

Microsoft Excel 2016 LEVEL 2

Microsoft Excel 2016 – Level 2

Welcome to Microsoft Excel 2016 - Level 2. In this class you will learn the basics of Excel, and work on a small project. You will connect to online tutorials and courses to reinforce and advance your learning. As you're going through the class, think about how you could use Excel at home or work.

Contents

In this class, you will	1
Formulas and Functions	
Writing and Copying Formulas	
Absolute References	
The AutoSum Function	
The Payment Function	
Excel Tables	
Create an Excel Table	6
Table Tools – Design Tab	
Sort Your Data	
Filter Your Data	7
Charts	
Insert a basic graph	
Move a chart to a new worksheet	
One-on-One Help, Classes, and Online Courses	

In this class, you will...

Learn and practice using important tools in Microsoft Excel, including:

- Formulas and Functions
- **Tables**
- Charts

To review Excel 2016 basics, read the short blogpost at: http://1.kcls.org/2CvPvQg

Formulas and Functions

To get the most from Excel, you must understand formulas and functions. Formulas are basic instructions Excel uses to make calculations from the data in the spreadsheet. **Functions** are preset formulas, have a name and use arguments to make calculations. **Arguments** are the data used in functions to make calculations. Practice formulas and functions in the training exercise file (workbook).

To get the training exercise file:

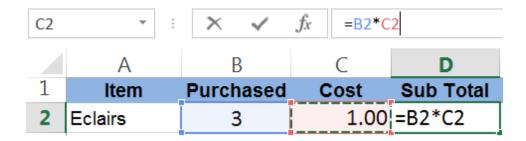
- 1. Go to kcls.org/techtutor
- 2. Scroll to find "Exercise Files for Tech Tutor Manuals" card
- 3. Select Excel Level 2 from the list
- 4. Click "OK" to open

Writing and Copying Formulas

In this exercise, you will calculate the sub total for desserts purchased.

Start with a basic formula for multiplication:

- Click cell D2
- 2. Type the equal sign (=)
- 3. Click cell B2
- 4. Insert an asterisk (*)
- 5. Click cell C2
- 6. Click check (✓) in formula bar



Screen shot of basic formula for multiplication in cell D2

Notes

- Formulas and functions always begin with an equal sign (=).
- Asterisk (*) means multiplication; to insert asterisk, hold Shift and press 8 on top row of keyboard.
- Formulas and functions use cell names (B2, C2, etc.) for values in corresponding cell.
- Formulas and functions appear in formula bar and can be edited.
- Click check (✓) in formula bar to "enter" formula (get answer); current cell stays selected.

Copy a formula with the auto fill handle tool.

You could perform the same steps to calculate the cost of the other desserts but imagine if you had a really long list of items. Use the auto fill handle tool to save time:

- 1. Place mouse pointer in lower-right corner of cell D2 (Mouse pointer will be a solid black "plus" sign)
- 2. Press (hold down) left-hand mouse button
- 3. Drag the fill handle ("plus" sign) down to cell D8
- 4. Release the left-hand mouse button

Excel copies the basic formula for multiplication to each row using data relative to each row. Click into cell D3 and look in the formula bar: it shows =B3*C3. Cell D4 shows =B4*C4, and so forth for each row.

These references are known as **relative references** because they change *relative* to the row where they are copied. Sometimes this won't give you the results you want because you need absolute references. For example, calculating a tax rate. You will learn about absolute references in the next exercise.

D		
Sub Total		
3.00		
T		

Auto fill handle is a solid black "plus" sign

D		
Sub To	otal	
	3.00	
8	4.00	
9	0.00	
2	4.00	
2.	5.00	
1	6.00	
6	8.00	
	1	

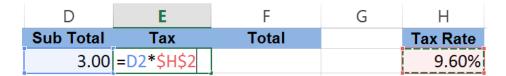
Excel copies formula relative to row data

Absolute References

A reference you make in a formula to the contents of a cell or cell range is either relative or absolute. When you create and then copy a formula from the original cell, a relative reference formula changes cell by cell as in the review exercise above. An absolute reference is a reference to a constant value in a formula, such as a tax rate. Regardless of the subtotal, all the items bought in the practice file will be charged the same, or absolute, tax rate.

To write a formula with an absolute reference:

- 1. Click cell E2
- 2. Type the equal sign (=)
- 3. Click cell D2
- 4. Insert an asterisk (*)
- 5. Click cell H2
- 6. Press F4 function key
- 7. Click check (✓) in formula bar



Screen shot of formula with absolute reference in cell E2

Tax on a \$3.00 purchase, at 9.6%, is \$0.29. Use auto fill handle tool to copy formula down to cell E8.

Notes

- Function keys run across the top of the keyboard.
- The \$ signs indicate cell H2 (9.6% tax rate) is an absolute reference.

The AutoSum Function

The AutoSum function selects a range of cell values to add. Remember, functions include a name that describes the purpose of the function, and a set of parentheses with the function's argument(s). The arguments show how the function is calculating information, for example =SUM(F2:F8) automatically adds (calculates SUM) of values from cell F2 to cell F8. This is a time saver.

For this exercise, write a basic addition formula in cell F2 to calculate total (including tax) for éclairs. Here's a hint: =D2+? . Then, copy the formula in F2 down to cell F8. Now, on to AutoSum function.

To	IISA	the	Auto	Sum	fun	ction:
10	use	uic	Autu	Juli	IUII	cuoii.

- 1. Click cell F9
- 2. Click AutoSum button (Σ)
- 3. Confirm cell range (arguments) is correct
- 4. Click check (✓) in formula bar

E	F		
Tax	Total		
0.29	3.29		
8.06	92.06		
8.64	98.64		
2.30	26.30		
2.40	27.40		
1.54	17.54		
6.53	74.53		
Total	=SUM(F2:F8)		

Screen shot of AutoSum function in cell F9

Notes

- AutoSum button is Greek letter **Sigma**, used in mathematical notation to show sums.
- AutoSum can be found in the Editing group of the Home tab, in the Formulas tab and in the "insert formula" button on the formula bar.

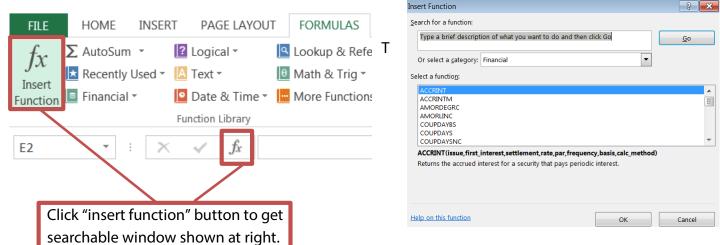
The Payment Function

Microsoft Excel has many powerful functions. For example, the payment (PMT) function calculates monthly payments like mortgage or auto loan. Access this and other functions via the Insert Function window. You may access any function via the formula bar or in Function Library group.

Understand PMT Function Arguments

After the equal sign and function name, in this case =PMT, come the cell references in parentheses known as arguments. Arguments are the data used for the calculation. Begin to understand the payment function arguments here:

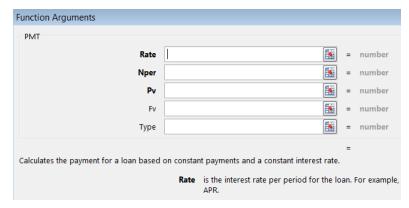
- 1. Click "Payments" tab toward the bottom of exercise file (see "To get the training exercise file," p. 2)
- 2. Click cell E2
- 3. Click "insert function" (fx) button
- 4. Type "PMT"
- 5. Click "Go"
- 6. Select "PMT" from list
- 7. Click "OK"



Insert Function window: search functions by name or browse by category

The Function Arguments window appears next with Rate, Nper, Pv, FV and Type as arguments:

- Rate is interest rate per period.
 Normally, rate is expressed as annual percentage (APR) so you may have to divide APR by 12 to get monthly rate.
- Nper is total number of payments.
- Pv is present value or total loan amount.



Function Arguments window: descriptions appear toward bottom of window

Calculate Monthly Payment

You will determine monthly payment

amounts as well as the total amount paid at the end of the loan term for a fictional auto, condo and boat loan. You will use the PMT function, in the Function Arguments (FA) window, and a basic multiplication formula. Begin with your fictional auto loan:

- 1. Drag FA window to see all of line 2 in the spreadsheet
- 2. Make sure cursor is in "Rate" box in FA window
- 3. Click cell D2; Rate is the monthly interest
- 4. Click into Nper field in the FA window; this is total number of payments
- 5. Click cell C2
- 6. Click into Pv field in the FA window; this is the loan amount
- 7. Click cell B2
- 8. Click "OK"

Your answer will appear in red parentheses indicating the amount is negative, or that you're paying out that amount. To determine the **Total Amount Paid** on the auto loan at the end of your loan term (48 months), you will multiply the monthly amount paid by the number of months paid. Type this formula into cell F2: **=E2*C2**, and press enter. In this scenario, how much interest did you end up paying for your automobile loan? Now try this with the condo and boat loans in the spreadsheet. You can go through the same steps above, or perhaps you know of a shortcut?

Excel Tables

Excel tables make working with data in a spreadsheet easier: you can sort and filter data, format quickly and create dynamic charts.

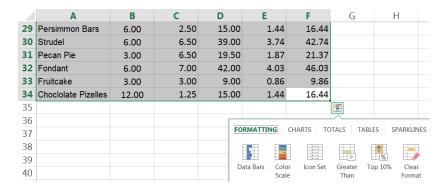
Before creating an Excel table it is important to adhere to the following standards:

- Organize your data in rows and columns in a spreadsheet
- Apply one type of data for each row and column
- Include a unique, descriptive header in the top row of the table for each column
- For each row, include one unique record of data about a particular entity or transaction
- Avoid blank rows or columns, including first row after header
- Use a zero instead of a blank cell in the table
- Keep list of data contained in its own worksheet

Create an Excel Table

Click "Excel Table" tab in the exercise file to get started.

- 1. Select the data you want in the table
 - a. Click and drag left mouse button from cell A1 to cell F34
- 2. Click "Quick Analysis" button in the bottom-right
- 3. Click "Tables" tab
- 4. Click "Table" button



After selecting data, the Quick Analysis button offers helpful tool options

Notes

- Quick Analysis button has other tools for working with your data, including totals and charts.
- Rest mouse pointer arrow over any Quick Analysis button to see what your data will look like.
- Observe Table Style, arrows in the column headers and the Table Tools/Design tab in the Ribbon.

Table Tools – Design Tab

After creating an Excel Table, a new set of table tools are made available to you in the Ribbon. They are only active when you have a cell in the table selected.



New Table Tools appear for your Excel Table: in this case, you get a Design tab with many useful options

Try some of the Table Style Options:

- Click "Total Row" check box to automatically format and add the "Total" column
- Check boxes for first, last or banded columns highlight data and make it easier to read
- Change the look of your table by selecting a different in the Table Styles group

Sort Your Data

Sorting your data helps you see and understand it better. Sorting data by text (A to Z or Z to A) and numbers (smallest to largest or largest to smallest) lets you organize and find the data you want in a long list, and make data-based decisions. In these exercises, you will sort by columns.

To sort a column in a table:

- 1. Click the down arrow for the "Item" column
- 2. Click "Sort A to Z" to sort items alphabetically

Notes

- Sorting data by text is alphabetical or reverse-alphabetical order.
- Sorting data by numbers is smallest to largest or largest to smallest values.
- Corresponding data for that column sorts along with the sorted data.
- An extra arrow appears in the column arrow box to indicate it has been sorted.

Now sort for: which item was purchased most? Which item had the highest cost per unit and overall?

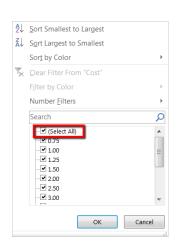
Filter Your Data

When you filter data in an Excel Table, only the rows that meet criteria that you specify display. Rows that do not meet the criteria are hidden.

For quick filtering

- 1. Click the arrow in the table header of the column you want to filter
- 2. Uncheck the (Select All) box
- 3. Check the boxes of the items (criteria) you want to show in your table
- 4. Click OK

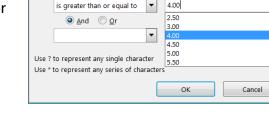
The filtering arrow changes to this icon \square to indicate a filter is applied. Click it to change or remove the filter.



Now you will filter for a specific number. Let's say you want to only see items that cost more than a certain amount.

To filter by specific numbers or text

- 1. Click the arrow in the table header of the "Cost" column
- 2. Click "Number Filters" (or you would click "Text Filters" for columns with text)
- 3. Click "Greater Than Or Equal To" in the sub menu
- 4. From the drop down menu, select the value 4.00
- 5. Click OK



Custom AutoFilter Show rows where

To filter by two conditions, enter filtering conditions in both sets of boxes, pick **And** for both conditions to be true, and **Or** for either of the conditions to be true.

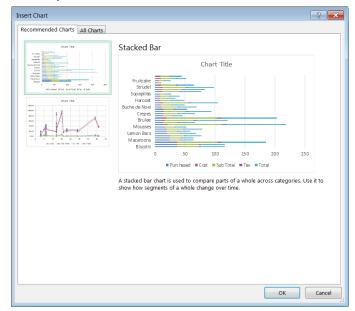
Charts

There are many types of charts to choose from when you want to share your data with others. Sometimes it can difficult to know which chart type to use for the data one wants to present. Excel 2016 has an excellent new feature called "Recommended Charts", which shows a live preview of selected data to be charted. It is found in both Insert Chart dialog as well as Quick Analysis.

Insert a basic graph

- 1. Click Insert tab
- 2. Click "Recommended Charts" in Charts tab
 - a. Click "All Charts" tab in dialog to see more chart options
- 3. Click OK

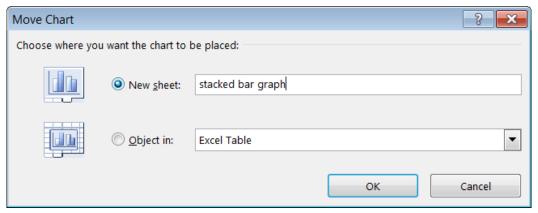
The chart will appear on top of your Excel table. Notice the Chart Tools in the Ribbon with many design and format options to explore.



Insert Chart dialog box

Move a chart to a new worksheet

- 1. Click "Move Chart" in the Design tab
- 2. Click "New Sheet"
- 3. Name the sheet "stacked bar graph"
- 4. Click OK



Move Chart dialog box

A new worksheet tab is created with the name and content you indicated. You may move the position of the worksheet by clicking and dragging. The chart gives a visual representation of quantities purchased, cost per item and totals per item compared to other items. This helps you see which is most popular among the desserts, which costs more, etc., and help you make decisions based on data.

One-on-One Help, Classes, and Online Courses

KCLS recommends free One-on-One computer help and computer classes as you continue to learn about Excel 2016 and computers. Stop by your local library or go to kcls.org/techtutor to find upcoming sessions near you. You may also call Ask KCLS at 1-800-462-9600.

Online courses are also an excellent way to continue your learning.

Try it! On an Internet enabled computer, try these online courses:

- "Excel 2016 Basics" from GCFLearnFree. Go to: http://bit.ly/2yLiRVc
- "Excel 2016 Essential Training" from Lynda.com. Go to: http://bit.ly/2xlOT9m

TIP: Want to earn a Microsoft Certification? Go to **kcls.org/certify** for more information. Certification is a great way to prove your skill to teachers and employers. You're already on track with this class, so make it your learning goal!

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