



Excel Worksheets: Best Practices

Joseph Helstrom

Course # 2174596, Version 2007, 2 CPE Credits

your self-study.
→ **your** way.

Course CPE Information

Course Expiration Date

Per AICPA and NASBA Standards (S9-06), QAS Self-Study courses must include an expiration date that is *no longer than one year from the date of purchase or enrollment*.

Field of Study

Computer Software & Applications. Some state boards may count credits under different categories—check with your state board for more information.

Course Level

Overview.

Prerequisites

There are no prerequisites.

Advance Preparation

None.

Course Description

Excel worksheets and workbooks are commonly considered number crunching tools. The primary focus is getting data into a worksheet, performing a few calculations, and arriving at an answer as quickly as possible. However, this prevalent mindset ignores many of the real goals and needed controls over worksheets that make them valuable decision-making tools. This course will examine worksheet and workbook best practices for layout and design, including segregating data, assumption, and calculations as well as documenting data sources and key calculations using comments. The materials will also cover important worksheet audit and other tools that ensure accuracy such as data validation, error checking, and inputting passwords to protect cells, worksheets and workbooks. Step-by-step instruction with screenshots and an Excel practice file are provided to enhance the learning experience.

© Copyright Mill Creek Publishing LLC 2020

Publication/Revision Date

July 2020

Instructional Design

This Self-Study course is designed to lead you through a learning process using instructional methods that will help you achieve the stated learning objectives. You will be provided with course objectives and presented with comprehensive information and facts demonstrated in exhibits and/or case studies. Review questions will allow you to check your understanding of the material, and a qualified assessment will test your mastery of the course.

Please familiarize yourself with the following instructional features to ensure your success in achieving the learning objectives.

Course CPE Information

The preceding section, “Course CPE Information,” details important information regarding CPE. If you skipped over that section, please go back and review the information now to ensure you are prepared to complete this course successfully.

Table of Contents

The table of contents allows you to quickly navigate to specific sections of the course.

Learning Objectives and Content

Learning objectives clearly define the knowledge, skills, or abilities you will gain by completing the course. Throughout the course content, you will find various instructional methods to help you achieve the learning objectives, such as examples, case studies, charts, diagrams, and explanations. Please pay special attention to these instructional methods, as they will help you achieve the stated learning objectives.

Review Questions

The review questions accompanying this course are designed to assist you in achieving the course learning objectives. The review section is not graded; do not submit it in place of your qualified assessment. While completing the review questions, it may be helpful to study any unfamiliar terms in the glossary in addition to course content. After completing the review questions, proceed to the review question answers and rationales.

Review Question Answers and Rationales

Review question answer choices are accompanied by unique, logical reasoning (rationales) as to why an answer is correct or incorrect. Evaluative feedback to incorrect responses and reinforcement feedback to correct responses are both provided.

Glossary

The glossary defines key terms. Please review the definition of any words you are not familiar with.

Index

The index allows you to quickly locate key terms or concepts as you progress through the instructional material.

Qualified Assessment

Qualified assessments measure (1) the extent to which the learning objectives have been met and (2) that you have gained the knowledge, skills, or abilities clearly defined by the learning objectives for each section of the course. Unless otherwise noted, you are required to earn a minimum score of 70% to pass a course. If you do not pass on your first attempt, please review the learning objectives, instructional materials, and review questions and answers before attempting to retake the qualified assessment to ensure all learning objectives have been successfully completed.

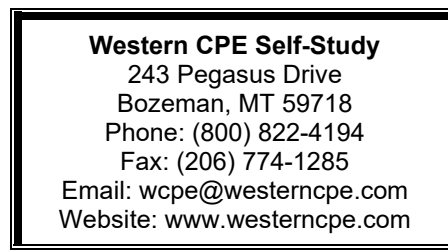
Answer Sheet

Feel free to fill the Answer Sheet out as you go over the course. To enter your answers online, follow these steps:

1. Go to www.westerncpe.com.
2. Log in with your username and password.
3. At the top right side of your screen, hover over “My Account” and click “My CPE.”
4. Click on the big orange button that says “View All Courses.”
5. Click on the appropriate course title.
6. Click on the blue wording that says “Qualified Assessment.”
7. Click on “Attempt assessment now.”

Evaluation

Upon successful completion of your online assessment, we ask that you complete an online course evaluation. Your feedback is a vital component in our future course development.



Notice: This publication is designed to provide accurate information in regard to the subject matter covered. It is sold with the understanding that neither the author, the publisher, nor any other individual involved in its distribution is engaged in rendering legal, accounting, or other professional advice and assumes no liability in connection with its use. Because regulations, laws, and other professional guidance are constantly changing, a professional should be consulted should you require legal or other expert advice. Information is current at the time of printing.

Table of Contents

Course CPE Information	i
Instructional Design.....	ii
Table of Contents	iv
Excel Worksheets: Best Practices.....	1
Learning Objectives.....	1
Course Overview.....	1
Worksheet Layout	3
Name the Worksheet.....	3
Use Headings	3
Use Descriptive Column and Row Headings.....	4
Segregate Data, Assumptions, and Calculations	4
Absolute Cell References	7
Named Ranges	8
Document Data Sources and Key Calculations Using Comments	12
Multiple Worksheet Workbooks	16
Headers and Footers.....	17
Print Titles.....	21
Worksheet Design	23
Input Data Check Totals.....	23
Formulas Require Cell References Rather Than Numbers	23
Use Constraints in Calculations	24
Use Comments to Explain Calculations.....	30
Review Questions	33
Worksheet Audit and Other Tools to Ensure Accuracy	34
Data Validation	34
Cell Protection and Worksheet Protection	42
Workbook Passwords.....	50
Highlighting All Cells Containing Formulas	52
Trace Precedent and Dependent Cells.....	55
Error Checking.....	58
Watch Window	59
Review Questions	61
Review Question Answers and Rationales.....	62
Glossary	66
Index.....	67
Qualified Assessment.....	68
Answer Sheet.....	71
Course Evaluation.....	72

Excel Worksheets: Best Practices

Learning Objectives

Upon successful completion of this course, participants will be able to:

- Recognize worksheet layout and design best practices, noting Excel features that promote data clarity
- Identify the various Excel features that help audit worksheets and ensure calculation accuracy
- Recognize the defining characteristics and usage of data validation tools, cell and worksheet protection, workbook protection, formula auditing tools, error checking, and tracking changes

Course Overview

Excel worksheets and workbooks are commonly considered “number crunching” tools. The focus is getting data into a worksheet, performing a few calculations, and arriving at an answer as quickly as possible. This mindset, while prevalent, ignores many of the real goals and needed controls over worksheets that make them decision useful tools.

Worksheet layout for clarity

Worksheets are used as a tool to make decisions. Accordingly, the results of the worksheet should be easily understood and not subject to misinterpretation. The overall layout and design of the worksheet is important to its usefulness as a management decision tool. The worksheet reader, as well as its author, should have no doubts regarding the data inputs, the calculations being performed, and the resulting output.

Worksheets are important financial tools and are used in very complex calculations with very large numbers. If there is any misunderstanding regarding the data inputs being used, the calculations being performed, the assumptions used, or the output it could result in very large financial or operational errors. Having an effective worksheet layout is the first step in minimizing the possibility of any worksheet error.

Aspects of worksheet layout that accomplish the clarity objective include:

- naming the worksheet with an appropriately descriptive name
- having descriptive worksheet headings as well as descriptive row and column headings, and
- segregating the data inputs, assumptions, calculations, and output.

One additional important, yet generally disregarded practice, is to make sure that the worksheet is documented with comments and other notations to ensure that a reader of the worksheet will understand the source of the data, the methods employed, and the intended use of the worksheet. Note that these explanatory comments and notations also help the preparer of the worksheet to remember what was being accomplished and how it was being accomplished if the particular worksheet is infrequently used.

Worksheet design to improve calculation integrity

There are aspects to the design of a worksheet that help ensure that the results of calculations are correct. For data inputs, it is important to have a check total (or totals) that can be compared to another authoritative data source to ensure that the correct input data is being used. Remember, garbage in, garbage out. If the wrong data is being used, then the resulting output will also be incorrect.

There are also other design conventions that help preserve the integrity of the output. These include always using cell references in calculations rather than numbers and using constraint calculations to highlight outliers.

These design conventions will be described in much greater detail later in the course. As an overview, the use of cell references makes it easier to modify assumptions and decreases the likelihood of error. As an example, if the goal of a worksheet was to forecast quarterly sales over the next two years using an assumed percentage growth rate, it would be much more controlled to have that percentage growth rate spelled out in a range of cells and have the formulas use the cells to calculate quarterly sales rather than to embed the percent growth rate into each formula that calculated quarterly sales. If the percentage were embedded, it would be up to the worksheet preparer to edit each formula with a new percent. If a user wanted to ensure that the correct percentages were utilized, they would be required to review every formula. That, in addition to the heightened possibility of input error, make this an undesirable method. By using a separate range of cells, changes may be made quickly and accurately with easy review by others. Using constraint calculations is another way of saying the “sanity tests” should be embedded in the worksheet. If the intent of a worksheet is to predict G&A costs relative to the prior year, you may want to include a constraint calculation that compares the forecasted amount to the prior year amount and highlights any increases greater than 10%. This provides an easy way to test worksheet results. Methods to highlight based on constraint calculations will also be discussed in more detail later in the course.

Worksheet audit and other tools to ensure accuracy

The goal of all calculations is that they are accurate. Excel provides some great tools to ensure that calculations are performed as intended. These tools include data validation, formula auditing, worksheet and cell protection, workbook passwords, and a seldom used but neat feature on the Home toolbar called Go To Special.

These tools can be used to ensure that the worksheet or workbook is not changed by an unauthorized person (i.e., passwords, cell, and worksheet protection), the assumption or other user inputs in the worksheet are confined to an acceptable range of values (data validation), and the formulas are functioning as intended (formula auditing). Go To Special is extremely helpful in quickly finding and highlighting formulas in the worksheet to make review easier. These areas will be explored and discussed as best practices in Excel Worksheets.

Worksheet Layout

Name the Worksheet

While it may seem intuitive, this is a step that many professionals skip. It is important to name the worksheet on the worksheet tab with something meaningful and descriptive as a reminder to both the preparer and other users of the worksheet or workbook of the intended use of the worksheet. This is especially important if you are using a workbook with multiple worksheets. As an example, if a workbook's intent is to accumulate inventory values at standard cost and one worksheet contains the results of physical inventory quantities by unit and another worksheet contains the standard cost for each unit, it is important that the worksheet tabs be labeled something similar to "Physical Inventory" and "Standard Costs". Otherwise, the user of the worksheets may draw a different conclusion as to what the data represents.

Using another example, if a workbook's intent is to provide a sales forecast and one worksheet has historic quarterly sales results and another has growth assumptions, these worksheets should be labeled "Historic Qtrly Sales" and "Growth Assumptions." As the first thing that the user of reader of the workbook will look at when opening the workbook are the worksheet tabs, this helps in understanding the intent of the worksheets and avoids misinterpretation of the data.

Use Headings

Headings provide another description of the intent of the worksheet. Generally, more space is available, so any description can be longer than that used as a worksheet name. Headings can also clarify the source of any data.

To continue the examples above, if a workbook's intent is to accumulate inventory values at standard cost and one worksheet contains the results of physical inventory quantities by unit, an appropriate heading may be "Physical Inventory Quantities by Part No. as of XX/XX/XXXX." This is more descriptive than the worksheet name "Physical Inventory" as it also describes that it represents quantities by part number as of the physical inventory date. Both the preparer of the worksheet and any user should not have any misinterpretation of the source and type of data that is represented in the worksheet.

Within the same workbook, if the other worksheet contained standard costs, an appropriate heading would be "Standard Inventory Costs as of XX/XX/XXXX." Once again, the headings should describe the contents of the worksheet for both the preparer and the reader.

When it is emphasized that names and headings are important for the preparer, this may cause some to ask the question, "Why should I worry about these things if I will be the only user of the worksheet/workbook?" Well, if you prepare more than a few worksheets or workbooks during the course of the year, it is likely that you have returned to one after a while and had some difficulty remembering either (a) what you were trying to accomplish, (b) the source of the data, or (c) why you prepared the worksheet/workbook in the first place. So, these conventions are just as important for you the preparer, as they are for a third party who is trying to understand the contents and result. As a practical matter, think of the person trying to perform your job tasks while you're on vacation or the person replacing you when you're promoted.

Use Descriptive Column and Row Headings

Each column or row of data should be adequately described for the same reasons cited above. Both the preparer and reader need to know the source of the data, assumptions, calculations being performed, and the output. Proper organization avoids confusion.

If there are two columns of data and one represents a stock number and the other represents standard cost, these two columns should be labeled “Stock #” and “Std. Cost” respectively (or some easily understood variation).

If data is organized in rows, and the first row represents Sales and the second represents Cost of Sales, these should be the row labels. If quarters are represented in the columns, each column should be labeled with the appropriate quarter and year (e.g., Q1, 2015).

Segregate Data, Assumptions, and Calculations

Some compare a spreadsheet to a computer program. A computer program has three basic components: input, processing, and output. For a worksheet, it would be better to describe these functions as input, assumptions, and output as worksheets and workbooks are often used in “what if” scenarios to aid in management decision making. Separating these tasks in a worksheet or workbook will minimize the possibility of error by permitting review of each component. The easiest way to illustrate the advantages of this best practice, and the pitfalls of not using it, is through example. Two examples follow.

	A	B	C	D	E	F
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4	
2						
3	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	
4	Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	
5						
6						

This is a quarterly sales forecast based on prior year actual sales. It simply takes the prior year actual quarterly sales and increases each quarterly amount by 20% (multiplies by a factor of 1.2). What are the downsides to this worksheet?

- Neither the preparer nor another user can tell that each quarter’s forecasted sales should increase by 20%.
- In the event of a change to the 20% assumption, the change would need to be made to each cell and, once again, neither the preparer nor the reader can easily ascertain the growth assumption.
- To easily tie out the input (Actual Sales), there should be a total.
- It would be easier to read if there was some separation between Actual Sales and Forecasted Sales.
- There is no heading on the worksheet.

To summarize, the biggest problem with the worksheet above, is that there is no separate documentation of assumptions being used and no separate calculation using those assumptions. A separation of the assumptions used permits both the preparer and the reader to easily review and understand the basis of the underlying calculations. Additionally, having the assumptions as the basis for the calculations also prevents errors when the assumptions are changed as the changes are evident on the worksheet.

Lesser problems are that the data inputs (Actual Sales) could be more easily tied to annual sales if there was a total. Without the total, the preparer is relying solely on a comparison to each individual quarterly amount. Another is that there should be some separation of the output (Forecasted Sales). This separation would let a reader know the intent of the worksheet as would a worksheet heading.

A suggested revised format for this worksheet follows and may be found in the **Worksheet Best Practices** workbook on the tab labeled *Good Sales Fcst*.

Forecasted Quarterly Sales Using Growth Assumptions										
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Growth Assumptions				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	
Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152	20%	20%	20%	20%	
Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	32,226,182					

In the above example, the growth assumptions are clear and easy to change. Since the assumptions in H5:K5 are the basis for the Forecasted Sales calculations, changes are both transparent to the preparer and reader and there is more assurance that the changes will be reflected in the calculations.

There is also a descriptive heading and a separation of the output for the benefit of a reader. Actual sales are totaled for ease of comparing this amount to an authoritative source. This worksheet can be handed to a third party reader and it is more likely that the reader can understand the intent of the document as well as challenge the input and assumptions being utilized.

This format also benefits the preparer. If the preparer were asked to change the quarterly growth assumptions to Quarters 1-4 to 10%, 15%, 20%, and 25%, respectively, this would be a matter of simply entering the new assumptions in cells H5:K5. Using the previous worksheet, the preparer would have to edit four formulas and the reader would likely need to re-check the amounts to ensure that the proper growth assumptions were used.

Another example would be the case of a worksheet whose intent is to use prior year actual accounts receivable information and certain assumptions as a basis to forecast the current year Allowance for Bad Debts. The assumptions for the current year are the acquisition of new

customers that will boost sales and also boost accounts receivable to an end of year balance of \$9,000,000. However, it is also expected that the increase in sales will result in more delinquency. The 0-30 aging category is expected to increase to 20% of total accounts Receivable while the 31-60, 61-90, 91-120 and 120+ aging categories are expected to increase to 15%, 5%, 2% and 1% respectively.

The worksheet used for forecasting the current year Allowance for Bad Debts follows.

Accounts Receivable Aging as of 12/31/XX and Allowance Forecast								
	Current	0-30	31-60	61-90	91-120	120+	Total	
Actual	5,010,780	1,070,631	865,120	287,420	53,266	15,819	7,303,036	
% Total	69%	15%	12%	4%	1%	0%	100%	
Allowance Calc. %	0%	5%	15%	20%	40%	50%		
Calculated Allowance	-	53,532	129,768	57,484	21,306	7,910	269,999	
Forecasted Allowance		90,000	202,500	90,000	72,000	45,000	499,500	

The positive aspects of this worksheet are:

- The worksheet has a descriptive heading
- Rows and columns have appropriate headings
- The actual accounts receivable and allowance can be tied out to appropriate amounts
- The output (Forecasted Allowance) is separated from the inputs

However, there are a few negative aspects. These include:

- There is no way of knowing the basis of the Forecasted Allowance. The assumptions used for accounts receivable balance, associated aging, and allowance calculation percentages are not evident.
- The missing assumptions are embedded in the calculations in C14:G14.
- Without transparency of the assumptions and calculations, a preparer or reader of the worksheet may arrive at an incorrect conclusion if there is an error in the calculation or if any assumptions differ from those being used in the worksheet.

Transparency is the key to proper worksheet layout. Data inputs, assumptions, calculations, and outputs should be evident. It should be easy for the preparer and the reader to challenge and understand all elements of the worksheet so that bad decisions are not the results of a poorly constructed worksheet.

An improved worksheet layout is found below and may be found in the **Worksheet Best Practices** workbook on the tab labeled *Good AR Aging*.

Accounts Receivable Aging as of 12/31/XX and Allowance							
	Current	0-30	31-60	61-90	91-120	120+	Total
Actual	5,010,780	1,070,631	865,120	287,420	53,266	15,819	7,303,036
% Total	69%	15%	12%	4%	1%	0%	100%
Allowance Calc. %	0%	5%	15%	20%	40%	50%	
Calculated Allowance	-	53,532	129,768	57,484	21,306	7,910	269,999

Forecasted Accounts Receivable Aging and Allowance							
	Current	0-30	31-60	61-90	91-120	120+	Total
Forecasted	5,130,000	1,800,000	1,350,000	450,000	180,000	90,000	9,000,000
% Total	57%	20%	15%	5%	2%	1%	100%
Allowance Calc. %	0%	5%	15%	20%	40%	50%	
Forecasted Allowance	-	90,000	202,500	90,000	72,000	45,000	499,500

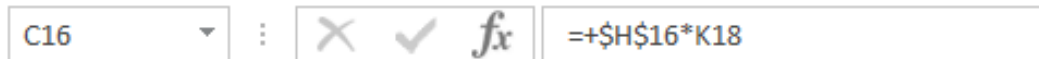
Aging Assumptions							
	Current	0-30	31-60	61-90	91-120	120+	Total
	57%	20%	15%	5%	2%	1%	100%

This worksheet overcomes the negative aspects of the previous example. The actual amounts remain the same. However, the basis of the forecast is now evident. Aging assumptions are set forth in a distinct area. These assumptions are used as the basis to calculate the accounts receivable aging. The allowance calculation percentages are also set forth, making them easy to review.

The improved layout and additional information make the worksheet more transparent and less susceptible to error. This layout has a much lower possibility of making a bad decision due to a poor understanding of the assumptions, calculations, or worksheet intent.

Absolute Cell References

Let's take a look at the formula in cell C16.



Why the \$ signs? These are called absolute cell references. When you use these, the cells will not change when they are copied. These can either be typed manually, or inserted after each cell reference by pressing F4 on your keyboard and the \$ signs will be inserted.

The reason for the absolute cell references is that we want to use the 9,000,000 in cell H16 and multiply this amount by the aging assumptions in cells J18:O18. If a formula in cell B16 was copied to cells C16:G16 without using absolute cell references (the \$ sign), the referenced cells would change by one cell to the right with each copied cell. So, if cell B16 multiplied cells H16 by J18 and this was copied to cell C16, the resultant formula would be I16 multiplied by K18. To keep the H16 cell reference from changing (that's where the 9,000,000 is), use an absolute cell reference (the \$ signs) so that the cell does not change from H16 as it's copied across.

Absolute cell references prevent the cell references from changing as they are copied. However, the cell references that are not absolute (they are relative), change as the formula is copied. This can be taken one step further. You can prevent either the row reference or the column reference from changing by only using one \$ sign rather than two. Using the same example, if the cell reference for H16 was indicated as \$H16 in a formula, this would indicate that if the formula were copied across, the H column would not change because it is absolute (contains a \$ sign) and, since it's being copied across, the 16 row indicator would not change either. However, if the formula using the cell reference \$H16 was copied down, the reference would change from \$H16 to \$H17 as there is no absolute cell reference before the row indicator.

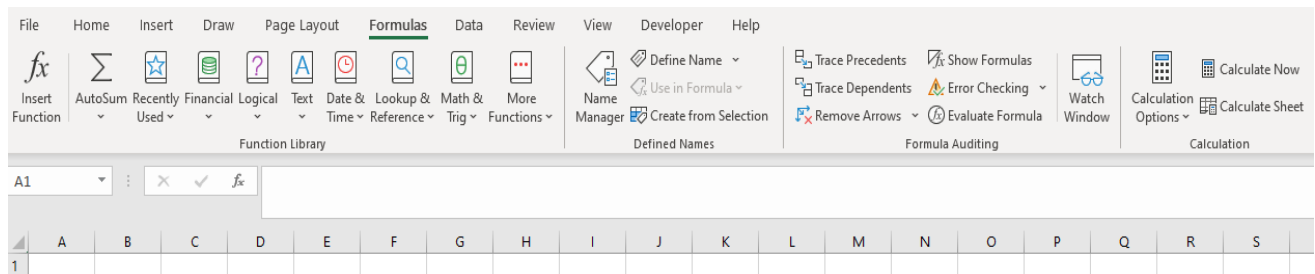
Named Ranges

An easier way of dealing with cell references and ranges of cells is to use the Name Manager in Excel. Using this tool, you may name an individual cell or name a range of cells. When either a cell or range of cells is named, the absolute reference of that cell is preserved, obviating the need for the absolute cell references.

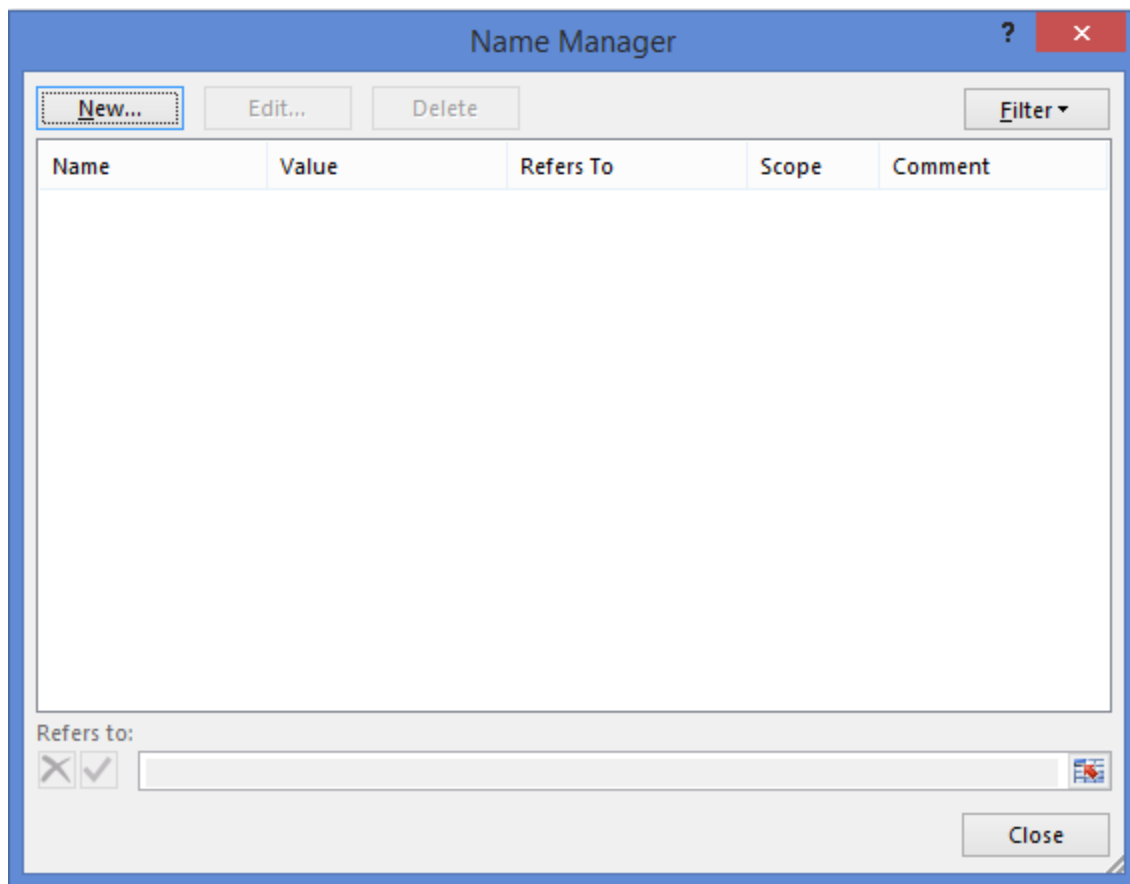
A big advantage of named ranges is that they are already absolute cell references in formulas. Another advantage is that a name for a cell or range of cells is much easier to remember. As demonstrated in the example below, it is much easier to remember a cell named "Q1" than it is to remember a cell labeled H5.

- Open the **Worksheet Best Practices** workbook and select the tab labeled *Good Sales Fcst*.

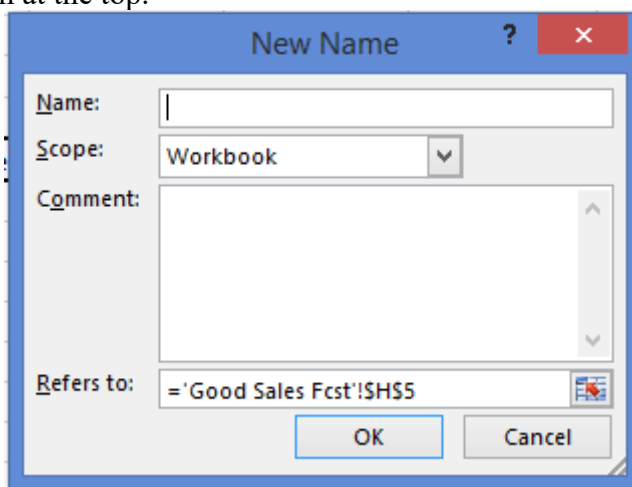
To name cell H5 **Qtr_1**, select cell H5 in a worksheet. To name the range, go to the **Formulas** menu and select **Name Manager** from the toolbar.



When Name Manager has been selected, a dialog box appears.

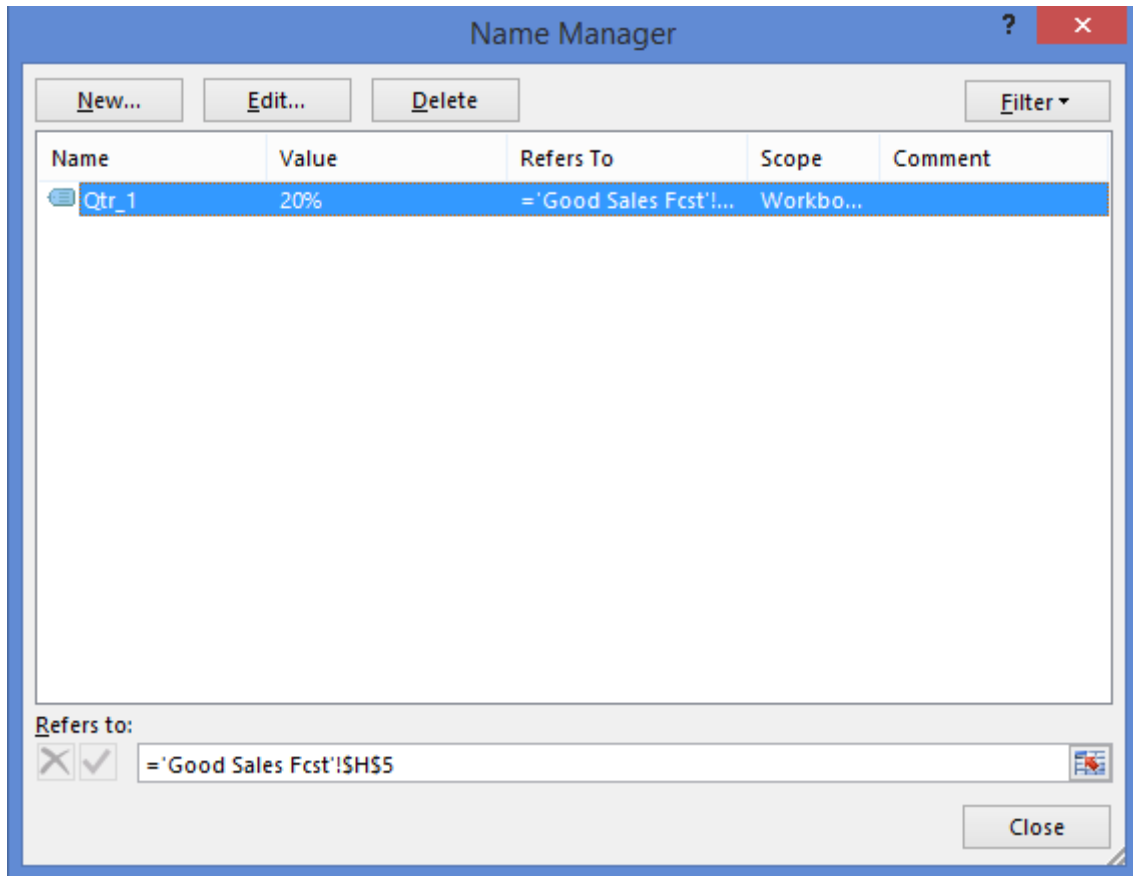


Click the **New...** button at the top.



Name the cell **Qtr_1**. Note that the named range relates to cell H5 in a worksheet that has been labeled Good Sales Fcst. Also note that there are \$ signs in the range, indicating that it will be absolute.

Once the Qtr_1 has been entered, press **OK**.



Cell H5 is now labeled Qtr_1. Press the **Close** button.

It is now possible to reference Qtr_1 in a formula. In cell B8, rather than having the formula be =B5*(1+\$H\$5), it may now be =B5*(1+Qtr_1)

	A	B	C	D	E	F	G	H
1	Forecasted Quarterly Sales Using Growth Assumptions							
2								Gr
3		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total		Quarter 1 C
4								
5	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152		20%
6								
7								
8	Forecasted Sales	=+B5*(1+Qtr_1)		8,708,174	11,354,184	32,226,182		

In this instance, the named range cannot be copied across since it is completely absolute. If it were copied, all the quarters would use the Qtr_1 growth assumption. This convention is very good for referencing one absolute cell or range of cells and makes the input very easy to remember. However, if you do need to copy the formula down or across, it will not automatically adjust since the reference is completely absolute (just like using \$H\$5).

In this example, it would be a good idea to name I5:K5 as **Qtr_2**, **Qtr_3**, and **Qtr_4**, respectively and adjust the formula references in C8:E8.

There are some naming conventions for named ranges that you should keep in mind. Names must begin with either a letter or an underscore. Only letters, numbers, underscores, and periods can all be used after the first character. Spaces cannot be used.

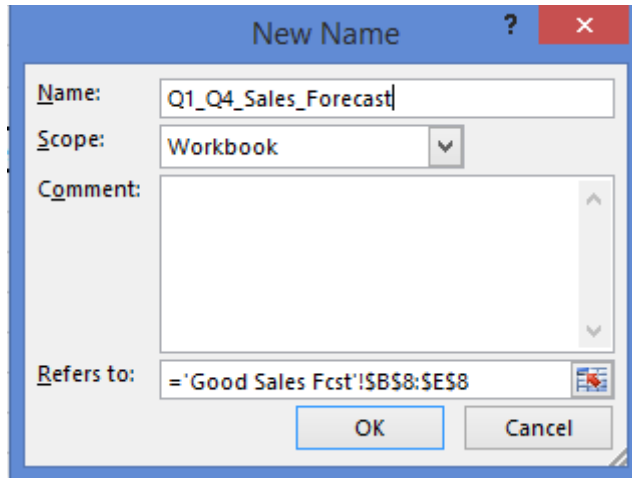
<u>Correct Name</u>	<u>Incorrect Name</u>
Total_Expense	Total-Expense
Net_Income	Net Income
Year2010	2010
Q_1	Q1

The last one may be a little tricky. Why is Q1 an incorrect name? Because it refers to an *existing* cell reference in the worksheet. Keep in mind that worksheets are getting bigger. You wouldn't be able to name a range Tax09 as this is also an existing cell reference in the worksheet.

To name a range of cells, first, select the range. As an example, the range of B8:E8 is summed in cell F8. Select the range **B8:E8**.

	A	B	C	D	E	F
1	Forecasted Quarterly Sales Using Growth Assumptions					
2						
3		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
4						
5	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152
6						
7						
8	Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	32,226,182

Select **Name Manager** and name this range **Q1_Q4_Sales_Forecast**.



Note that the range being referred to is \$B\$8:\$E\$8. Press **OK**.

Now, when this range of B8:E8 is selected, it is referred to as Q1_Q4_Sales_Forecast.

	A	B	C	D	E	F	G	H
1	Forecasted Quarterly Sales Using Growth Assumptions							
2								
3		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total		Quarter 1
4								
5	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152		20%
6								
7								
8	Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	=sum(Q1_Q4_Sales_Forecast)		
9								

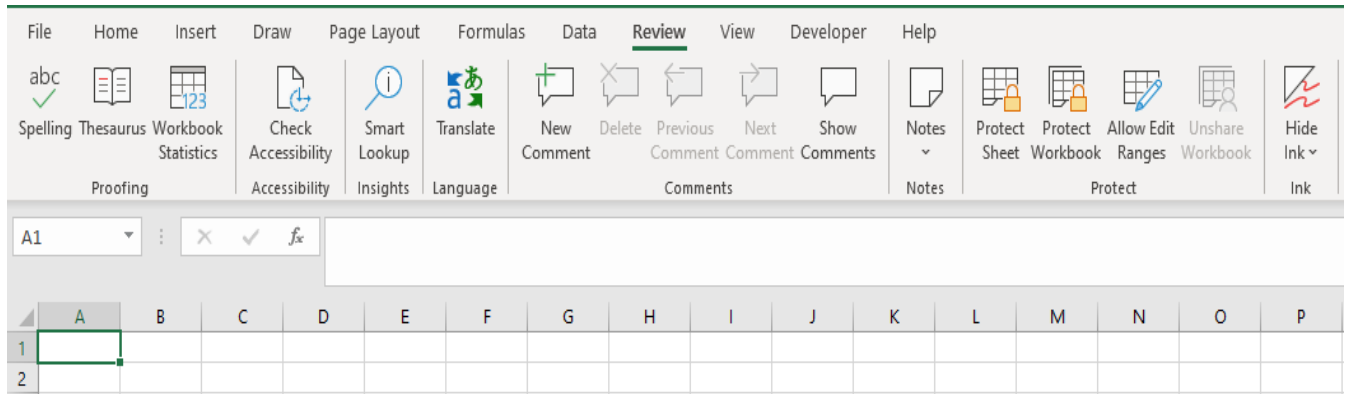
Naming key cells and key ranges of cells is a best practice. The advantages are that the named ranges are absolute in nature (when you use Qtr_1, it will always refer to the Quarter 1 growth assumption). This absolute nature helps to minimize the impact of keypunch errors or erroneous cell references in formulas. The other advantage is that named ranges are much more descriptive for a reviewer and much easier to remember for everyone.

Document Data Sources and Key Calculations Using Comments

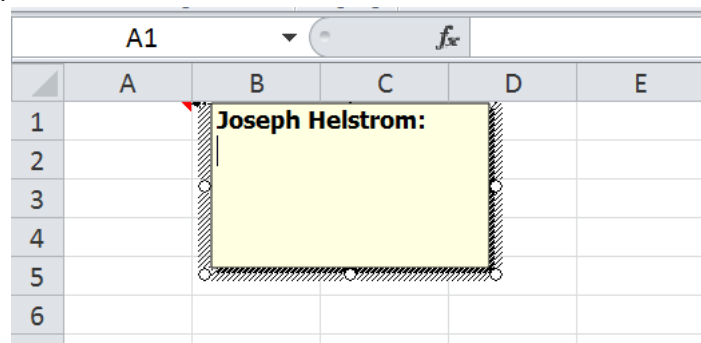
Proper documentation is essential to ensure that users understand how the worksheet functions and what it is intended to do. Excel provides for comments that relate to each cell. These comments are displayed as the cursor hovers over the cell and can also be displayed through a command. Excel comments are an excellent way to document the worksheet as the documentation is contained within the spreadsheet and is not a separate document that is unlikely to be consulted.

To add a comment to a cell, open a new worksheet and

- Go to the **Review** tab.
- Click **New Comment**.

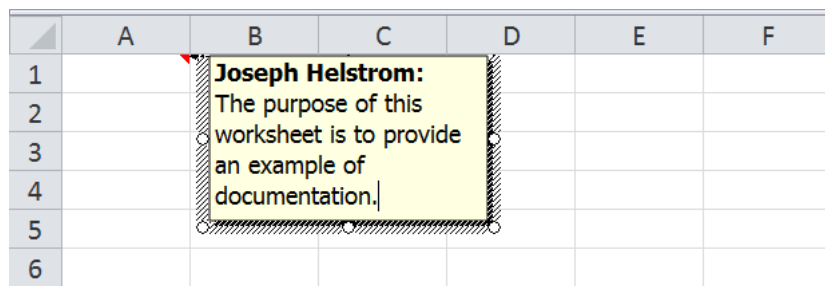


When New Comment is clicked, you have a yellow area (white input box in newer excel versions) to add text.

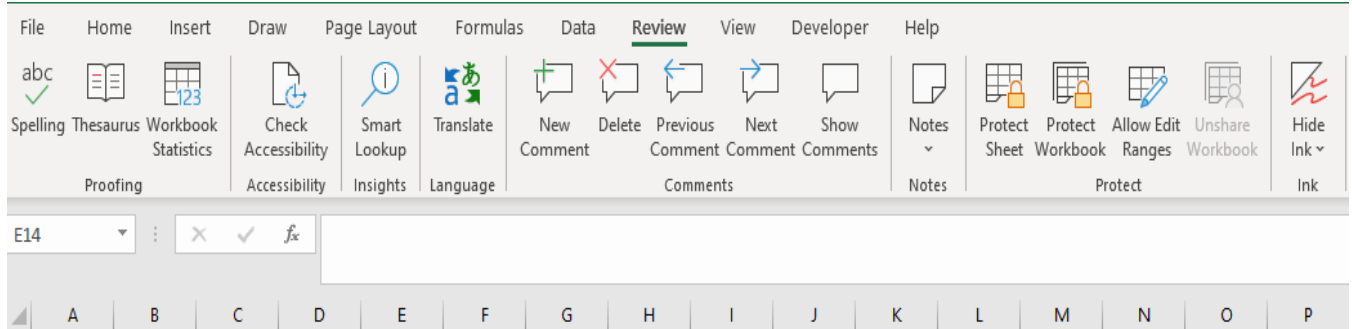


Within this area, you can describe the particular cell input or use it to provide overall information about the spreadsheet. The area can be resized larger or smaller by dragging the corner with your mouse.

- As an example, in cell **A1**, type “*The purpose of this worksheet is to provide an example of documentation.*”



When the cursor hovers over this cell, this comment will be displayed. You can also display the comments using the Previous Comment and Next Comment buttons as well as display all comments by clicking on Show Comments.



Also note that comments can be edited and deleted with a click of the mouse.

► You can also right-click on a cell and select Insert Comment (New Comment on newer Excel versions)

Comments can help the preparer and reader understand the source of the data used (so that the analysis may be replicated in the future) and the rationale for assumptions as well as explain how calculations work.

Using the Forecasted Quarterly Sales example, appropriate comments may be:

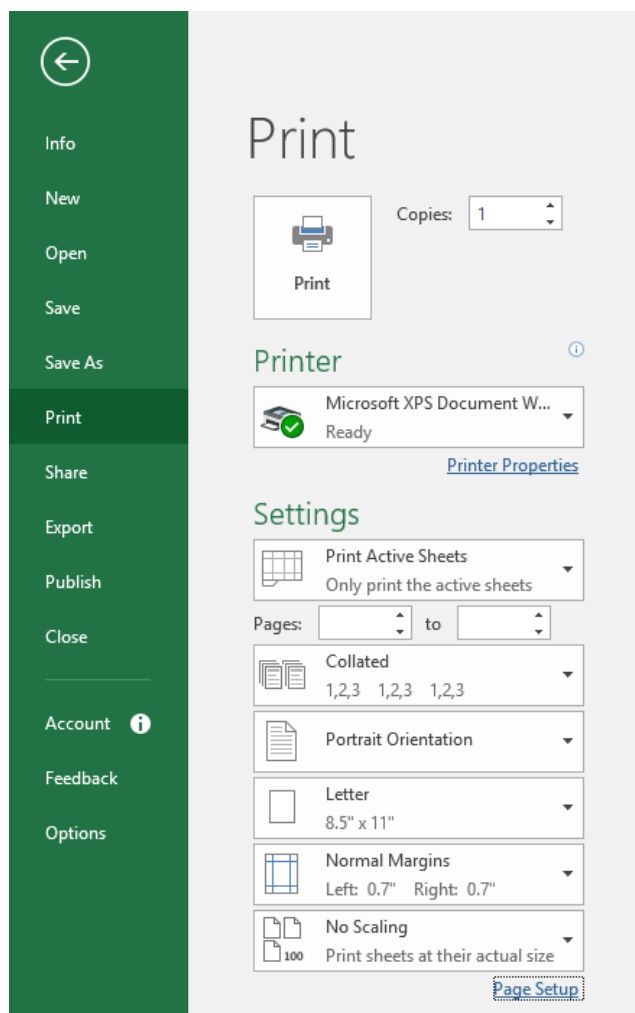
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1		Forecasted Quarterly Sales Using Growth Assumptions							Growth Assumptions				Joseph Helstrom: Based on new sales targets developed in January		
2		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total		Quarter 1	Quarter 2	Quarter 3	Quarter 4				
3								20%	20%	20%	20%				
4															
5	Actual Sales	Joseph Helstrom: Obtained from quarterly published income statements. Total ties to income statement as of 12/31/XX	720	7,256,812	9,461,820	26,855,152									
6															
7															
8	Forecasted Sales		664	8,708,174	11,354,184	32,226,182									
9															
10		Joseph Helstrom: Multiplies actual quarterly sales by (1+growth%) in Growth Assumptions													
11															
12															
13															
14															

These were obtained by using the **Show All Comments** option in the Review tab.

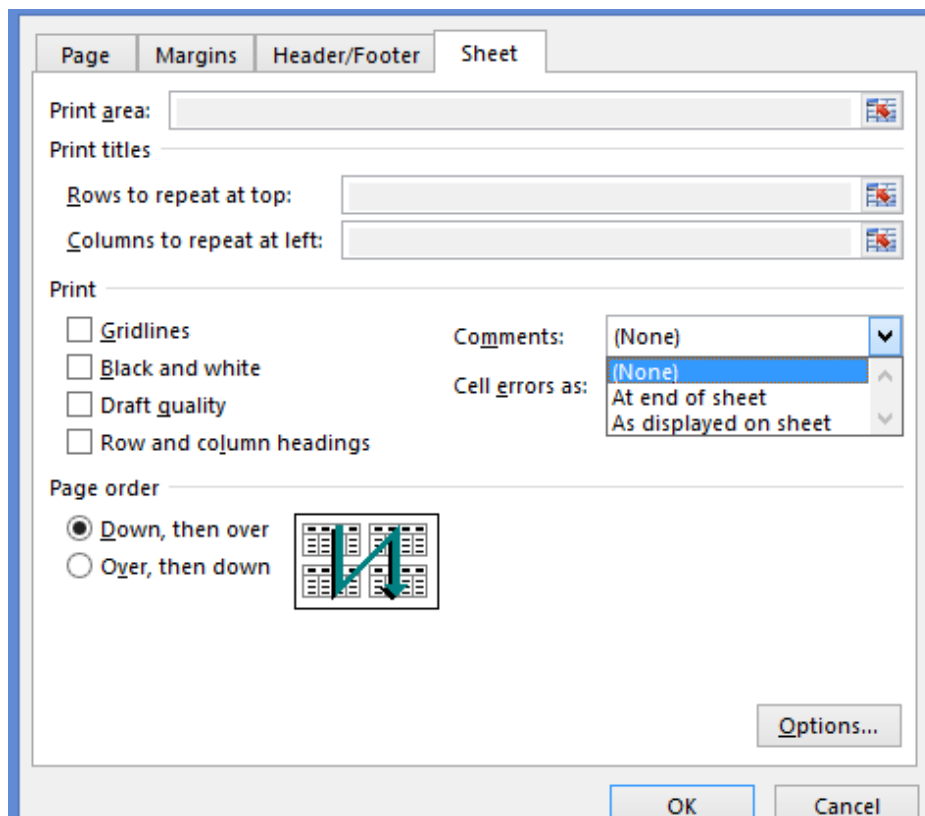
- Try adding comments to the *Good Sales Fcst* tab of the **Worksheet Best Practices workbook**.

For the preparer, comments can be thought of as a “cheat sheet” to remind them of the data source, assumption source, and components of calculations. For the reader, they can help in both reviewing and understanding worksheet components.

It is also possible to print out the comments as part of the worksheet. When preparing the worksheet for printing, select *Print* and click on the *Page Setup* link (located at the bottom under the No Scaling options).



In the page setup window, select the *Sheet* tab.



On the middle portion of the right side of the dialog box are the Comments options. You may elect to either print the comments at the end of the sheet or print them as displayed on the worksheet. A word of caution, printing the comments as displayed on the worksheet may obscure some of the output.

Multiple Worksheet Workbooks

In instances where the data or analysis is large, multiple worksheets should be utilized as part of a workbook. In these cases, all worksheet tabs should be appropriately labeled and each worksheet should contain appropriate overall headings as well as row and column headings. The separation of the input data from the assumptions, calculations, and the output should be accomplished on separate worksheets. As an example, assume that the input data is prior year sales by model and embedded in each model number is one of five product lines. You are asked to apply a specific sales growth factor to each product line to forecast current year sales.

In this case, there should be one worksheet for the input data that may, as an example, be labeled “PY Sales by Model.” There should also be a worksheet that may, as an example, be labeled “Growth Assump. By Prod. Line.” Another worksheet should be used to summarize prior year sales by product line and apply the growth assumptions. This worksheet may be labeled “Calculations.” The last worksheet, for your output, would contain a current year sales forecast by product line, based on prior year sales and growth assumption and may be labeled “Sales Forecast.”

Another example is the use of an Excel workbook to compile monthly and annual financial information. It may be organized by financial statement line item so that each line item has its own worksheet that is broken out by month. Revenue and expense detail can be entered into the appropriate month and the totals for each month are linked to a summary worksheet. By organizing it in this manner, the inputs (each worksheet of detail) is separated from the output (the summary worksheet). An example is below and is also contained in the **Worksheet Best Practices** workbook with worksheets labeled as *Summary Worksheet, Revenue, and General and Admin Expenses*.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	XYZ Consulting Company													
2	Statement of Income for 2015													
3														
4		January	February	March	April	May	June	July	August	September	October	November	December	Year
5														
6	Revenue	13,141	-	-	-	-	-	-	-	-	-	-	-	13,141
7														
8	General & Admin Expenses	8,965	-	-	-	-	-	-	-	-	-	-	-	8,965
9														
10	Net Income	4,176	-	-	-	-	-	-	-	-	-	-	-	4,176

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	XYZ Consulting Company													
2	Revenues - 2015													
3														
4		January	February	March	April	May	June	July	August	September	October	November	December	Year
5	Day													
6	1	500												500
7	2	623												623
8	3													-
9	4	400												400
10	5	957												957
11	6	409												409
12	7	555												555
13	8	800												800

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	XYZ Consulting Company													
2	General & Admin Expense - 2015													
3														
4		January	February	March	April	May	June	July	August	September	October	November	December	Year
5														
6	Payroll	6,000												6,000
7	Office Rent	1,760												1,760
8	Leases	300												300
9	Travel	200												200
10	Meals	400												400
11	Supplies	55												55
12	Office Expense	20												20
13	Utilities	130												130
14	Depreciation	100												100
15														
16	Total	8,965	-	-	-	-	-	-	-	-	-	-	-	8,965

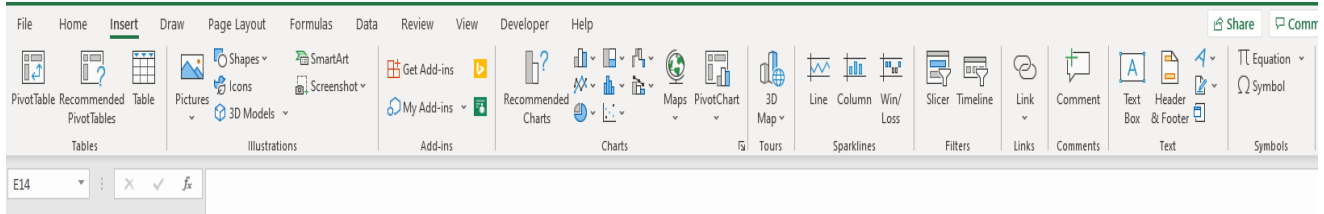
This method ensures information organization and clarity for both the preparer and reader.

Headers and Footers

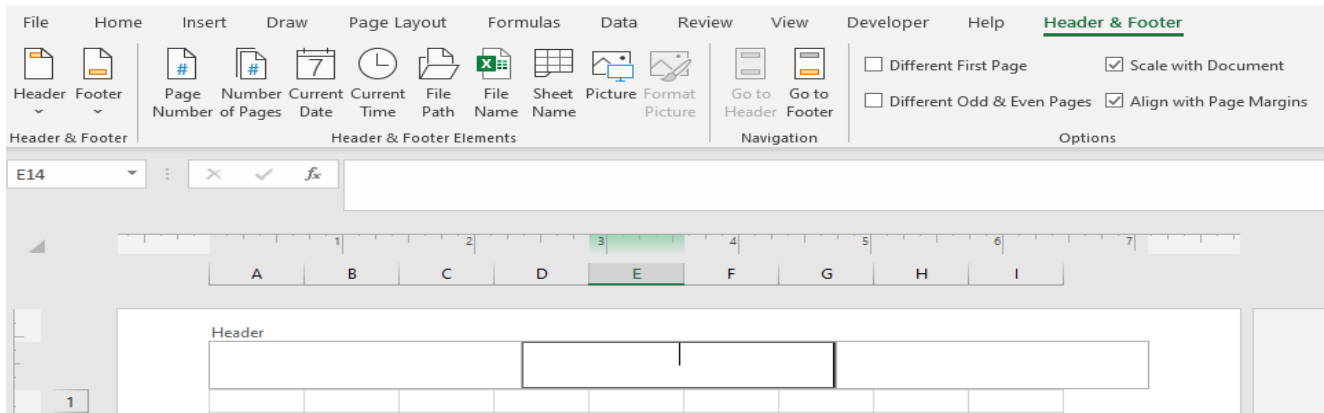
Headers and Footers are only evident on printed pages. If a worksheet or workbook is meant to be shared, using the first row(s) of the worksheet may be a better alternative as the heading will appear on the worksheet being displayed on the computer monitor. A discussion of how to use Print Titles to achieve the same title on each of multiple printed pages will appear after this discussion.

The use of headers in a worksheet is a good way of ensuring that each printed page has the same heading. Headers use a portion of the top margin of a printed page to print a consistent heading. If you elect to use a header rather than the top row of a worksheet, this option is found under the **Insert** menu option, then selecting *Header & Footer* toward the right side of the taskbar.

- Open a new worksheet.

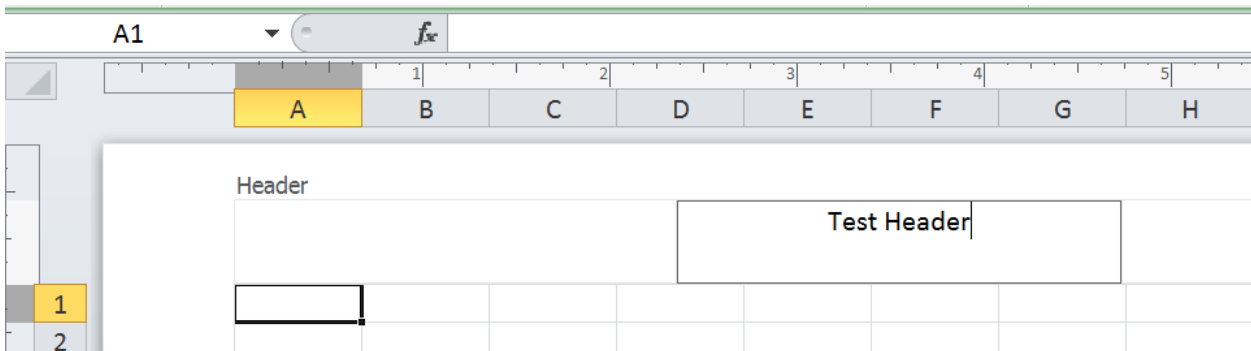


After selecting the *Header & Footer* option, a new worksheet layout appears as well as a **Header & Footer** Tool Design menu option at the top.



You may either type in text as a Header or use one of the standard headers under the *Header* button on the left side of the toolbar. These options are generally page numbers, workbook name, and date, etc.

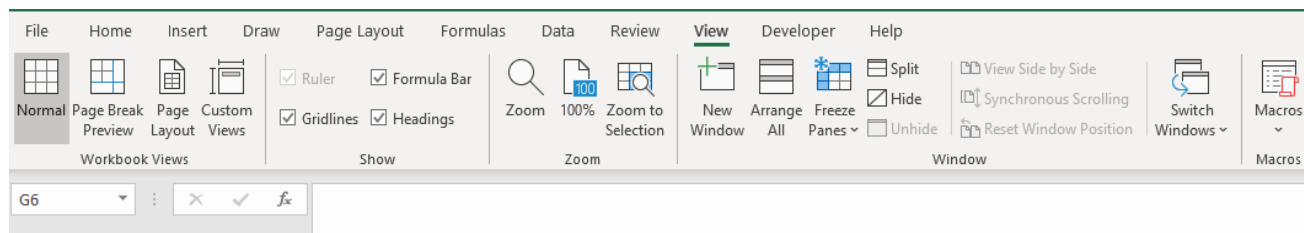
In this case, we'll use **Test Header** as an example. Simply type this text into the box.



This text may be altered like any other text. You may make it larger, bold, italicized, or underlined.

Click anywhere within the worksheet and the Header will be saved.

Notice that you're still in a Page Layout mode in the worksheet. To return to the Normal page layout, click on the *View* menu option and select the *Normal* option on the left hand side of the toolbar.

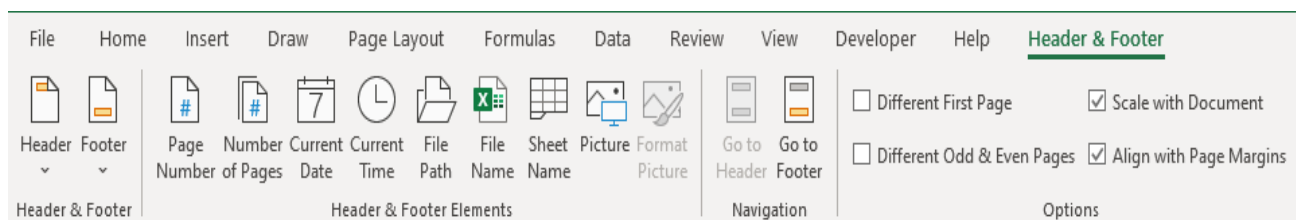


Once back in the Normal page layout mode, the header of **Test Header** no longer appears. It will only appear on the printed page.

Footers are generally used for page numbers and to place a time and date stamp on the printed worksheet. Like headers, these only appear on the printed page(s).

Access Footers in the same manner by going to the *Insert* menu option and then selecting *Header & Footer* which is toward the right hand side of the toolbar.

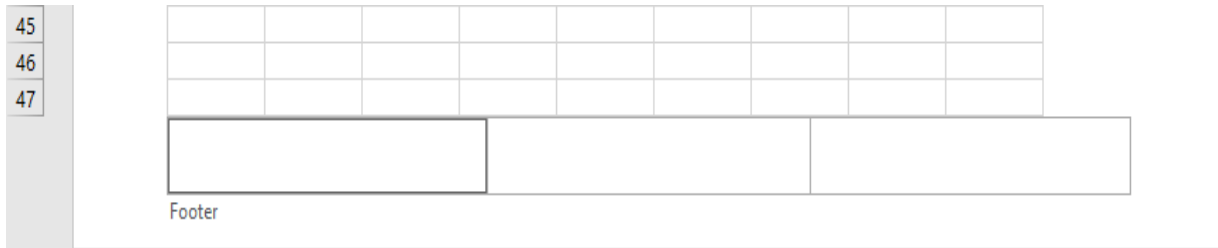
Once again, the Header & Footer Tools Design toolbar appears. On the left hand side of this toolbar is the *Footer* option button.



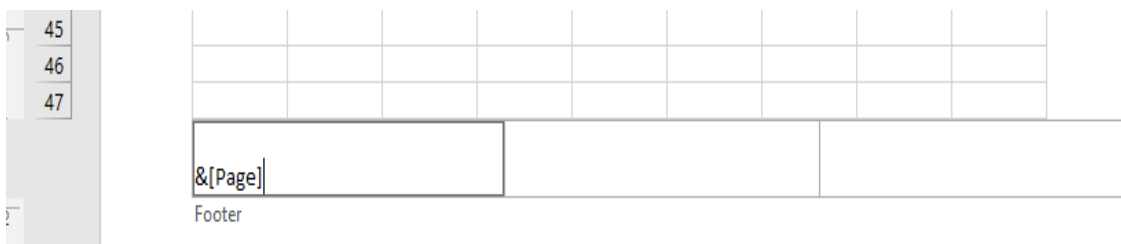
When the Footer button is selected, you'll note several different standard options (e.g., page number, current date, author, etc). Using the other buttons to the left, you may also select multiple options such as page number and current date. You may also select page number, current date, and current time.

For printed documents, a page number is important to ensure that multi-page documents don't get out of order. You may also want a date and time on the document if it happens to be one of those documents that endures constant revisions. A budget or forecast document is an example of this. It may be printed out, reviewed and then "tweaked" multiple times in an hour. In these instances, you want to ensure that you're working with the most recent printed document. Once again, neither headers nor footers show up on the worksheet displayed on the computer monitor. They only show up on the printed document.

To place page numbers, date, and time as a Footer, scroll down until the footer portion of the worksheet is displayed and click on the **Footer** section.



Once the left Footer section has been clicked, select the **Page Number** button from the toolbar. Your Footer area should now appear as follows:

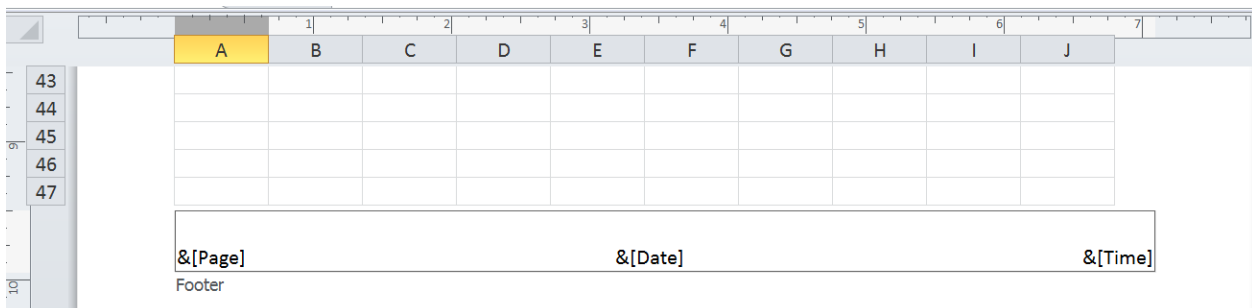


Next, click on the middle footer section and select the Current Date button from the toolbar. In the right footer section, select the Current Time button from the toolbar. The completed footer should have &(Page) on the left, &(Date) in the middle and &(Time) on the right.

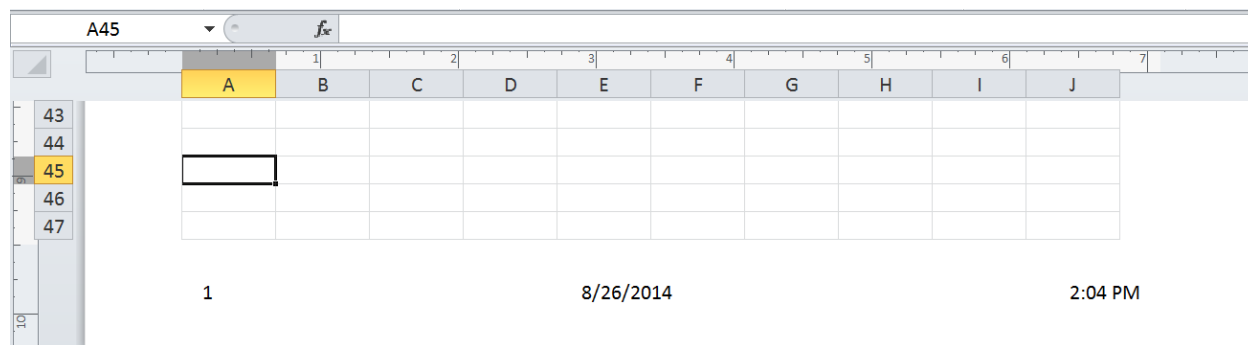
If you are using an earlier version of Excel that does not have left, middle and right header sections, this is the solution:

Click the &(Page), &(Date) and &(Time) buttons. They will display in the middle of the footer in a group.

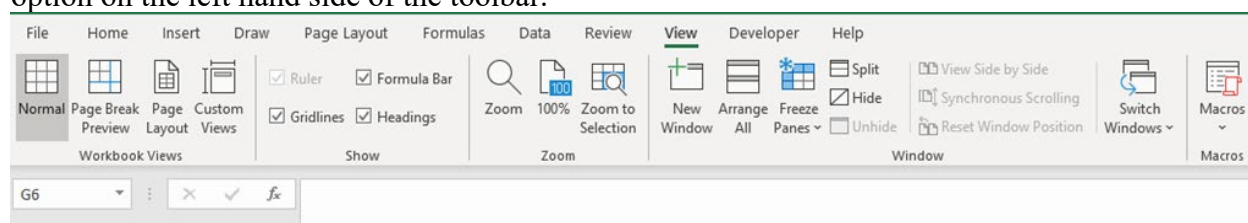
Remain in the Footer area and click in between &(Page)&(Date) and add some spaces. Also add some spaces between &(Date)&(Time). Simply use the spacebar. If these are not spaced, they will run together and be difficult to read. The finished product should look something like this.



Click anywhere in the worksheet and, while in page layout mode, you can see the results.



To return to the Normal page layout, click on the *View* menu option, and select the *Normal* option on the left hand side of the toolbar.



Once back in the Normal page layout mode, the footer no longer appears. It will only appear on the printed page.

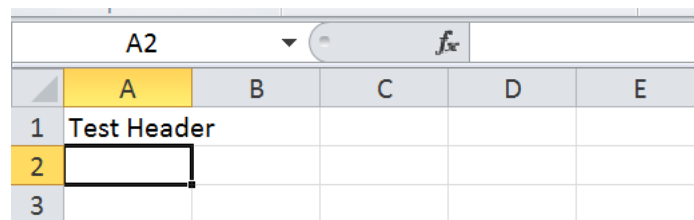
Headers and Footers can be important to documenting printed worksheets. However, keep in mind that the Headers and Footers only appear in the printed form and are not displayed in the worksheet on the computer monitor. They should be used with this in mind.

Print Titles

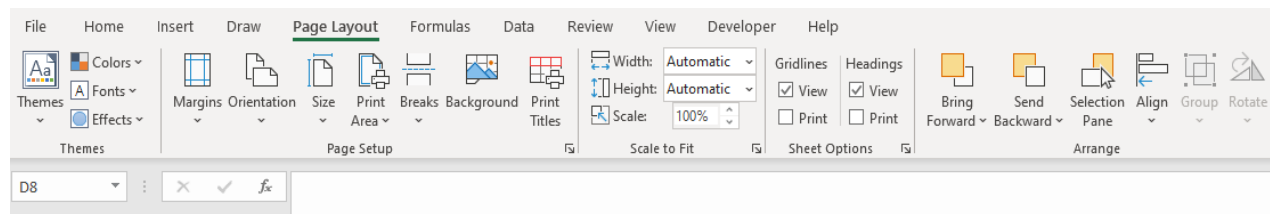
If you want a heading to appear on both the worksheet as viewed and the printed page, an easy way is to use the top row(s) of the worksheet for a heading and then use an Excel tool called Print Titles to ensure that each printed page has the same heading.

- Open a new worksheet.

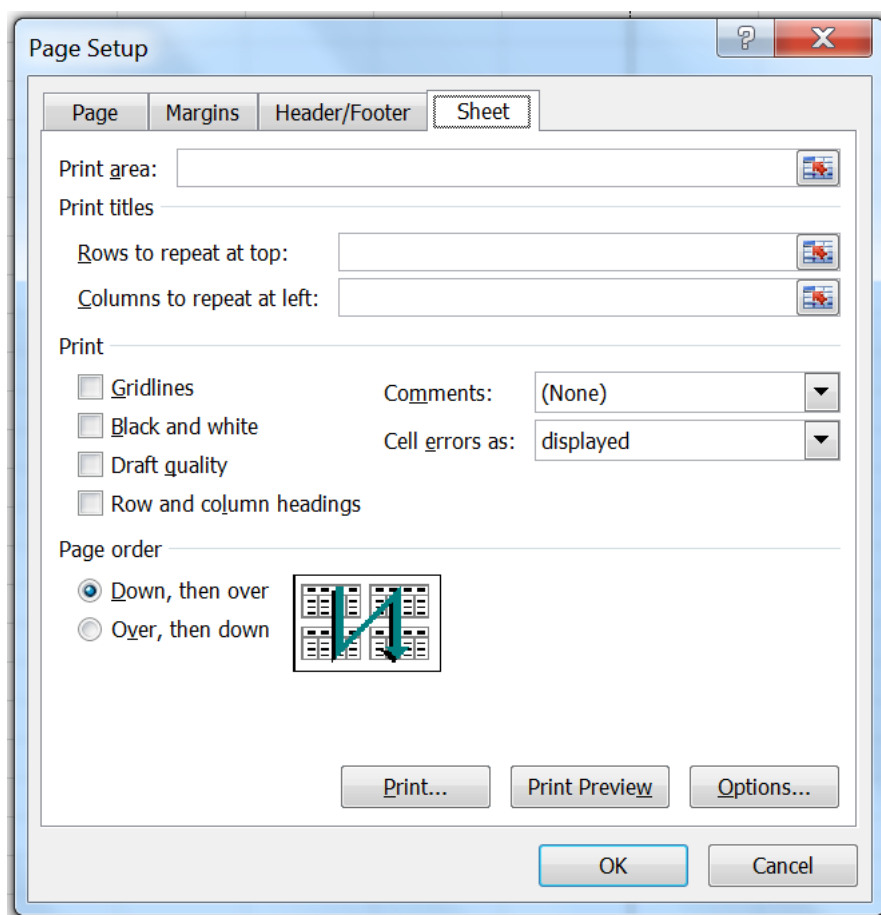
As an example, enter the text **Test Header** in cell A1.



Select the *Page Layout* menu option, then select **Print Titles** toward the middle of the toolbar.



After Print Titles has been selected, a textbox appears.



Using the *Rows to repeat at top:* option, enter **1:1** (indicating a range of the first row to the first row. If you just enter 1, it won't work.), then click **OK** at the bottom.

Note that by using this alternative, the header may encompass more than one row. It can be two or more rows of description.

If the worksheet encompasses multiple pages, the heading would now be *Test Header* on all printed pages.

This alternative ensures that the heading is displayed on both the printed worksheet as well as on the worksheet being displayed on the computer monitor. Depending on the predominant use of

the worksheet, printed or viewed on a monitor, either Headers or Print Titles should be utilized to describe the purpose of the worksheet.

Worksheet Design

Input Data Check Totals

All input data must be tied out to an authoritative source. In order to do this, totals should be used to ease this process. It is easy to skip this step as many will trust the data downloaded from an enterprise computer system. However, this is an extremely important step that acts as an internal control over the output data.

There must be a process to ensure the input data is correct. Without any controls over the input data, there can be no assurance that the output is correct. There is an old information technology expression that is applicable here: Garbage In, Garbage Out (GIGO). If the wrong data inputs are used, the output will also be wrong.

As an example, if product sales by model number for the previous year was the input data, the total sales should tie out (or be reconciled) to prior year reported sales. If year-end inventory by product is the data input, that should also tie out (or be reconciled) to prior year reported inventories. Check totals should always be available and these totals should always be compared to reported amounts to ensure accuracy of the inputs.

There are numerous instances of reports and analyses being wrong due to the use of incorrect data inputs. The use of check totals and the subsequent comparison of the check totals to reported amounts or another authoritative source is the best assurance that the appropriate input data is being utilized and this data is complete.

Formulas Require Cell References Rather Than Numbers

A previous example used numbers in a formula rather than cell references. Note that the Forecasted Sales in cell B4 uses actual sales multiplies by a factor of 1.2 to obtain actual sales.

	A	B	C	D	E	F
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4	
2						
3	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	
4	Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	
5						
6						

This is not a good practice. While it is tempting to use a worksheet as a calculator for keystroke efficiency, it is not a good practice in worksheet design for the following reasons:

- The calculation methodology is not evident. Just looking at the analysis, it is unclear that a factor of 1.2 is being applied to Actual Sales.

- The use of 1.2 in the formula is subject to data entry error. A factor of 1.3 could easily be entered in error and unless someone recalculated the Forecasted Sales, this error is unlikely to be caught.
- If the factor of 1.2 was changed, it would require editing of 4 different cells, also resulting in a much higher likelihood of error due to erroneous input. The new assumptions would also not be clear to a reader of the worksheet.

As noted earlier, it is also not a good practice from a worksheet layout perspective as the underlying assumptions to arrive at Forecasted Sales are not evident to the reader or the preparer. The best practice is to have formulas use cell references rather than numbers. By following this practice, the amounts may be reviewed for accuracy in case of data input errors, may be reviewed for reasonableness, and may be easily changed with a higher level of assurance that the proper changes were made.

Using the same example, a best practice worksheet would be:

Forecasted Quarterly Sales Using Growth Assumptions							Growth Assumptions			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	
Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152	20%	20%	20%	20%	
Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	32,226,182					

In this example, the growth assumptions are in separate cells that are referenced by the formula. They may be easily reviewed and changed. The use of this technique helps to ensure calculation accuracy.

Use Constraints in Calculations

All calculations need a sanity check. There are times when calculations are performed and the answer just doesn't make sense. Key worksheet calculations should be subject to constraints that highlight any answers that just don't make sense.

As an example, assume that a worksheet is being used to prepare a General and Administrative Expense budget. Each department is preparing its own budget and the purpose of the worksheet is to summarize the departmental inputs. Wouldn't it be nice to know if any expense line item increased by more than 10% over current year forecast so that particular line item could be investigated?

By using constraints, the preparer can identify results that don't appear to make sense and subject these results to further investigation. The investigation may demonstrate that there is a problem with the input or it may highlight an error in calculation. Even if there is no error present, it prepares the worksheet preparer with an answer in the event someone else questions to result.

Assume that the following represents the culmination of the budgeting process for General and Administrative Expenses.

- Open the **Worksheet Best Practices** workbook and select the tab labeled *Constraints*.

	A	B	C	D
1	General and Administrative Expense Budget			
2				
3		Current Year		% Increase
4		Forecast	Budget	(Decrease)
5	Salaries	1,460,000	1,489,200	2%
6	Benefits	292,000	297,840	2%
7	Supplies	52,000	75,000	44%
8	Travel	60,000	65,000	8%
9	Meals	12,000	13,000	8%
10	Advertising	200,000	300,000	50%
11	Promotion	50,000	55,000	10%
12	Building Rent	144,000	144,000	0%
13	Utilities	24,000	26,000	8%
14				
15	Total Expense	2,294,000	2,465,040	7%

Now, both the preparer and reader could scan the % Increase (Decrease) column to see that there are outliers. However, if the information presented was much greater or if there are time constraints, this review may be susceptible to error. Since the overall increase of 7% may appear to be reasonable, the increases in Supplies of 44% and Advertising of 50% may escape notice. There are two ways to apply constraints to identify any increase greater than 10%. The first is to use the IF function. The syntax for the IF function is:

=IF(logical test, value if true, value if false)

The logical test is the condition you wish to use to select. In this case, the test would be whether than % Increase Decrease in column D is greater than 10%. The value if true is the value that will be returned if the logical test is true (The value in column D is greater than 10%). This value may be a number or text. In this example, we'll use text that states "Large Increase." The value if false is the value that will be returned if the logical test is false (The value in column D is less than or equal to 10%). This value may also be a number or text (If it is text, the text value must be in quotes). Since we're not concerned with values that are less than or equal to 10%, we'll use a blank space (" ") for this value.

In cell E5, the formula will be inserted as shown below.

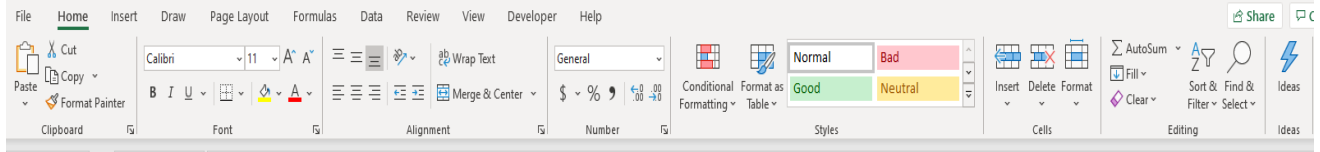
		TEXT			=IF(D5>10%,"Large Increase","")		
	A	B	C	D	E	F	G
1	General and Administrative Expense Budget						
2							
3		Current Year		% Increase			
4		Forecast	Budget	(Decrease)			
5	Salaries	1,460,000	1,489,200	2%	=IF(D5>10%,"Large Increase","")		
6	Benefits	292,000	297,840	2%			
7	Supplies	52,000	75,000	44%			
8	Travel	60,000	65,000	8%			
9	Meals	12,000	13,000	8%			
10	Advertising	200,000	300,000	50%			
11	Promotion	50,000	55,000	10%			
12	Building Rent	144,000	144,000	0%			
13	Utilities	24,000	26,000	8%			
14							
15	Total Expense	2,294,000	2,465,040	7%			

After pressing Enter, there is a blank in cell E5. This is expected as the increase is not greater than 10%. When this formula is copied down from E5:E13, the results are shown below.

	A	B	C	D	E
1	General and Administrative Expense Budget				
2					
3		Current Year		% Increase	
4		Forecast	Budget	(Decrease)	
5	Salaries	1,460,000	1,489,200	2%	
6	Benefits	292,000	297,840	2%	
7	Supplies	52,000	75,000	44%	Large Increase
8	Travel	60,000	65,000	8%	
9	Meals	12,000	13,000	8%	
10	Advertising	200,000	300,000	50%	Large Increase
11	Promotion	50,000	55,000	10%	
12	Building Rent	144,000	144,000	0%	
13	Utilities	24,000	26,000	8%	
14					
15	Total Expense	2,294,000	2,465,040	7%	

Now, the large increases in Supplies and Advertising are highlighted for further review. The use of constraints in calculations makes the review process easier and reduces the possibility of calculation error.

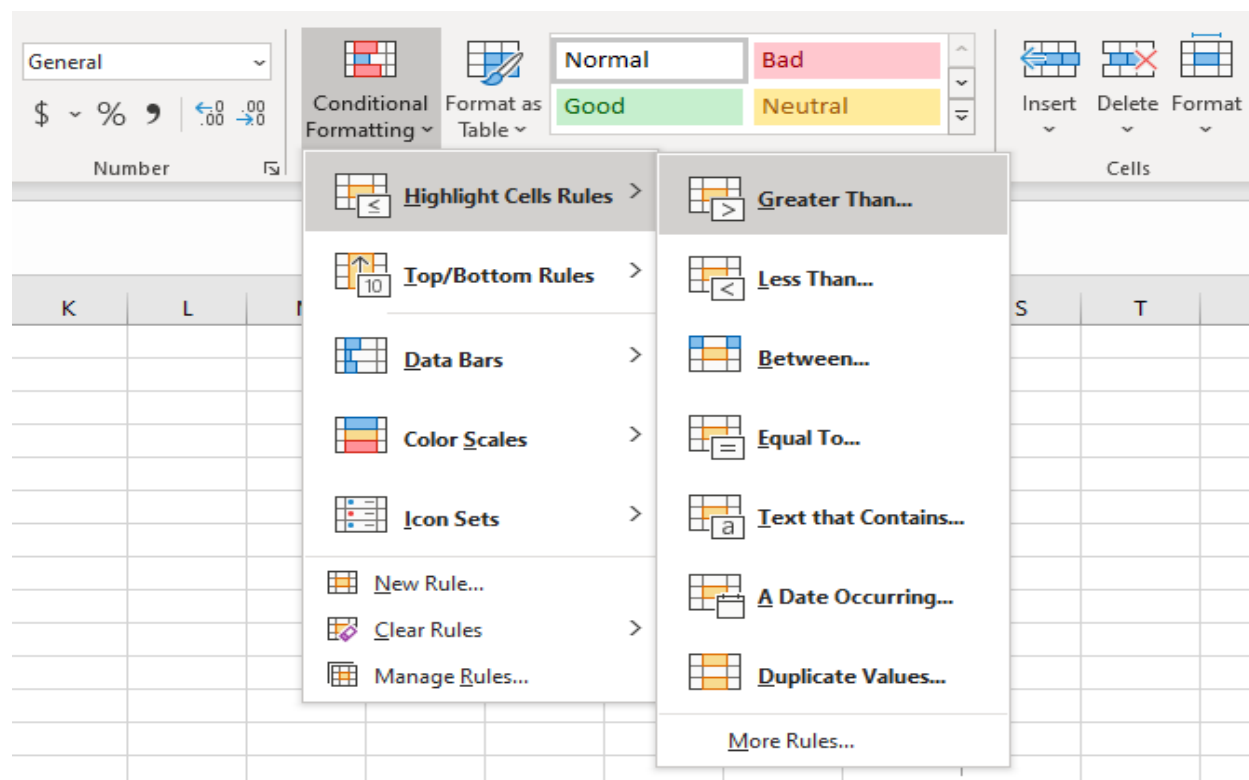
Another method that may be employed is the use of conditional formatting. The Conditional Formatting option can be found on the *Home* menu, just right of center on the toolbar.



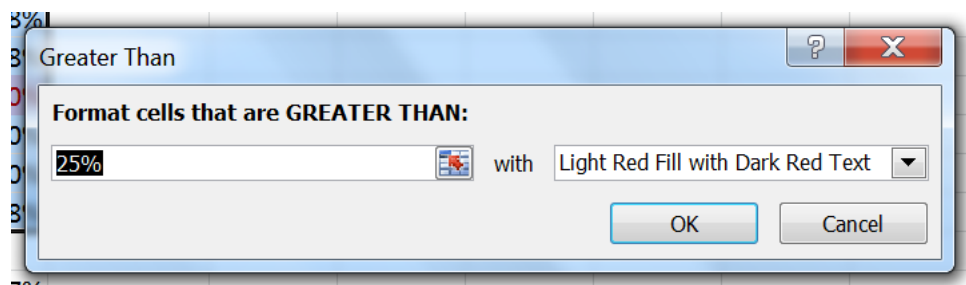
To use Conditional Formatting to accomplish the goal of highlighting all amounts in column D that are greater than 10%, highlight the range of cells from D5:D13.

	A	B	C	D
1	General and Administrative Expense Budget			
2				
3		Current Year		% Increase
4		Forecast	Budget	(Decrease)
5	Salaries	1,460,000	1,489,200	2%
6	Benefits	292,000	297,840	2%
7	Supplies	52,000	75,000	44%
8	Travel	60,000	65,000	8%
9	Meals	12,000	13,000	8%
10	Advertising	200,000	300,000	50%
11	Promotion	50,000	55,000	10%
12	Building Rent	144,000	144,000	0%
13	Utilities	24,000	26,000	8%
14				
15	Total Expense	2,294,000	2,465,040	7%

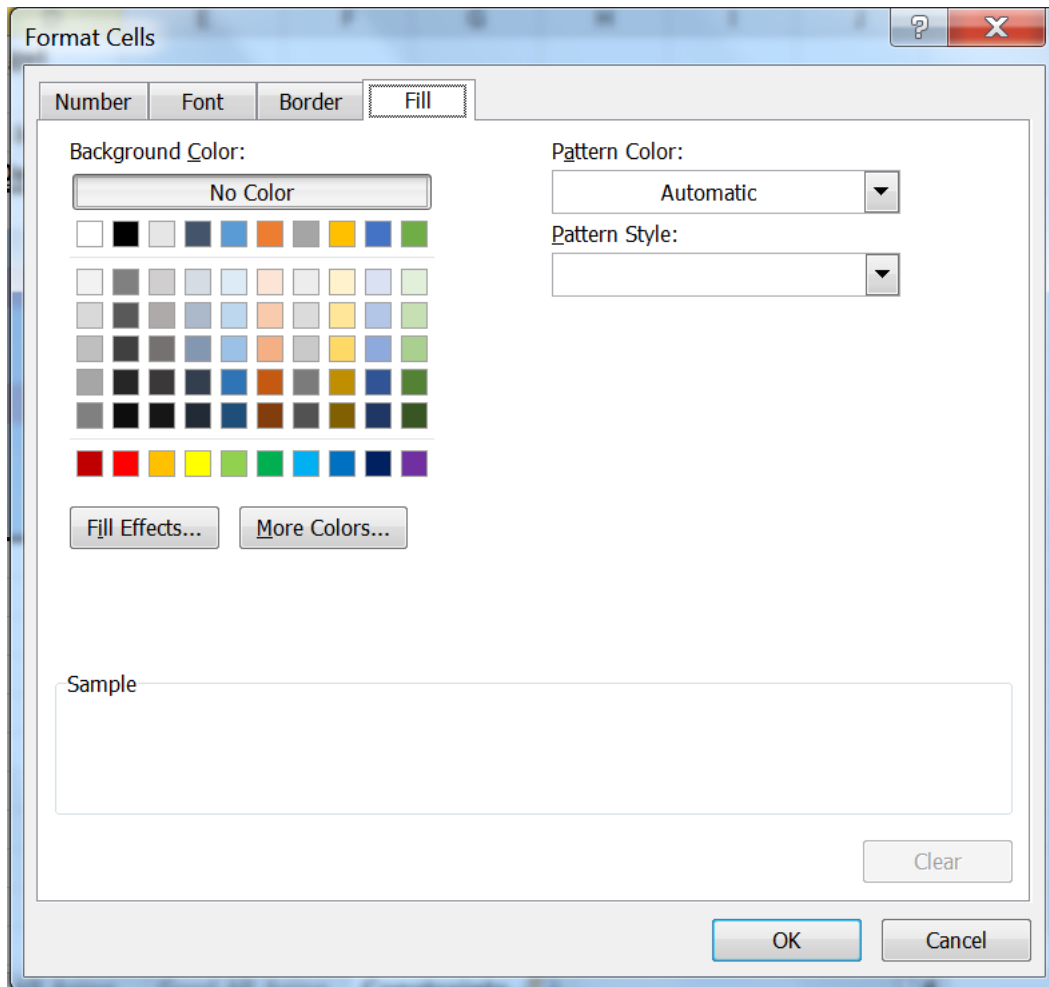
Click on the *Conditional Formatting* button, then select **Highlight Cells Rules**, then select **Greater Than** (since we want those cells that are greater than 10%). Note that there are other options which include Less Than, Between and Equal To. These options will work in the same manner as described below.



The following dialog box appears.



Replace the 25% in the dialog box with 10%. On the right, there are highlighting options. You can use the six standard fill and text options or you can customize both the text color and/or the fill color. We will use a yellow fill for any amounts greater than 10%, so click on **Custom Format**.



When the *Format Cells* dialog box appears, select the **Fill** tab, if this is not already selected. Click on the **yellow** fill color. The sample at the bottom should now display a bar of yellow color. Click **OK**.

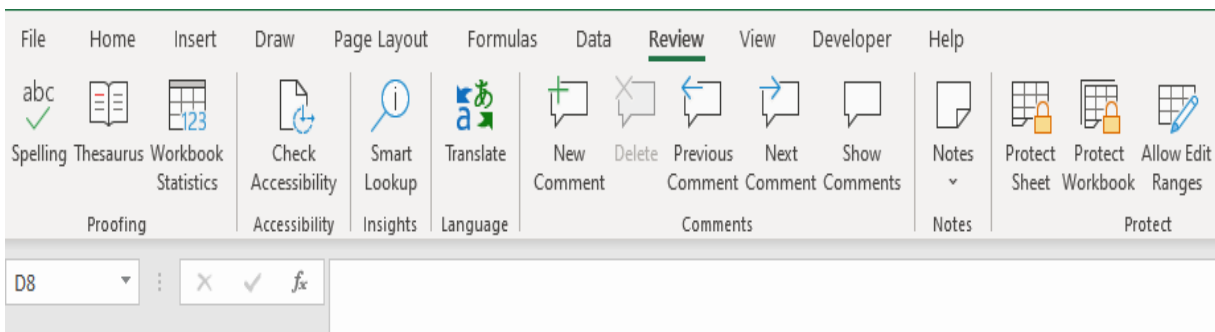
Click **OK** on the Greater Than dialog box.

	A	B	C	D
1	General and Administrative Expense Budget			
2				
3		Current Year		% Increase
4		Forecast	Budget	(Decrease)
5	Salaries	1,460,000	1,489,200	2%
6	Benefits	292,000	297,840	2%
7	Supplies	52,000	75,000	44%
8	Travel	60,000	65,000	8%
9	Meals	12,000	13,000	8%
10	Advertising	200,000	300,000	50%
11	Promotion	50,000	55,000	10%
12	Building Rent	144,000	144,000	0%
13	Utilities	24,000	26,000	8%
14				
15	Total Expense	2,294,000	2,465,040	7%

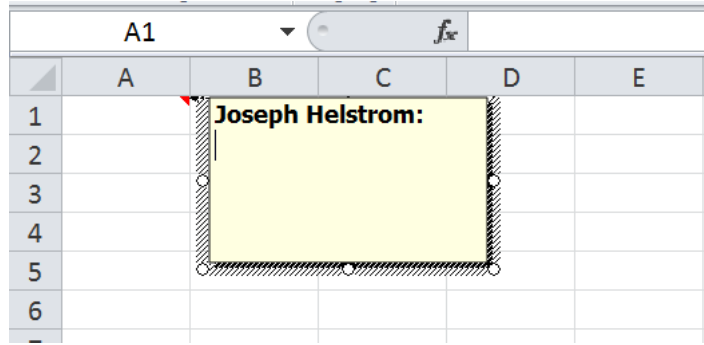
The two items that are greater than 10% are now highlighted in yellow to indicate that further review is necessary. The use of either Conditional Formatting or the IF function as constraint tools to identify results that are beyond reasonable expectations is an important technique to assure that both data inputs and the results of calculations are accurate.

Use Comments to Explain Calculations

As noted earlier, comments are an important tool to explain how the worksheet operates. You may easily add a new comment by going to the Review menu option and clicking New Comment on the toolbar.



When New Comment is clicked, you have a yellow area to add text (or, in newer versions of Excel, a text box).

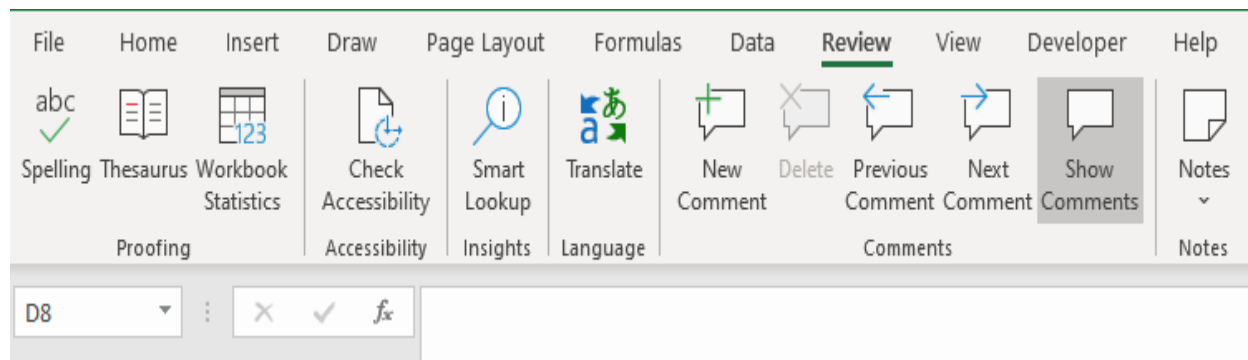


To continue with the Sales Forecast example, the comment explains that the calculation is the result of multiplying the actual sales by (1+Growth%) that are in the Growth Assumptions area of the worksheet.

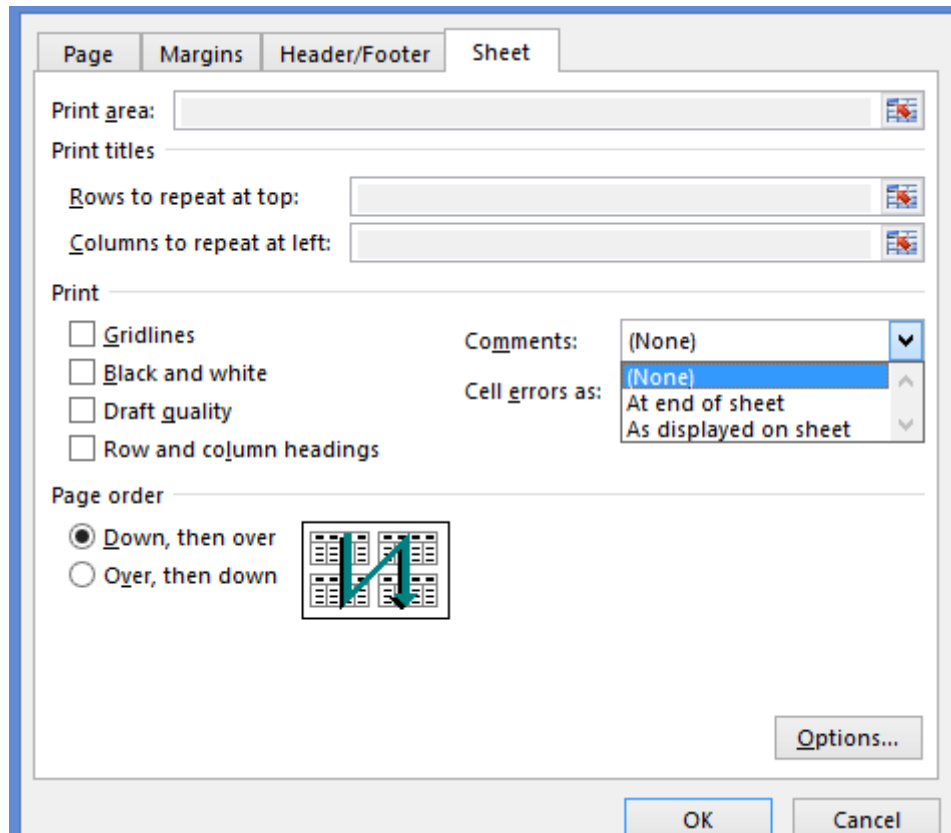
	A	B	C	D	E	F	G	H	I	J	K	
1	Forecasted Quarterly Sales Using Growth Assumptions								Growth Assumptions			
2								Quarter 1	Quarter 2	Quarter 3	Quarter 4	
3		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total						
4								20%	20%	20%	20%	
5	Actual Sales	5,236,800	4,899,720	7,256,812	9,461,820	26,855,152						
6												
7												
8	Forecasted Sales	6,284,160	5,879,664	8,708,174	11,354,184	32,226,182						
9												
10												
11												
12												
13												

Joseph Helstrom:
Multiplies actual quarterly sales by (1+growth%) in Growth Assumptions

Comments may be displayed by either hovering over the cell with the cursor or by clicking the Show All Comments option on the Review menu.



Comments may also be printed. When preparing the worksheet for printing, select *Page Setup* and then select the *Sheet* tab. On the middle portion of the right side of the dialog box is the *Comments* options. You may elect to either print the comments at the end of the sheet or print them as displayed on the worksheet. A word of caution, printing the comments as displayed on the worksheet may obscure some of the output.



The use of check totals, cell reference inputs in formulas and calculation constraints will help to assure that the worksheet is functioning as intended. As noted earlier, documenting key calculations, assumptions, and data sources is essential to reminding the preparer of what was done long ago as well as helping another user with the worksheet components.

Review Questions

The review questions accompanying this course are designed to assist you in achieving the course learning objectives. The review section is not graded; do not submit it in place of your qualified assessment. While completing the review questions, it may be helpful to study any unfamiliar terms in the glossary in addition to course content. After completing the review questions, proceed to the review question answers and rationales.

1. Which of the following is an acceptable range name in Excel?
 - a. Total_Expense
 - b. Total-Expense
 - c. Q1
 - d. Net Income

2. Comments may be printed:
 - a. By right-clicking any cell in the workbook
 - b. By clicking the Review tab and then clicking Show Comments
 - c. By accessing the Print menu, selecting Page Setup, then selecting the Sheet tab and selecting a print option in the Comments box
 - d. By selecting a separate page at the end of the worksheet

3. Which of the following is not true regarding calculation constraints?
 - a. They may be accomplished using the IF function
 - b. 10% variance is always a good constraint
 - c. They may be accomplished using Conditional Formatting
 - d. They are used to identify outliers

4. Which of the following is not a best practice for worksheet design?
 - a. Use check totals for input data
 - b. In cases where there is a significant amount of data and analysis, make sure that all inputs, calculations and output fit into one worksheet to ease review
 - c. Use cell references in formulas rather than numbers
 - d. Use calculation constraints

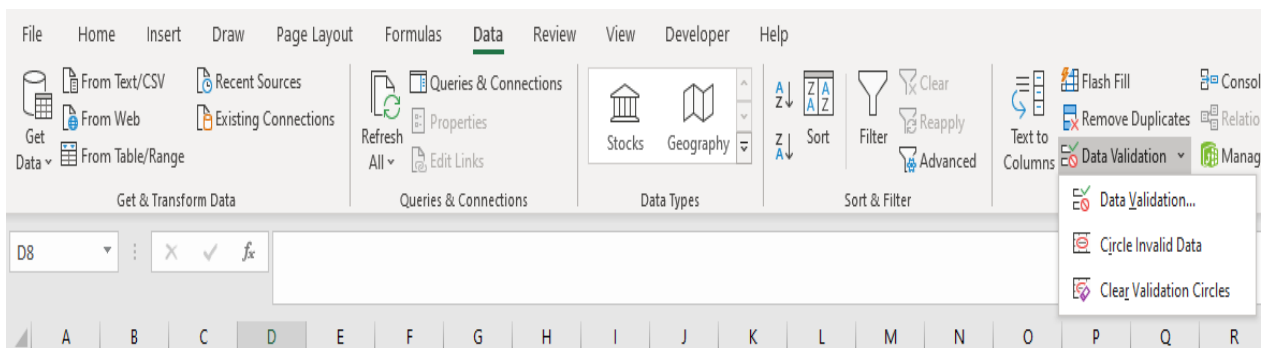
Worksheet Audit and Other Tools to Ensure Accuracy

Data Validation

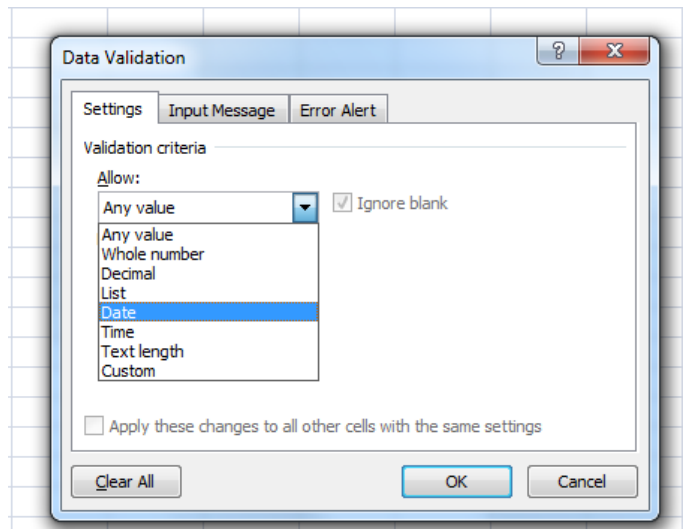
If the worksheet requires user input, validation of user input is a best practice. While Excel cannot test to make sure that any entry is absolutely accurate, it can test for a value that is a whole number, decimal, a list, a date, a time, text, or a custom formula. Except for the list option and custom formula, you can further restrict the input to a range of values.

To access Data Validation:

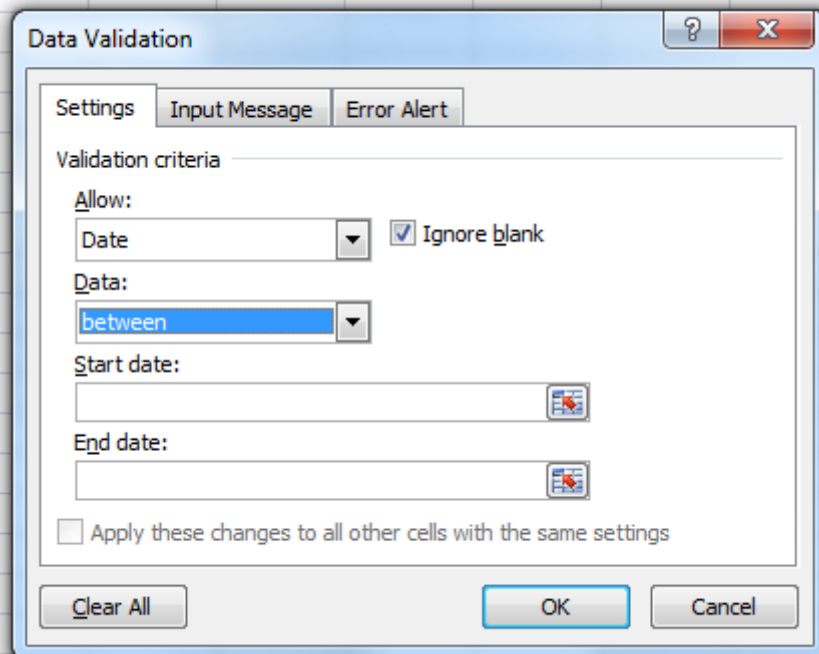
- Open a new worksheet
- Select the Data tab
- Select the Data Validation button
- Select the Data Validation option



As an example, if the input to a cell is a date that should be restricted to the year 2015, which would be accomplished by selecting the cell, then selecting the Data Validation button, selecting the Data Validation option, then, from the list that appears after “Allow:” in the dialog box, select Date.



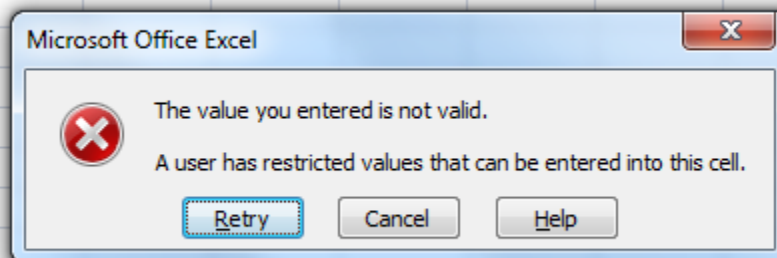
Once Date has been selected, the following dialog box appears:



You have many logical options now. The date can be between two dates, not equal to a date, not between dates, greater than, or less than a date. You have similar options with the other values (except List and Custom).

- For our purposes, we'll confine the date in this cell to 1/1/2015 – 12/31/2015. Use the *between* option under **Data:** then enter these values in the start date and end date
- Press **OK**.

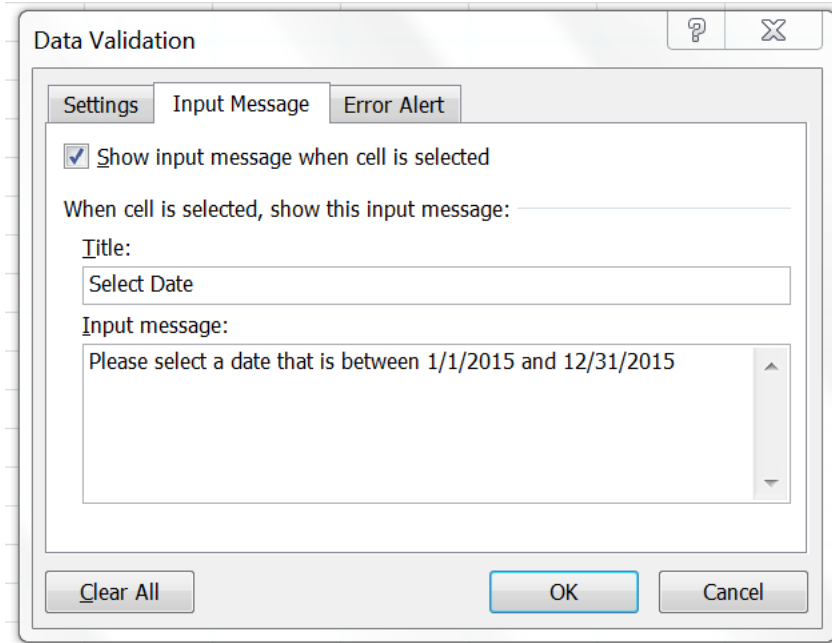
Now, this cell (A1 in the example) will be restricted to a date that is between 1/1/2015 and 12/31/2015. When we attempt to input 12/31/2009 into the cell, we see the following:



Press **Cancel**.

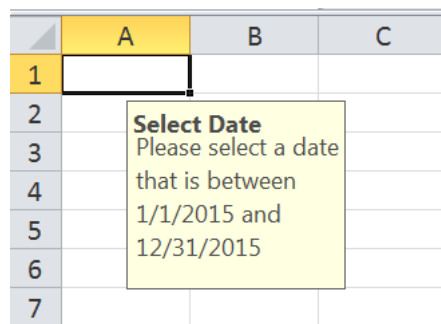
Now, we can make this more user friendly by using an input message. That is on the second tab of the Data Validation tool.

- After selecting the Data Validation button and selecting the Data Validation option again, click on **Input Message** tab on the **Data Validation** dialog box and enter the information shown in the screenshot below.



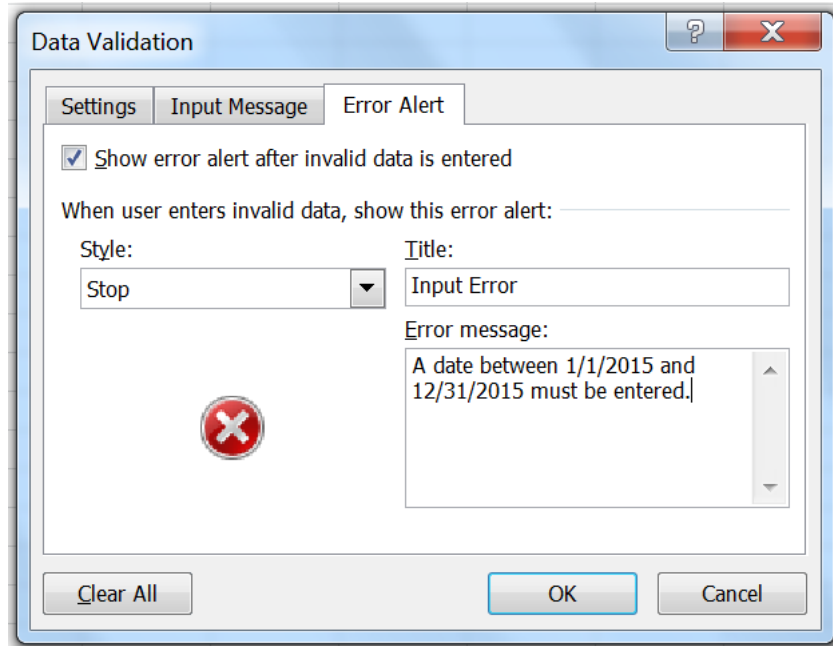
- Click **OK**

When we click OK, the message appears whenever the cell (A1 in this example) is selected. It looks like this:

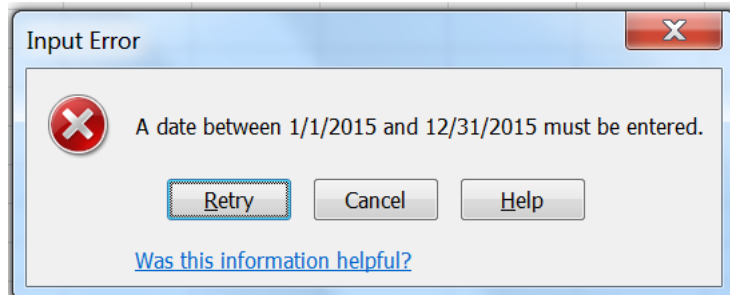


You can also customize the error message by selecting the third tab on the Data Validation tool.

- Select the **Data Validation** button and select the *Data Validation* option
- Click on the **Error Alert** tab in the *Data Validation* dialog box
- Enter the information shown below:



- Press **OK**
- In that cell, enter erroneous data (like 12/31/2009) and the following appears.

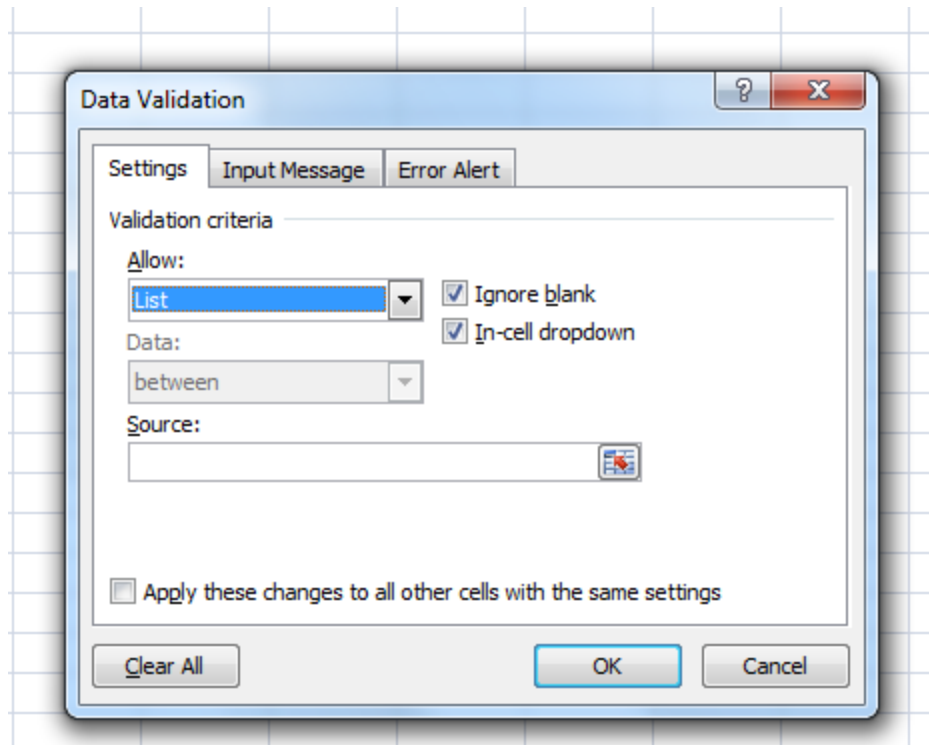


The logic is the same for numbers. This is a great tool help check user input for keypunch errors. The error alert will default to a **Stop** condition. This is the desired setting since this will prevent input that does not meet the data validation settings. The other two settings (Warning and Information) will allow the user to input data that does not meet the validation settings and provides a warning message. It is recommended that the default Stop setting be used.

Note: There is a weakness in data validation. If data is copied to the cell subject to validation, the validation does not work as the cell contents have been replaced. User documentation should reflect that data must not be copied to a cell that has Data Validation applied.

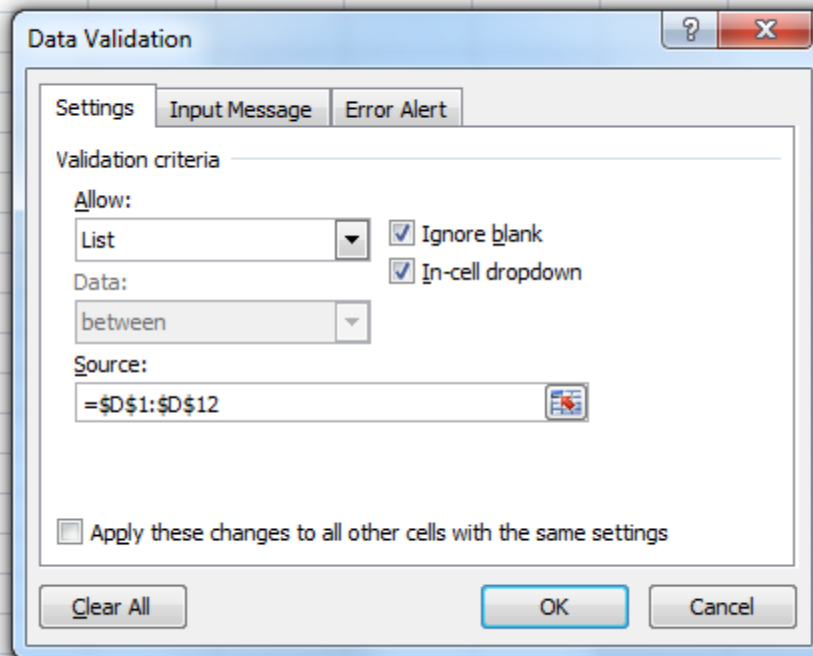
If the input can be restricted to a specific list, this can “error proof” it even further. Assume that the input to cell A1 is confined to the 12 months Jan-Dec. We want the input to A1 confined to these values.

- Once again, select the **Data Validation** button and then select the *Data Validation* option. This time select **List** from the dialog box options.



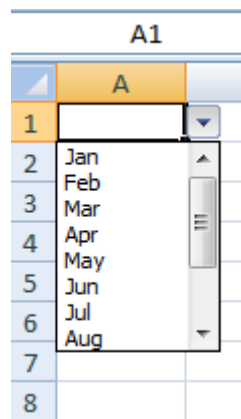
It will ask for a source for the list.

- **Cancel** the *Data Validation*
- In cells **D1:D12**, type *Jan, Feb, Mar, Apr...Dec.* to use that as the source for data validation
- Select **Data Validation** and **List** again
- For the source, use **= $\$D\$1:\$D\12** . (You can also select the range by clicking on the spreadsheet box to the right of the input box and using your mouse to select the range).
- Click **OK**.



- Go to cell A1.

You have the following drop down options:



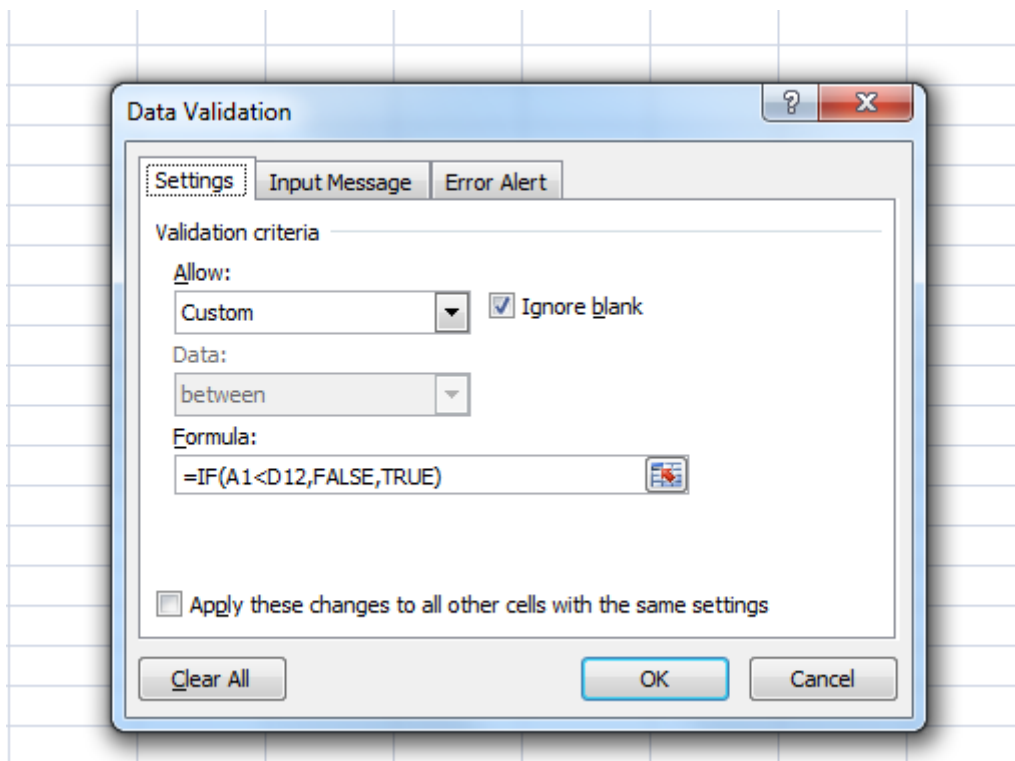
Now you can only select one of the pre-set items. With this, you can also use a customized input message and error message as shown above.

The big advantage of using lists is to restrict the input to a pre-selected range. However, another advantage of using lists is the uniformity of the data being presented. In the example, January will always be presented as Jan.

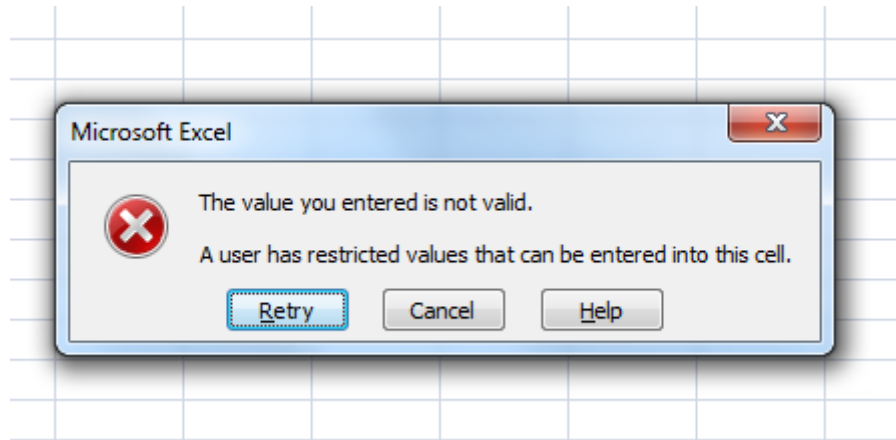
Another feature is the custom formula. The most common use for this is to restrict the input value of a cell based on the value of another cell in the spreadsheet. As an example, say that a component of a spreadsheet calculates the minimum liability exposures of a lawsuit in cell D12 and you want the input value of cell A1 to not be less than this computed amount.

Let's assume that the value in cell D12 is 1,000,000.

- Select the **Data Validation** button and then select the *Data Validation* option
- Select **Custom** from the dialog box
- In the *formula* box, type **=if(A1<D12,False,True)**
 - This will limit the input in cell A1 to an amount that is greater than or equal to the result in cell D12.

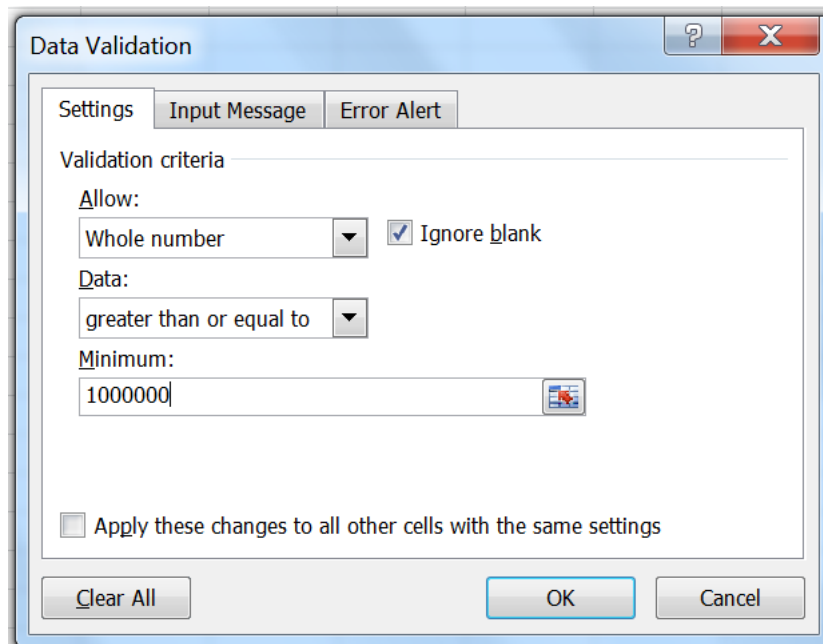


If you enter the value 999,999 in cell A1, you will get an error message as this amount is less than 1,000,000.



This formula tells Excel that if the condition is true (the value of A1 is less than the value of D12), then return False (an error condition), otherwise return True (a non-error condition).

Note that this may also be accomplished by selecting a “whole number” that is “greater than or equal to” 1,000,000 in the dialog box as shown below.



Once again, input messages and error messages can be customized. Keep in mind that the Error Alert should remain at *Stop*.

While Data Validation is not error proof, you can restrict user input to ensure that many, if not most, inadvertent input errors are detected. Also be aware of the weakness of data validation; data may be copied into the validated cell, replacing the cell contents.

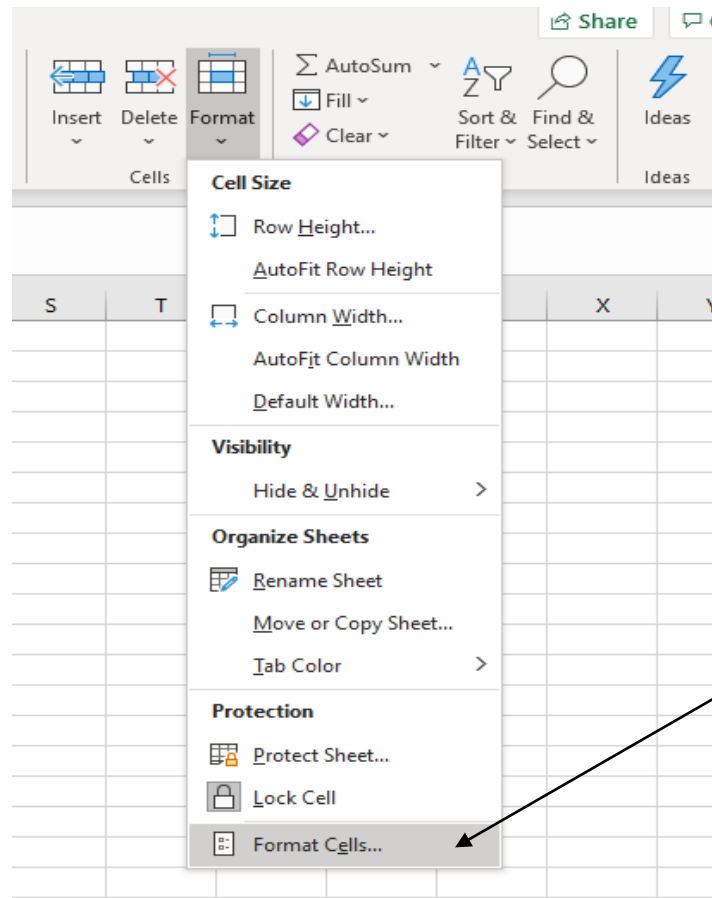
Cell Protection and Worksheet Protection

If there are key calculations that should not be changed, cell protection in Excel allows you to lock cells and restrict access to those cells. This can be used to protect formulas, functions and calculation detail. Many times, the only unlocked cells in a spreadsheet are those that are used for user input.

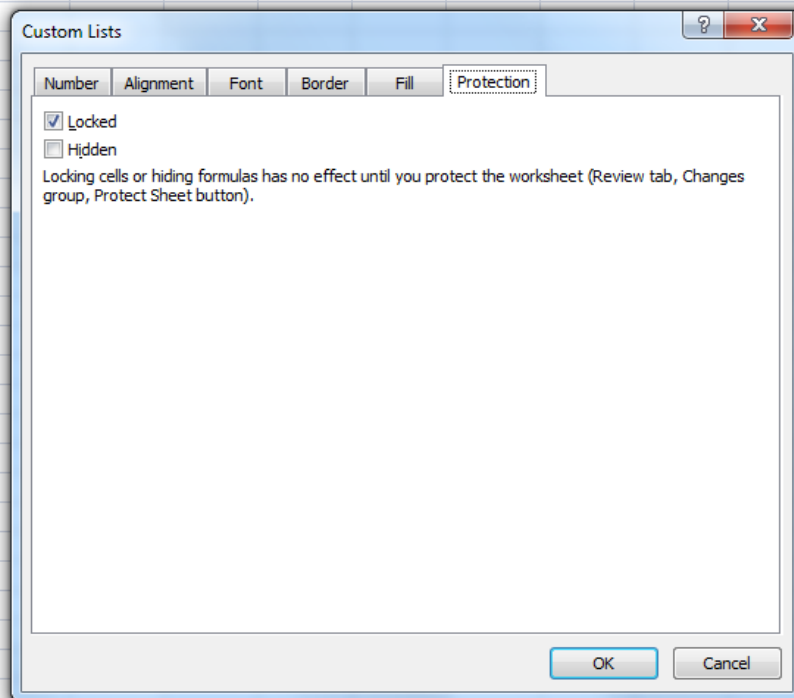
A locked cell can be password protected. It is important to note that the password protection is not the default. It is important to limit the password to only those users with authorized access, to properly safeguard the password and not share it with anyone else.

In cells, the default setting for cells is that they are locked. You can access the protection settings for a cell or range of cells through the Home tab, Cells Format or by right clicking a cell or range of cells and going to Format cells. Both methods are illustrated below.

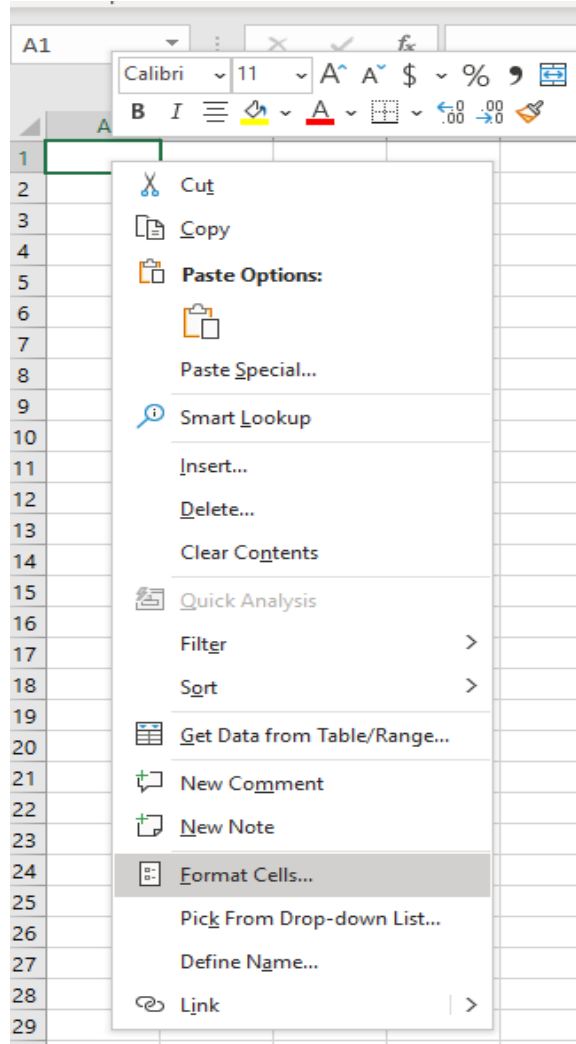
- Select **Format icon** from the **Home** tab:



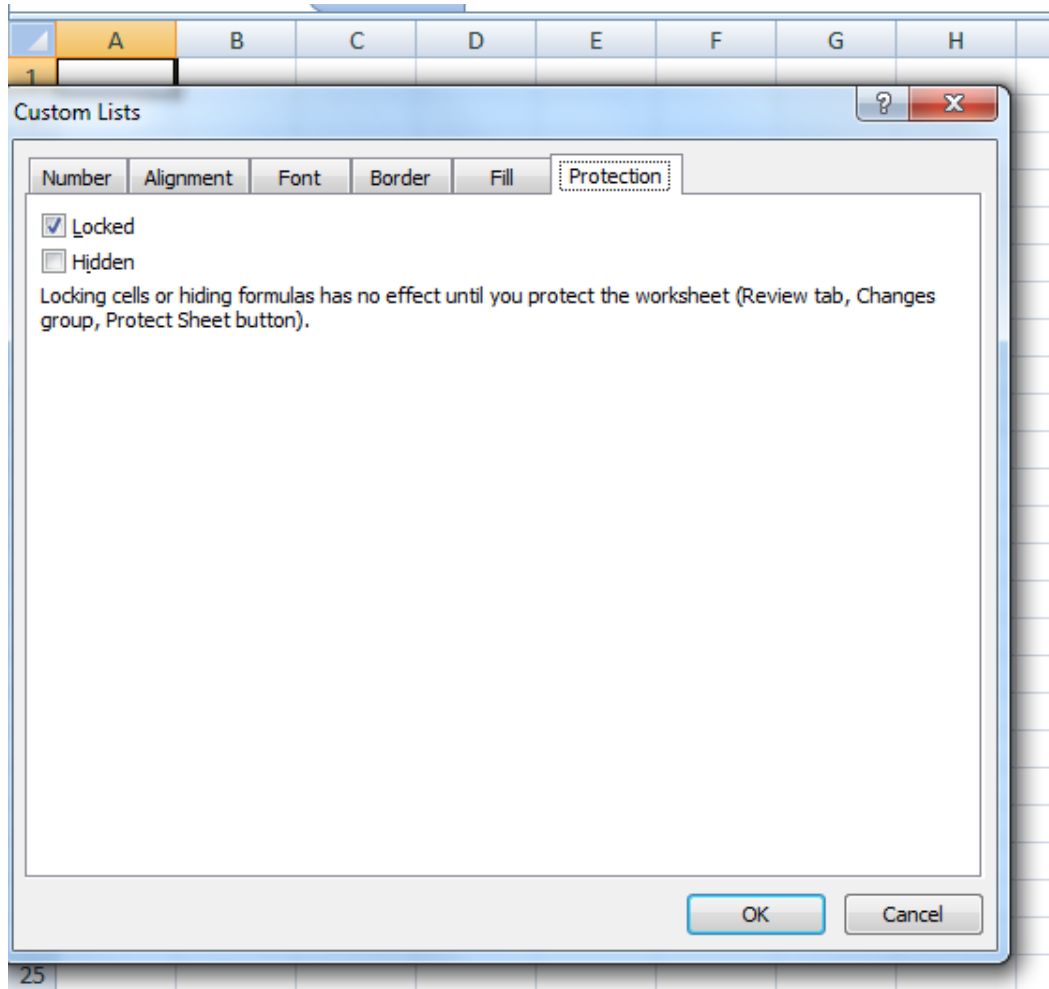
- Click **Format Cells**
- Select the **Protection** tab



Alternatively, you can right-click on a cell or group of cells:



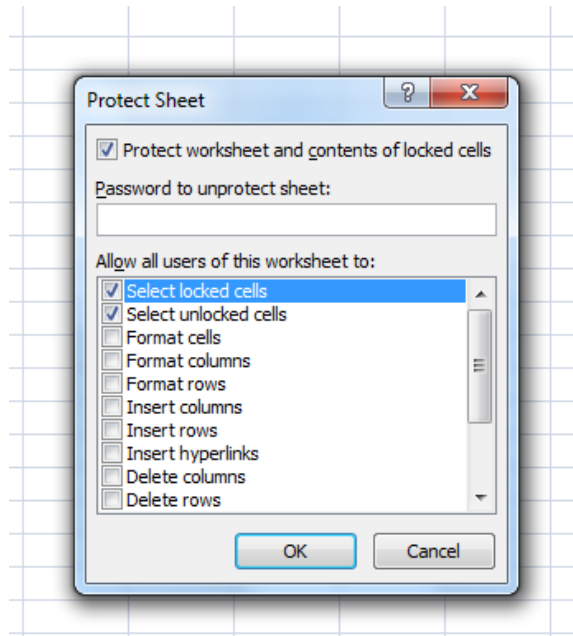
When you click **Format** cells and select the **Protection** tab, the following appears:



Note that both methods arrive at the same result. Also note that the default option is that the cells are locked.

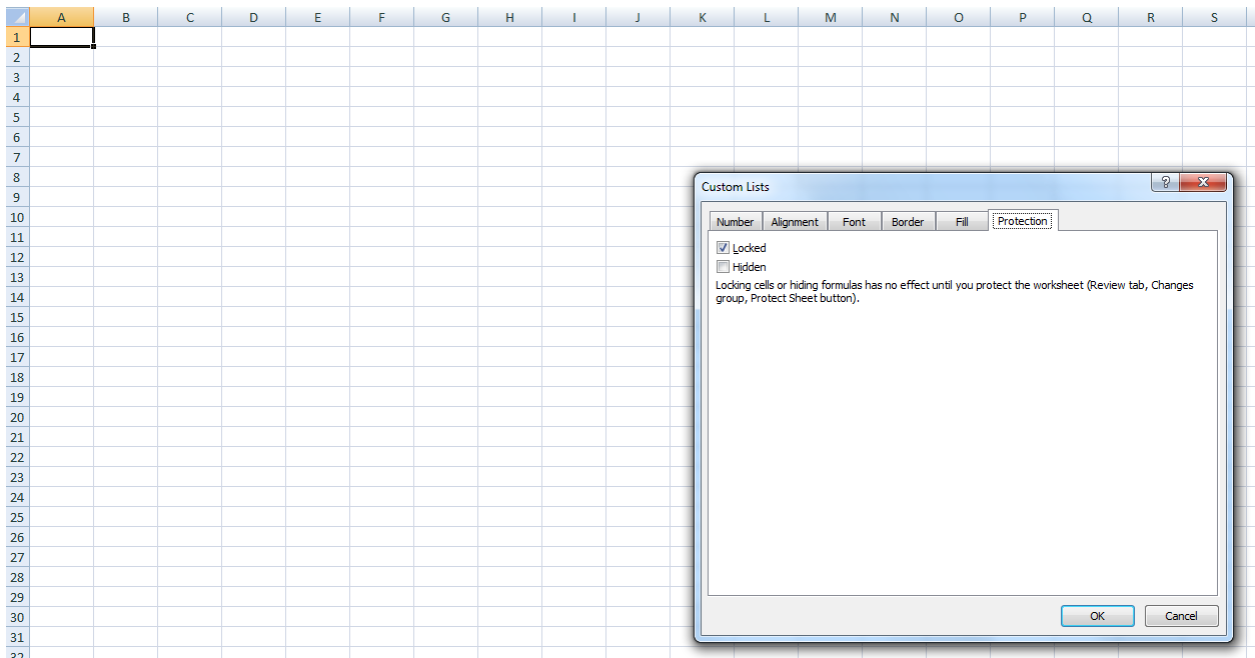
Nothing happens to a locked cell until the worksheet is protected. You can access the worksheet protection window one of two ways. Either go to the **Review** tab, click **Protect Sheet** or use the **Home** tab, Click **Format** and then **Protect Sheet**.

In either instance, you arrive at the following:



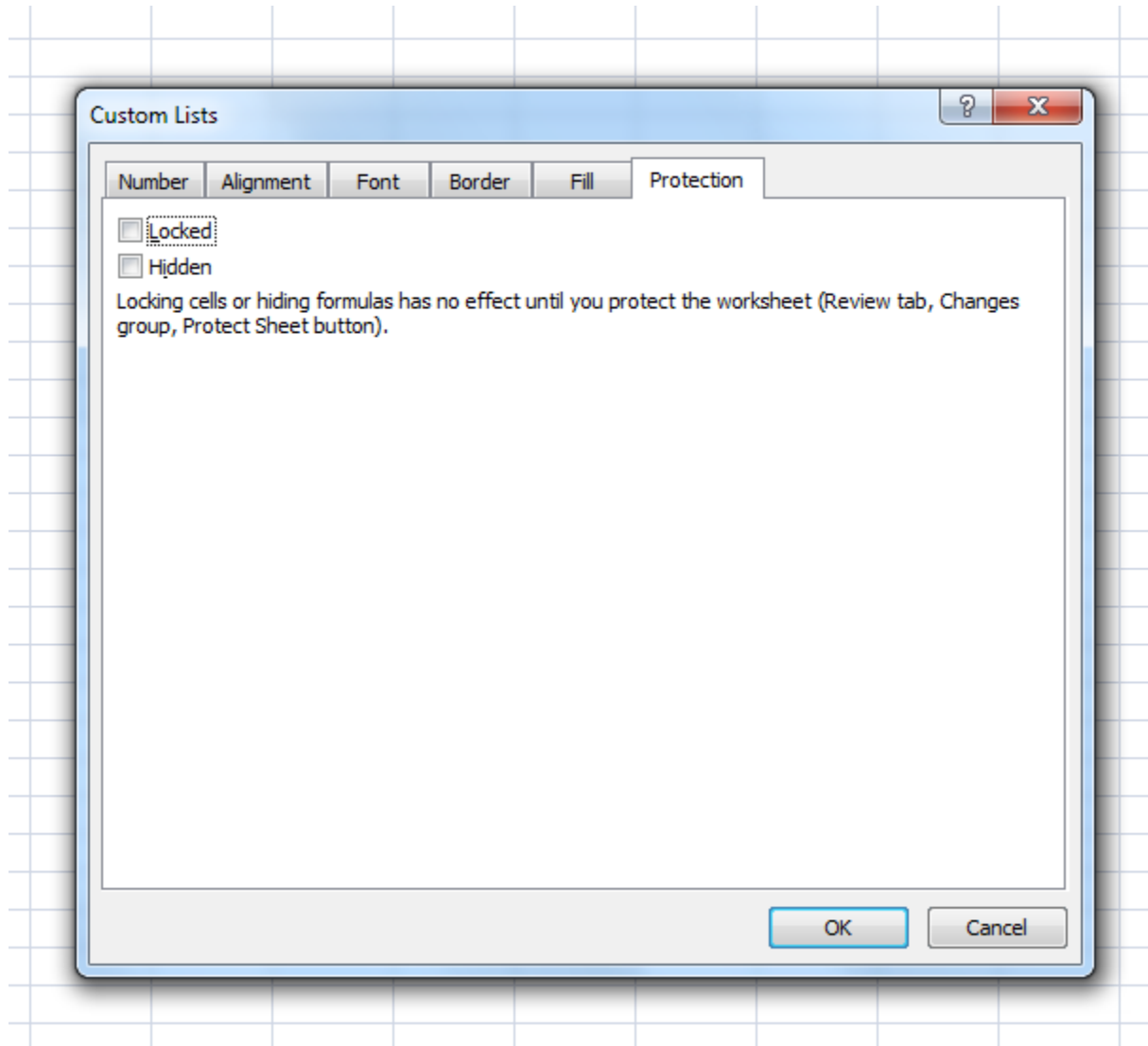
The default option is that users can select both locked and unlocked cells. Assume that you want to protect the contents of the entire sheet except for cell A1, which is an input cell. Since we know that the default option is that cells are locked, we need to unlock cell A1. Using one of the methods described above,

- Click **Cancel** on the dialog box, above
- Click on cell **A1**
- Get to the **Format** cells dialog box using one of the methods described above
- Select the **Protection** tab as shown below:



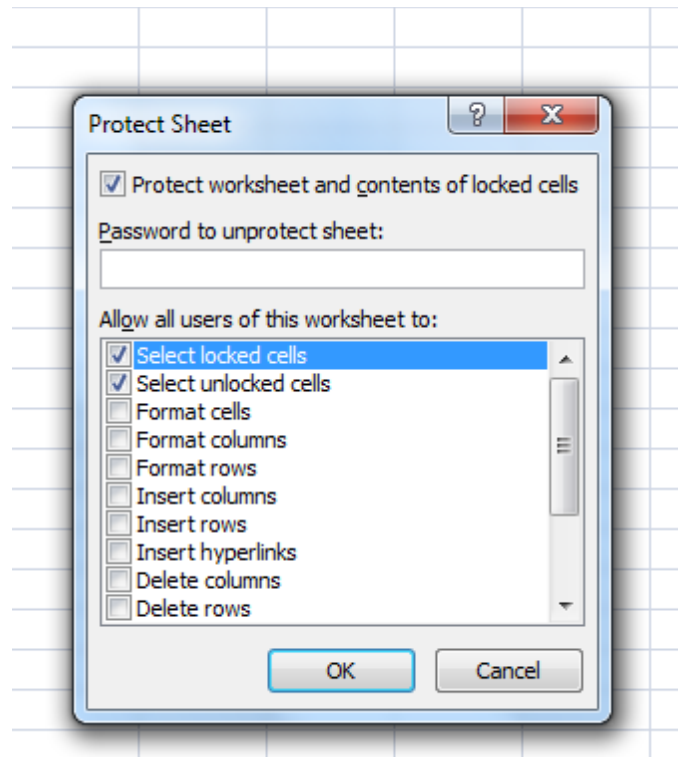
Note that cell A1 is locked (Default option).

- Click the **checkmark** to unlock it.
- Once the box is empty, click **OK**.



After OK is clicked, cell A1 should be unlocked while the other cells are locked.

Let's test this by protecting the worksheet. Using one of the methods identified above, go to the **Protect Sheet** window.

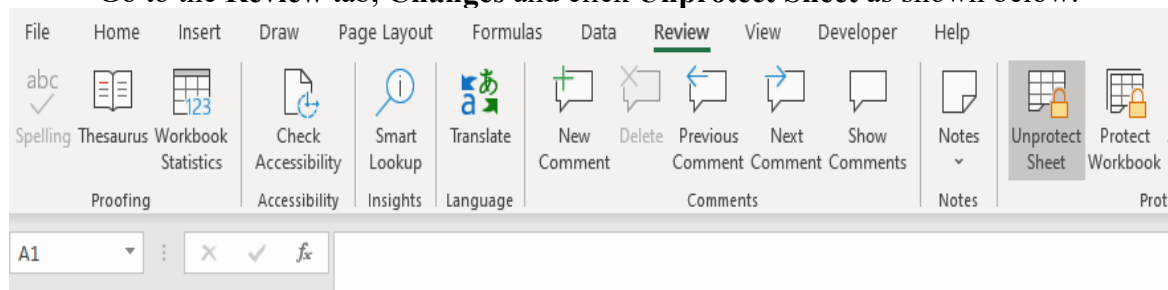


- Click the box *Select locked cells* to clear the checkmark. This will allow users to only select unlocked cells (as that's the only box that will be checked).
- Once you have unchecked the *Select locked cells* box, click **OK**.

Now, try to select any cell in the worksheet other than A1. It doesn't work. You can only select cell A1.

You can turn this off by unprotecting the worksheet. To do this,

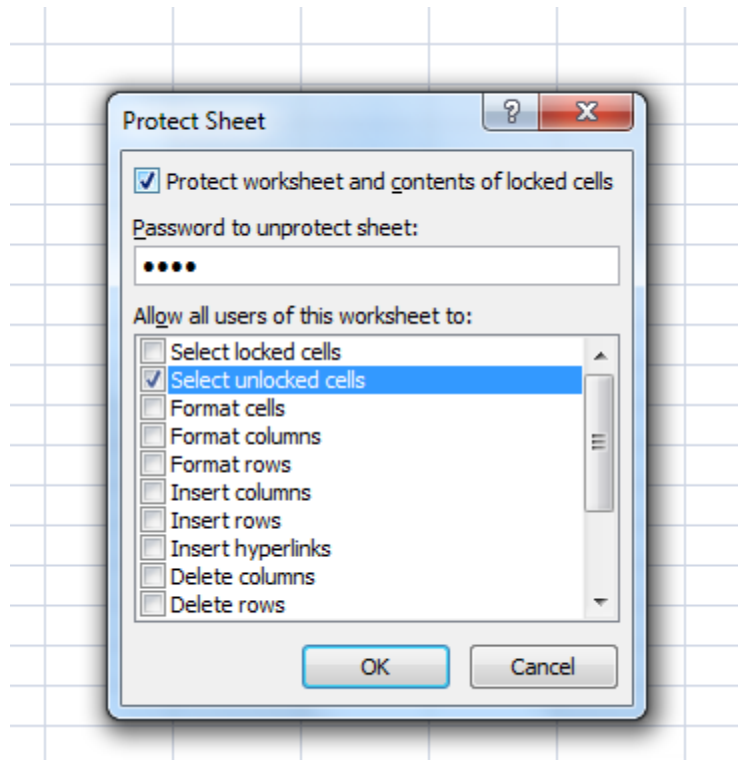
- Go to the **Review** tab, **Changes** and click **Unprotect Sheet** as shown below.



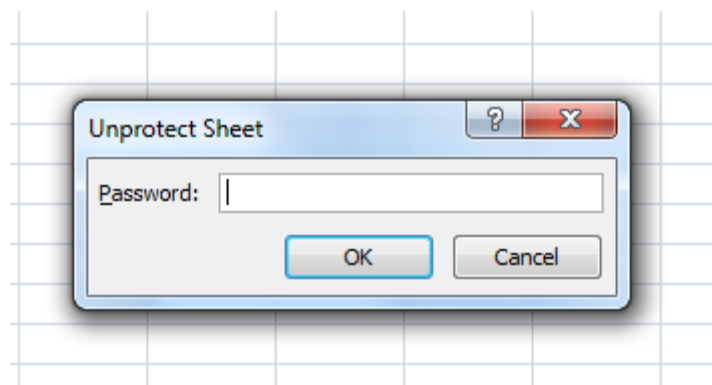
When the sheet is unprotected, all cells are once again accessible.

To prevent unauthorized changes to cells that contain formulas or calculations, you can password protect the worksheet so that it may be unprotected by only those that know the password. To do this, go back to the Protect sheet window and before clicking OK, type in a password. As an example, we'll use the password *bear*.

Note that passwords should be strong. It is recommended that they be at least 7 characters long, contain both uppercase and lowercase letters as well as number and symbols. Our use of the password *bear* is for illustrative purposes only.



After clicking OK, you will be prompted to re-enter the password. After that, the sheet can only be unprotected by the password bear. You will be prompted when you try to unprotect the sheet as shown below.



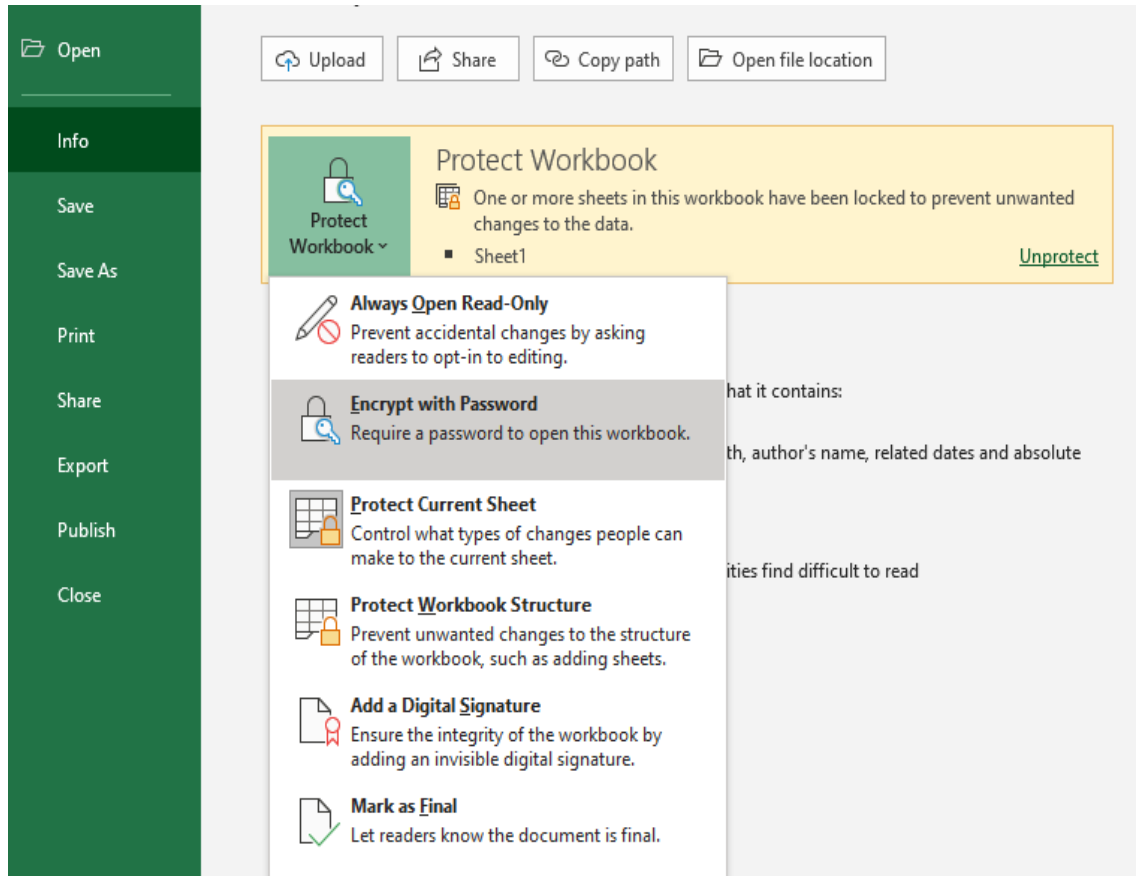
- Type bear and click OK.
The worksheet is now unprotected.

Tip: To find unprotected cells in a protected worksheet, simply press the Tab key

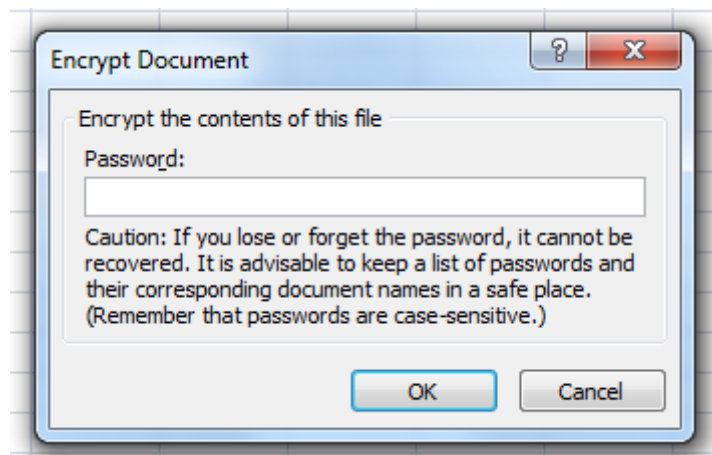
Workbook Passwords

To ensure that unauthorized users do not access a workbook, a workbook can be password protected. Without the password, users cannot access the worksheets within the workbook. It is an effective control as long as the password is limited only to those users with authorized access, is properly safeguarded and is not shared with anyone else. A password is not very effective if it's on a sticky note attached to your computer monitor.

- Click on **File**
- Click **Info**
- Select **Protect Workbook**

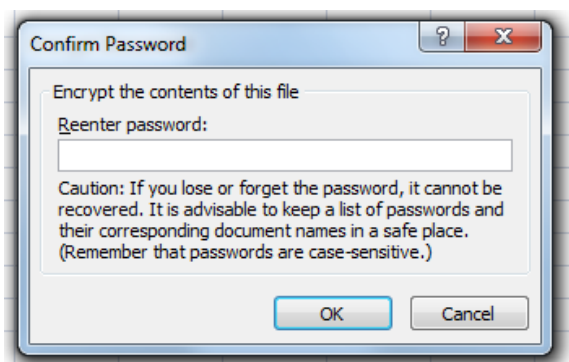


- Click **Encrypt with Password**



Note the contents of the message above. If you lose the password, it cannot be recovered. Also note that passwords are case sensitive.

Once you've selected a password, you'll be asked to re-enter it.



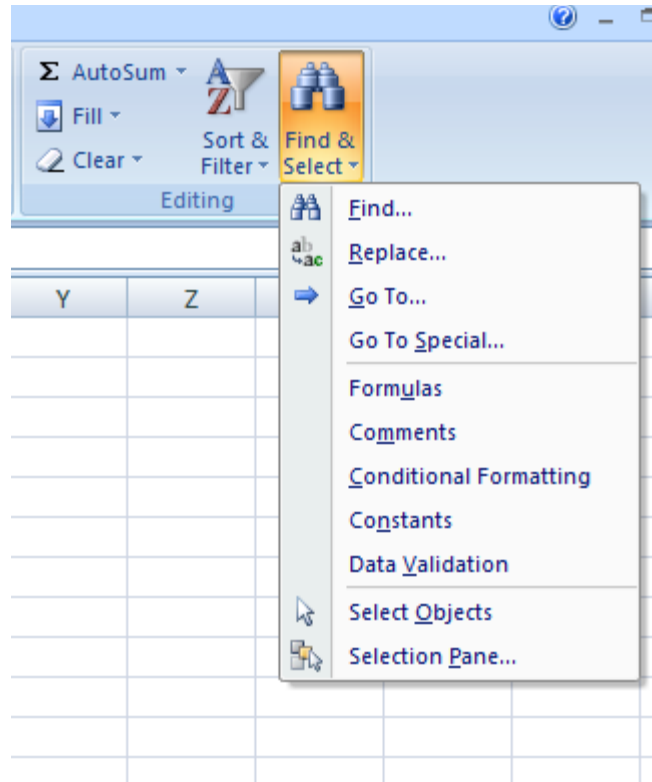
When you save the workbook, the password will be required to open it. Again, keep in mind that **there is no way of recovering a lost password in Excel.**

This feature not only password protects the workbook. It also uses AES 128-bit encryption which makes the file more secure. Again, it is important to note that passwords should be strong. They should be at least 7 characters long and contain both uppercase and lowercase letters as well as numbers and symbols.

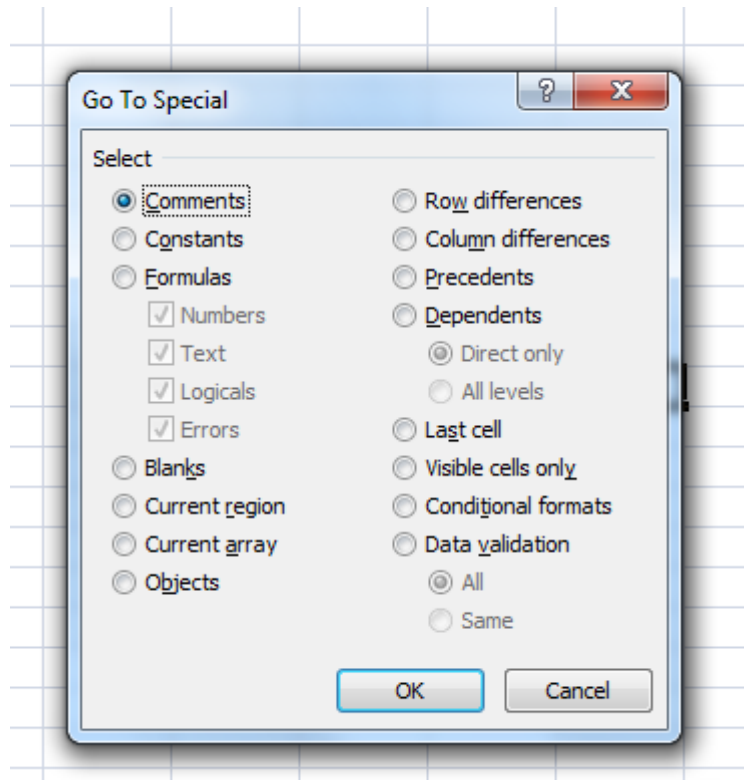
This is one way of addressing the compensating control of access to the spreadsheet is limited to authorized users. An additional control can be found in the information technology function's network access control. If the spreadsheet is in an area of the network that only authorized users can access, and the network access controls are effective, that will also accomplish the task of limiting the spreadsheet to authorized users.

Highlighting All Cells Containing Formulas

Before we use the formula auditing tools, it's important to first identify all the cells that contain a formula. The *Home* tab contains an editing section. Click on **Find & Select** and the following options appear.



Click on **Go To Special...**



Click on **Formulas**. This will identify every formula in the spreadsheet. You may also limit which types of formulas are returned. However, in this example, we want them all.

- Open the **Worksheet Best Practices** workbook and select the *Formulas* tab.

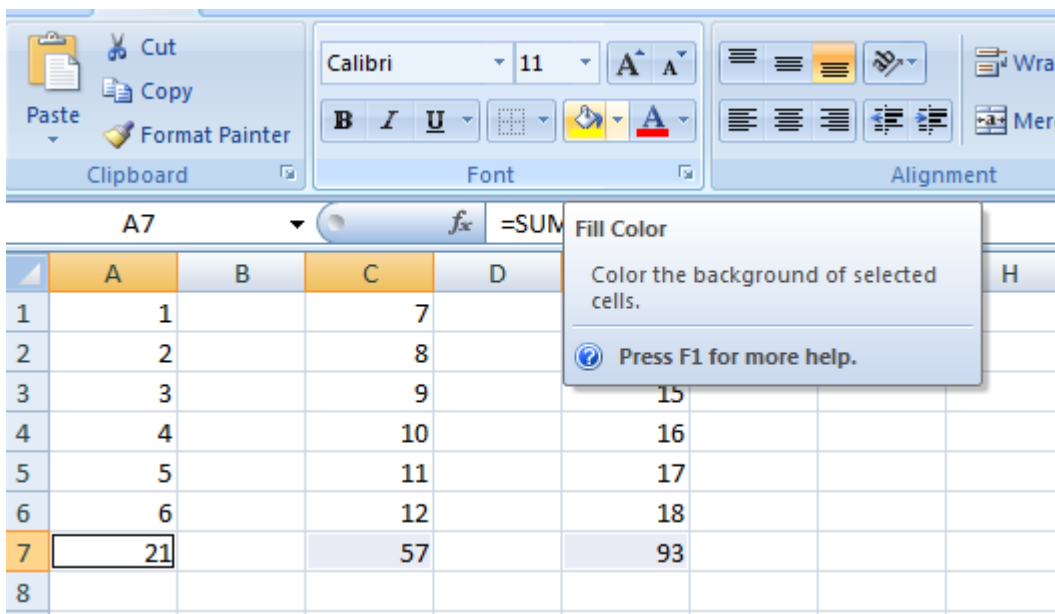
	A	B	C	D	E	F
1	1		7		13	
2	2		8		14	
3	3		9		15	
4	4		10		16	
5	5		11		17	
6	6		12		18	
7	21		57		93	
8						

Using the method described above:

- Go to the **Home** tab
- Click on **Find & Select**
- Click **Go To Special...**
- Click **Formulas**
- Click **OK**.
- The three formulas are now selected.

	A	B	C	D	E	F
1	1		7		13	
2	2		8		14	
3	3		9		15	
4	4		10		16	
5	5		11		17	
6	6		12		18	
7	21		57		93	
8						
9						

To make the selected cells more evident, use a fill color. In this example, we'll use yellow.



- Click on the **Fill Color** button and now the selected cells are highlighted yellow.

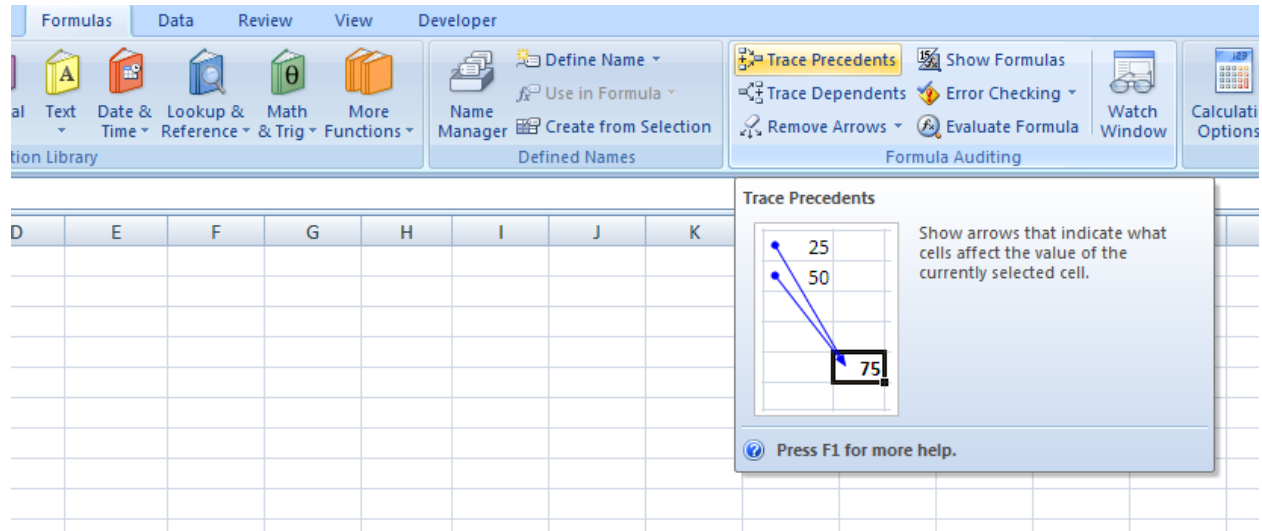
	A	B	C	D	E	F
1	1		7		13	
2	2		8		14	
3	3		9		15	
4	4		10		16	
5	5		11		17	
6	6		12		18	
7	21		57		93	
8						

It is now evident to a reviewer which cells contain formulas.

Trace Precedent and Dependent Cells

You can trace both precedent cells and dependent cells of formulas and see where the data is coming from or where it's going to. Let's start with the precedent cells of a formula or where the data is coming from.

- Using the example above, click on highlighted cell A7.
- Go to the **Formula** tab and click on **Trace Precedents**.

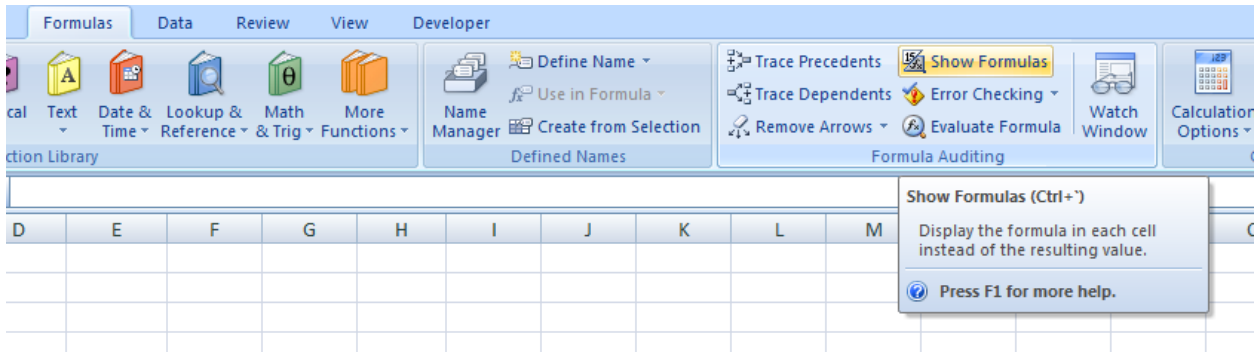


The following appears.

A7		fx =SUM(A1:A6)				
	A	B	C	D	E	F
1	1		7		13	
2	2		8		14	
3	3		9		15	
4	4		10		16	
5	5		11		17	
6	6		12		18	
7	21		57		93	
8						

You see that the formula is comprised of cells A1:A6. However, it may be helpful to also see the formula.

- Click **Show Formulas** in the *Formula* tab as shown below...



You see the following:

A7		fx =SUM(A1:A6)				
	A	B	C	D	E	
1	1		7		13	
2	2		8		14	
3	3		9		15	
4	4		10		16	
5	5		11		17	
6	6		12		18	
7	=SUM(A1:A6)		=SUM(C1:C6)		=SUM(E1:E6)	
8						

Formula auditing also traces formulas that use information from different worksheets. Using a new worksheet, we'll sum another column of numbers and refer to that column in the existing example. The column of numbers on a separate sheet follows.

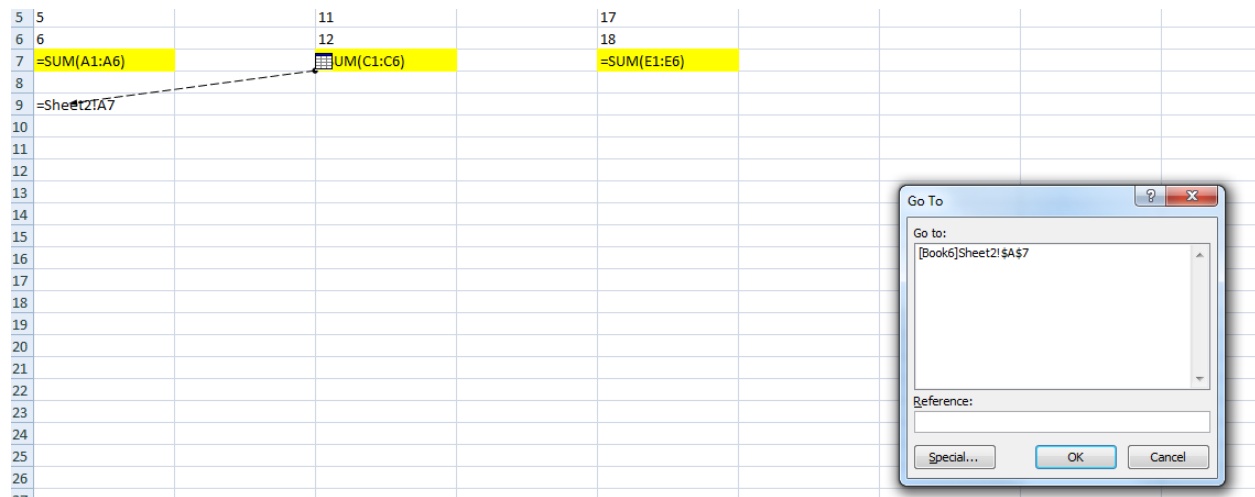
A8	
	A
1	4
2	5
3	6
4	7
5	8
6	9
7	39
8	
9	
10	
11	

- In cell A9, we'll reference that sum in cell A7 of the separate worksheet.
- The result is below.

	A	B	C	D	E
1	1		7		13
2	2		8		14
3	3		9		15
4	4		10		16
5	5		11		17
6	6		12		18
7	=SUM(A1:A6)		=SUM(C1:C6)		=SUM(E1:E6)
8					
9	=Sheet2!A7				
10					

Since the *Show Formula* option is engaged, we see the actual formula in cell A9.

- Click on cell A9, then click **Trace Precedents**.



The trace line ends at a worksheet icon. When you double click the line, a window appears that tells you where the data is coming from. In this case, Sheet2, cell A7.

Trace dependents tell you where the data is going to. If you click on a cell with data in it, it will tell you where the formula is that uses the data. Using our same example in cells A1:A7, click on cell A1, then click on **Trace Dependents** in the *Formulas* tab.

	A
1	1
2	2
3	3
4	4
5	5
6	6
7	=SUM(A1:A6)
8	
9	

You can see that the data in cell A1 is used in the formula in cell A7.

To remove the arrows and the formulas, click on **Remove Arrows** and also click on **Show Formulas**. The spreadsheet should revert back to normal. You can manually remove the highlights on the formula cells by returning to the Home tab, Find & Select, Go To Special and once again finding all the formulas. After they have been selected, click on the Fill Color button and choose No fill. Now, everything is back to normal.

Tip: A shortcut is to press **F5** and select **Special** from the bottom of the dialog box.

Error Checking

Excel can also help with determining whether errors exist. The Error Checking tool uses certain rules to check for problems in formulas. These rules do not guarantee that your worksheet is problem-free, but they can go a long way to finding common mistakes.

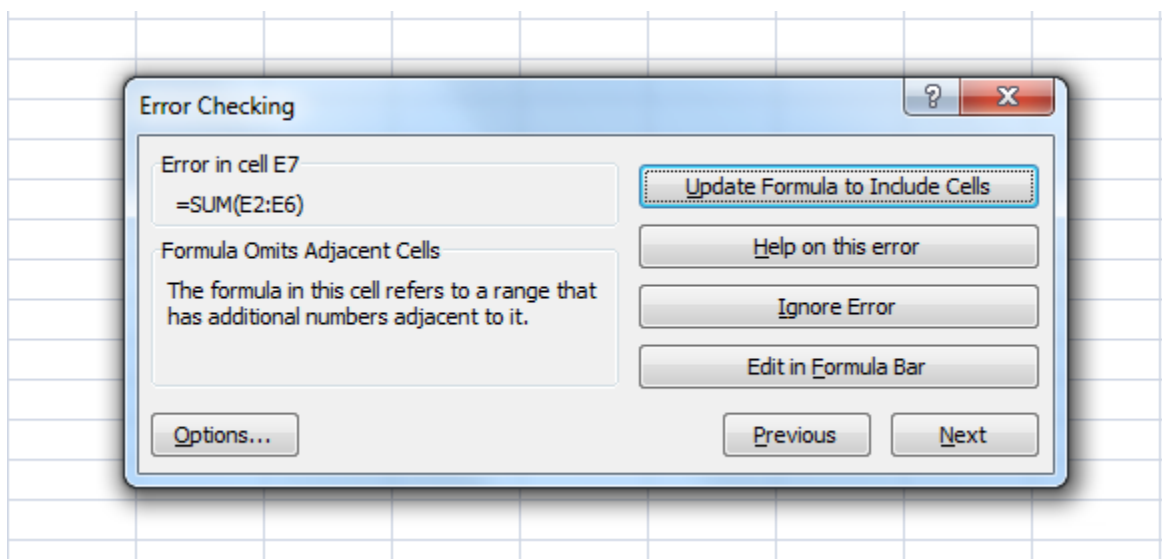
Using the same data we had before:

- Change cell E7 to only sum E2:E6, ignoring cell E1.

The spreadsheet looks like this:

	A	B	C	D	E
1	1		7		13
2	2		8		14
3	3		9		15
4	4		10		16
5	5		11		17
6	6		12		18
7	21		57		80

- Now, click on the **Formulas** tab and click **Error Checking**. The following appears.



We have options. We can update the formula to include the excluded cell, ignore the error, or manually edit it in the formula bar. If there are multiple errors, we can also proceed to the next error. In this case, we will Update the Formula to Include Cells. A message box appears that tells us that error checking is complete.

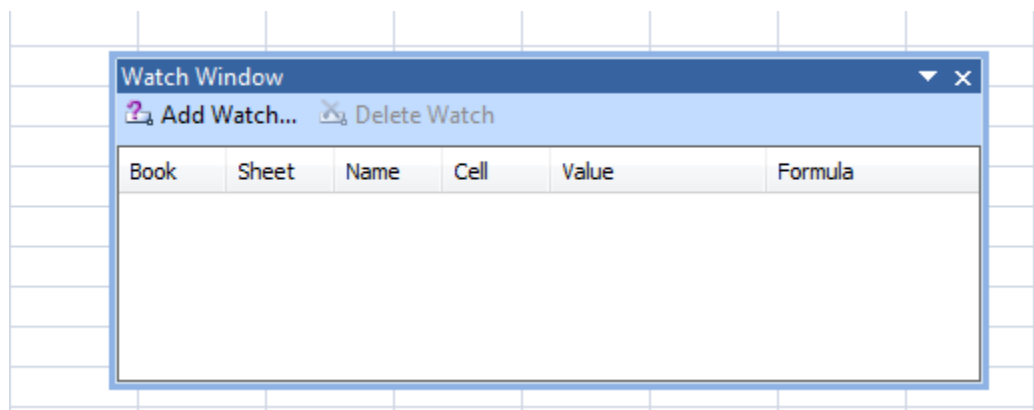
Error checking will also help identify error values which are normally preceded with a # such as #N/A, #Value!, #DIV/0!, #Name?, #Ref!.

Watch Window

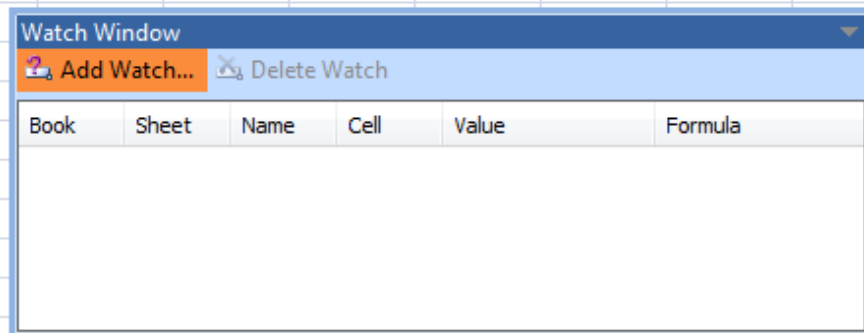
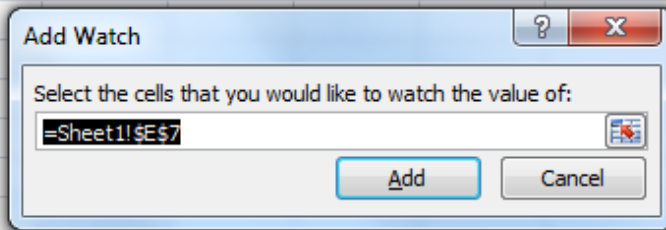
A watch window can also be added to monitor a cell and its formula while you work, even when the cells are not visible on the screen. Watching a cell can help you notice errors. This can be used for key calculation results in a test setting where the results have been previously calculated and you can watch for the same results.

As an example, we'll watch the results of cell E7.

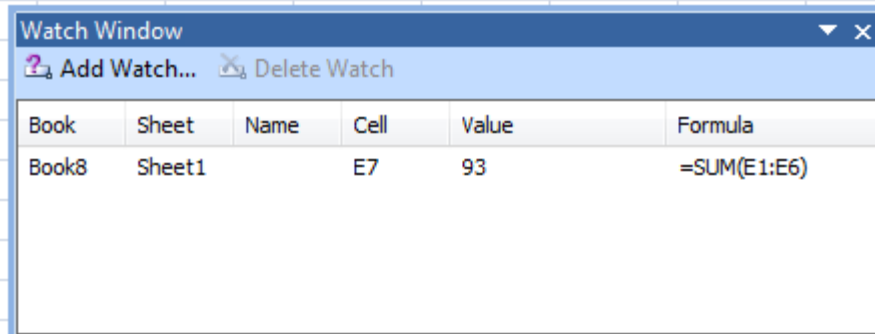
- Select cell **E7**
- Click the **Formulas** tab, then the **Watch Window** button.



- Click **Add Watch**.



- The default cell is the one already selected, E7. Click **Add**.



Our watch window now monitors cell E7 and provides its current value and its formula. If the value changes, we can monitor the change to ensure it is what we expected.

Review Questions

The review questions accompanying this course are designed to assist you in achieving the course learning objectives. The review section is not graded; do not submit it in place of your qualified assessment. While completing the review questions, it may be helpful to study any unfamiliar terms in the glossary in addition to course content. After completing the review questions, proceed to the review question answers and rationales.

5. Data Validation is **UNABLE** to:
 - a. Handle a list of acceptable user inputs
 - b. Limit user input to a range between two dates
 - c. Restrict user input to a number greater than 50
 - d. Error proof user input

6. Which of the following will only protect cell A1 from changes, but permit the worksheet user to access and change other cells in the worksheet?
 - a. Protect Sheet
 - b. Lock cell A1, then Protect Sheet
 - c. Unlock all cells other than A1, then Protect Sheet
 - d. Unlock all cells other than A1

7. Which of the following is true regarding workbook passwords?
 - a. There is a test in Excel for password length, use of a number and use of a special character
 - b. There is no way of recovering a lost password in Excel
 - c. Passwords are NOT case sensitive
 - d. You only must enter the password once

8. Which Excel feature will tell you where formula data is coming from?
 - a. Trace dependents
 - b. Watch window
 - c. Error checking
 - d. Trace precedents

Review Question Answers and Rationales

Review question answer choices are accompanied by unique, logical reasoning (rationales) as to why an answer is correct or incorrect. Evaluative feedback to incorrect responses and reinforcement feedback to correct responses are both provided.

1. Which of the following is an acceptable range name in Excel?
 - a. **Correct. Range names must start with a letter or an underscore. The range name Total_Expense starts with a letter. Only letters, numbers, underscores, and periods may be used after the first character.**
 - b. Incorrect. While the first character is a letter (and may be either a letter or underscore), Total-Expense contains a hyphen. This character is not permitted as only letters, numbers, underscores, and periods may be used after the first character.
 - c. Incorrect. Q1 represents a worksheet cell reference. Cell references are not permitted as a range name.
 - d. Incorrect. Net Income contains a space. Spaces are not allowed within range names. Only letters, numbers, underscores, and periods may be used after the first character.

2. Comments may be printed:
 - a. Incorrect. By right clicking any cell in the workbook you only have the option to insert a comment into the worksheet. There is no option to print the comments.
 - b. Incorrect. By clicking the Review tab and then clicking Show Comments will display the comments on the computer monitor. However, this step will not print the comments.
 - c. **Correct. By accessing the Print menu, selecting Page Setup then selecting the Sheet tab and selecting a print option in the Comments box will result in a printed page that contains the worksheet comments either printed as displayed on the sheet or at the end of the worksheet.**
 - d. Incorrect. Comments may be printed as they are displayed on the worksheet or at the end of the worksheet.

3. Which of the following is not true regarding calculation constraints?
 - a. Incorrect. The IF function is a method of providing calculation constraints. It is used to identify results that may be greater than, less than, equal to, not equal to (along with a variety of other conditions) a certain parameter.
 - b. **Correct. The use of a 10% variance may be a good constraint in certain circumstances. However, it is not always a good constraint. When dealing with large numbers, a constraint of 2% may be needed. You may also wish to use a numeric constraint such as a variance of \$500,000. The constraint is dependent on the circumstances and professional judgment.**
 - c. Incorrect. Conditional Formatting is an accepted method of providing calculation constraints. It highlights results that are greater than, less than, between, equal to, has

- text containing (and a variety of other conditions) a specified parameter. It highlights the results, providing easy visual identification of the outlier.
- d. Incorrect. Calculation constraints are used to identify outliers, making this a true statement. Identification of outliers provides a method of reviewing calculation output to help ensure that the calculations are performing as intended.
4. Which of the following is not a best practice for worksheet design?
- a. Incorrect. The use of check totals for input data is a best practice. This eases the process of comparing the total of input data to an authoritative source, helping to ensure the accuracy of the input data.
- b. Correct. In cases where there is a significant amount of data and analysis, inputs, calculations and output should be segregated to multiple worksheets within a workbook and each worksheet should be properly labeled. This will ensure that proper separation of input data, assumptions, calculations and output.
- c. Incorrect. The use of cell references in formulas rather than numbers is a best practice. This helps both the preparer and reviewer easily see that formula inputs and changes may be made in a more controlled manner.
- d. Incorrect. Calculation constraints are a best practice to detect any outliers that may represent formula issues or bad data inputs.
5. Data Validation is **UNABLE** to:
- a. Incorrect. Data Validation is able to handle a list of acceptable user inputs. This is accomplished by using the list feature in the Allow: portion of the Data Validation dialog box.
- b. Incorrect. Data Validation is able to limit user input to a range between two dates. This is accomplished by using the Date feature in the Allow: portion of the Data Validation dialog box and the Between feature in the Data: portion of the Data Validation dialog box. The two dates must also be specified in the dialog box.
- c. Incorrect. Data Validation is able to restrict user input to a number greater than 50. This is done by specifying a whole number in the Allow: portion of the Data Validation dialog box and Greater than in the Data: portion of the data validation dialog box, then specifying the number 50 as a Minimum.
- d. **Correct. Data Validation is unable to absolutely error proof user input. It can create certain restrictions on user input that will help to minimize errors. However, there can still be erroneous input within the confines of the Data Validation parameters. As an example, if the number entered must be greater than 50, and was meant to be 55, but 65 was entered in error, the Data Validation parameters would not catch this error.**
6. Which of the following will only protect cell A1 from changes, but permit the worksheet user to access and change other cells in the worksheet?

- a. Incorrect. The use of Protect Sheet only will result in all cells being protected in their default value, which is locked. In this case, all the cells in the worksheet would be inaccessible and unable to be changed.
 - b. Incorrect. Since the default value of all cells is locked, by (re) locking cell A1, then protecting the sheet will also result in all cells in the worksheet being locked and, therefore, inaccessible and unable to be changed.
 - c. **Correct. The default value of all cells is locked. By unlocking all cells other than A1, it changes these cells from the locked value to the unlocked value. When Protect Sheet is engaged, cell A1 will still be locked and all other cells will be unlocked and accessible to the user.**
 - d. Incorrect. While unlocking all cells other than A1 is a good first step, it omits the step of engaging Protect Sheet. If Protect Sheet is not engaged, the locked cells will not be locked. In this case, all cells, including A1, would be accessible to the user and able to be changed.
7. Which of the following is true regarding workbook passwords?
- a. Incorrect. There is no test that Excel administers for password length or the use of numbers or special characters. There are suggestions in the course for this, but no specific test is performed by Excel.
 - b. **Correct. There is no way to recover a lost password in Excel. Because the encryption is very strong, you may not be able to access the file again if the password is lost. This is an important element to remember when using passwords.**
 - c. Incorrect. Passwords in Excel are case sensitive. While there is no test for password length or the use of numbers or special characters, there is a comparison of uppercase vs. lowercase letters. A simple password like “bear” would be different from “Bear” because of the capital B.
 - d. Incorrect. Excel requires that a password be entered twice before it is accepted. This is to safeguard against misspelling or typing errors. Since there is no way to recover a lost password in Excel, this feature is used to ensure that the typed password is the one that was meant to be used.
8. Which Excel feature will tell you where formula data is coming from?
- a. Incorrect. Trace dependents tells you which formula data is going to. If a data cell is selected, Trace dependents will display an arrow to the formula(s) that contain the data in the selected cell.
 - b. Incorrect. A Watch window can be added to monitor a cell’s value and its formula while you work. However, it does not show where data is coming from.
 - c. Incorrect. The Error checking tool uses certain rules to check for problems in formulas. While it may highlight a possible problem in a formula, it does not indicate the source of formula data.

- d. Correct. Trace precedents shows you where formula data is coming from. When a formula cell is selected, Trace precedents will use an arrow to indicate the data used in the selected formula.**

Glossary

This is a glossary of key terms with definitions. Please review any terms with which you are not familiar.

Absolute cell references: The use of \$ signs that precede the column and row references and make a column or row reference, or both, fixed. This is important when copying formulas that contain cell references. Without absolute cell references, the formula cell references will change as the formula is copied. The absence of absolute cell references is called relative cell references.

Comments: A method to document Excel worksheets that involves adding dialog to a particular cell. The dialog may be displayed on the worksheet as the cursor hovers over the worksheet and may also be printed as displayed on the worksheet or at the end of the worksheet.

Constraints: A way to identify formula results that do not conform to expected results. Using the IF function or conditional formatting, results that are outside of expectations may be further investigated to ensure worksheet formulas are functioning as designed.

Data Validation: An Excel tool that confines user input to certain set parameters.

Footer: The bottom of a printed worksheet page. This area may contain page numbers, current date and time, author and other information.

Header: The top of a printed worksheet page. This area may contain a title for the worksheet as well as other information.

Locked cell: When Protect Sheet is engaged, a cell that may not be accessed or changed. The default for all cells is that they are locked.

Named range: An individual cell or group of cells that is given a separate, more descriptive name in a worksheet. A named range is absolute in terms of its location reference.

Protect Sheet: A means to make those cells that are locked unable to be accessed or changed when engaged.

Unlocked cell: A cell that may be accessed or changed when Protect Sheet is engaged.

Index

A

absolute cell references.....7, 8
 AES 128 bit encryption51
 assumptions 1, 2, 3, 4, 5, 6, 7, 14, 16, 24, 32

C

cell references.....2, 7, 8, 12, 23, 24
 comments..... 1, 12, 13, 14, 15, 30, 31
 Conditional Formatting.....26, 27, 30, 33, 63
 constraints..... 24, 25, 26, 32, 33, 62

D

data validation37, 38, 41
Data Validation 34, 36, 37, 40
 dependent cells55
 Dependents57

E

Error Checking58

F

F558
 Find & Select.....52, 53, 58
 Footers 17, 19, 21
Formulas.....53

G

Go To Special52, 53, 58

H

Headers..... 17, 18, 21, 23
 Headings.....3, 4

I

IF 25

Input Message36

L

locked cell.....42, 45
 logical35
 lose the password.....51

N

Name Manager8, 11
 named range.....9, 10

P

password42, 48, 49, 50, 51
passwords49, 51
 precedent cells55
Precedents55, 57
 Print Titles 17, 21, 22, 23
Protect Sheet45, 47

S

Show Formulas55, 58

T

Track Changes61

U

unlocked cells42, 46, 48
Unprotect48

V

Validation 34, 36, 37, 38, 40, 41, 61, 63

W

Watch Window59

Qualified Assessment

Excel Worksheets: Best Practices

Course # 2174596, Version 2007

Publication/Revision Date:

July 2020

Course Expiration Date

Per AICPA and NASBA Standards (S9-06), QAS Self-Study courses must include an expiration date that is *no longer than one year from the date of purchase or enrollment*.

Complete this assessment online at www.westerncpe.com and receive your certificate and results instantly!

1. Which of the following is NOT a good worksheet layout practice?
 - a. Use of descriptive headings
 - b. Separate calculations from assumptions on the worksheet
 - c. Use comments
 - d. Color code certain inputs and outputs with no legend describing the color coding scheme

2. To copy a formula using one cell as an input cell, which Excel feature will maintain the cell reference of the input cell without changing it as it is being copied down or across?
 - a. Relative cell referencing
 - b. Absolute cell referencing
 - c. Data Validation
 - d. Error checking

3. Which of the following is NOT true regarding named ranges in Excel?
 - a. They only apply to multiple cells. Individual cells cannot be named
 - b. They are automatically absolute references
 - c. They are named using the Name Manager
 - d. Names must begin with a letter or an underscore

4. Which of the following is NOT true regarding worksheet comments?
 - a. They may be added by right clicking on a cell and selecting Insert Comment
 - b. Comments cannot be printed
 - c. They may be added by selecting the Review tab and the New Comment button
 - d. Comments are displayed when the cursor hovers over the cell

5. You want to identify calculation results that are less than 1,000. Which Excel feature will accomplish this?
 - a. Go To Special

- b. Data Validation
 - c. Conditional formatting
 - d. Name Manager
6. Which of the following will identify the result of a calculation in cell A1 that is greater than 10?
- a. =IF(A1>10,"Greater than 10","")
 - b. Format cells, then select Custom
 - c. =IF(A1>10)
 - d. Home tab, then Format as Table button
7. You wish to restrict user input to a date in 2015. What is the best way to accomplish this?
- a. IF function
 - b. Conditional Formatting
 - c. Data Validation
 - d. Insert Comment
8. Which of the following is true regarding worksheet protection?
- a. The default is that cells are unlocked
 - b. The default is that cells are locked
 - c. Locked cells are always protected
 - d. There is no password option
9. A workbook password:
- a. Is restricted to a combination of letters and numbers
 - b. Can be created by right clicking a cell
 - c. Can be created by using the Home tab
 - d. Cannot be recovered if forgotten
10. Which Excel feature may be used to identify all formulas in a worksheet?
- a. Go To Special
 - b. Name Manager
 - c. Trace Precedents
 - d. Watch Window
11. Error checking:
- a. Guarantees that the worksheet is error free
 - b. Will help identify certain common errors
 - c. Does not let you proceed unless you correct the identified error
 - d. Ignores error values preceded by a #

12. You are adding headers and footers to a worksheet. How do you return to a normal worksheet view?
 - a. Review menu option, then select the Notes button
 - b. Data menu option, then select the Group button
 - c. View menu option, then select the Normal button
 - d. Page Layout menu option, then select the Print Area button

13. Which Excel feature is best described as a way to monitor a cell value and its formula while you work?
 - a. Error checking
 - b. Data Validation
 - c. Name Manager
 - d. Watch Window



Answer Sheet
Excel Worksheets: Best Practices
Course # 2174596, Version 2007
2 CPE Credits

Date: _____

Name: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

Fax: _____ E-mail*: _____

*E-mail address MUST be unique (not shared with another CPA) for Western CPE to grade your assessment

Name of purchaser (if other than person taking assessment): _____

If course was purchased as part of the **MEGA TAX LIBRARY** please include \$4/credit for grading:
VISA/MC/Discover/Amex # _____ Exp. _____

Course expires
1 Year from date
of purchase or
enrollment

Online Grading: visit www.westerncpe.com to complete your assessment online and receive your certificate of completion and results *instantly*.

- | | | | | |
|----------|----------|----------|---------|----------|
| 1. ____ | 2. ____ | 3. ____ | 4. ____ | 5. ____ |
| 6. ____ | 7. ____ | 8. ____ | 9. ____ | 10. ____ |
| 11. ____ | 12. ____ | 13. ____ | | |



Course Evaluation
Excel Worksheets: Best Practices
Course # 2174596, Version 2007

Thank you for taking the time to fill out this course and customer experience evaluation. Your responses help us to build better courses and maintain the highest levels of service. If you have comments not covered by this evaluation, or need immediate assistance, please contact us at 800.822.4194 or wcpe@westerncpe.com.

Course and Instructor Evaluation

1. Please answer the following related to the content of the course:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The stated learning objectives were met.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course materials were accurate, relevant, and contributed to the achievement of the learning objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The stated prerequisites were appropriate and sufficient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on 50 minutes per credit hour, the time to take this course accurately reflects the credit hours assigned to it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The instructor was knowledgeable and effective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Were there any questions you felt were confusing or had incorrect answers listed? If so, please give the question number and a brief description of the issue:

3. Please provide any additional comments specific to the educational content or author of this course:

4. Do you have ideas for future course topics? If so, please list them along with any known subject matter experts we might contact to develop the course:

--

Customer Experience

5. Please rate your overall experience with Western CPE:

	Unsatisfactory	Improvement Needed	Meets Expectations	Exceeds Expectations	Exceptional
If you interacted with our Customer Service team, please rate the quality of service you received.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you purchased your course online, please rate the quality of your e-commerce experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
“My Account” information includes the tools necessary to access courses and track those completed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Please indicate the likelihood of your purchasing the listed course formats from Western CPE:

	Not at all	Not very likely	Possibly	Likely	Highly Likely
Self-Study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Webcast OnDemand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Live Webcast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resort Conference or Seminar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Please use the box below to provide any additional comments related to your educational experience with Western CPE.

8. If you are willing to provide a quote about this course, or Western CPE in general, that we may use in our promotional materials, please state it below. Be sure to include your name, title, city, and state.