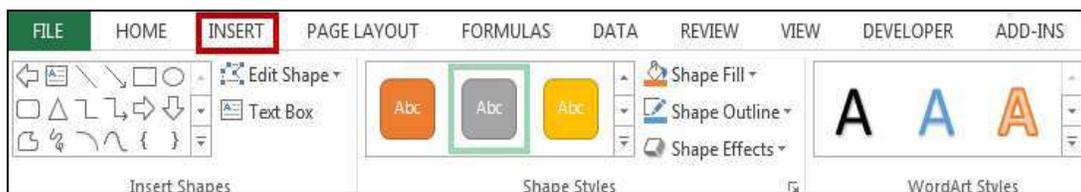


Figure 68 - Insert Tab

- Click **Screenshot** (located in the *Illustrations* section) (see Figure 69).

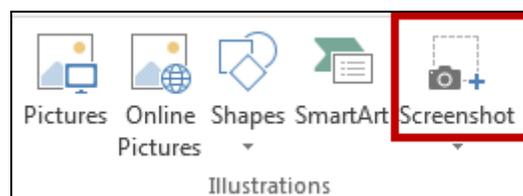


Figure 69 – Screenshot

- Click **Screen Clipping** (see Figure 70).



Figure 70 - Screen Clipping

- When your screen becomes faded, use your mouse to frame the area of your screen that you want to capture.
- The clipped image that you captured will appear in your spreadsheet.

Additional Assistance

If you need additional assistance with Microsoft Office Access 2013, contact University Information Technology Services (UITs) at:

Faculty and Staff Service Desk

Phone: 470-578-6999

Email: service@kennesaw.edu

Students Help Desk

Phone: 470-578-3555

Email: studenthelpdesk@kennesaw.edu