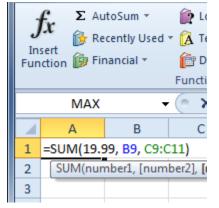


Lesson10-Working with Basic Functions



Figuring out formulas for calculations you want to make in Excel can be tedious and complicated. Fortunately, Excel has an entire library of **functions** or **predefined formulas** that you can take advantage of. You may be familiar with common functions like **sum**, **average**, **product** or **count**, but there are hundreds of functions in Excel, even for things like formatting text, referencing cells, calculating financial rates, analyzing statistics, and more.

In this lesson, you will learn the basics of inserting common functions into your worksheet by utilizing the **AutoSum** and **Insert Functions** commands. You will also become familiar with how to **search and find various functions**, including exploring Excel's **Functions Library**.

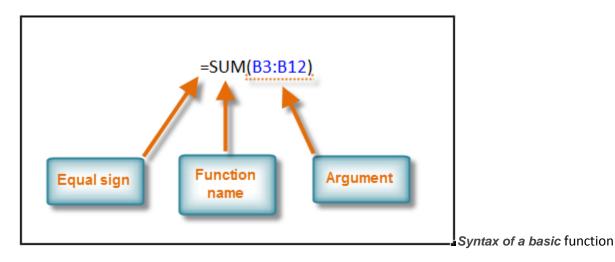
A **function** is a **predefined formula** that performs calculations using specific values in a particular order. One of the key benefits of functions is that they can save you time since you do not have to write the formula yourself. Excel has hundreds of different functions to assist with your calculations.

In order to use these functions correctly, you need to understand the different **parts of a** function and how to create **arguments** in functions to calculate values and cell references.



The Parts of a Function

The order in which you insert a function is important. Each function has a specific order, called **syntax**, which must be followed for the function to work correctly. The basic syntax to create a formula with a function is to insert an **equal sign** (=), a **function name** (SUM, for example, is the function name for addition), and an **argument**. Arguments contain the information you want the formula to calculate, such as a range of cell references.



Working with Basic Arguments

Arguments must be enclosed in **parentheses**. Individual values or cell references inside the parentheses are separated by either **colons** or **commas**.

• **Colons** create a reference to a range of cells.

For example, **=AVG(E19:E23)** would calculate the **average** of the cell range E19 through E23.

• **Commas** separate individual values, cell references, and cell ranges in the parentheses. If there is more than one argument, you must separate each argument by a comma.



For example, **=COUNT(C6:C14,C19:C23,C28)** will **count** all the cells in the three arguments that are included in parentheses.

To Create a Basic Function in Excel:

- 1. Select the cell where the answer will appear (F15, for example)
- 2. Type the equal sign (=) and enter the function name (SUM, for example).

• • • • • • • • • • • • • • • • • • • •					
\$12.20	\$61.00	8-Aug	11-Aug		
\$7.33	\$36.65	8-Aug	11-Aug		
	=SUM				
	🕭 SUM	Adds all	the numbers in a ra	inge of cells	
	🕭 SUMIF				
Unit Price	(fs) SUMIFS	Drdered	Date Received		
\$12.03	 	18-Sep	26-Sep		
\$15.95	€ SUMX2MY	2 18-Sep	26-Sep		
\$5.87	€ SUMX2PY2		14-Aug		
\$8.83	€ SUMXMY2	8-Aug	14-Aug		
\$13.54	\$27.08	22-Jul	29-Jul		Creating a SUM

function

3. Enter the cells for the **argument** inside the parenthesis.

Unit Price	Subtotal	Date Ordered	Date Received
\$5.86	\$58.60	12-Sep	17-Sep
\$40.26	\$80.52	12-Sep	17-Sep
\$4.20	\$42.00	6-Sep	12-Sep
\$6.19	\$74.28	6-Sep	12-Sep
\$3.20	\$48.00	6-Sep	12-Sep
\$3.40	\$17.00	6-Sep	12-Sep
\$4.10	\$32.80	6-Sep	12-Sep
\$12.20	\$61.00	8-Aug	11-Aug
\$7.33	\$36.65	8-Aug	11-Aug
	=SUM(F6:F1	4)	A
	Т	-	A

Adding cells to the function argument

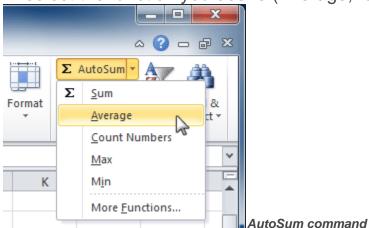
Press Enter and the result will appear.
 \$450.85 Result



Using AutoSum to select Common Functions:

The **AutoSum** command allows you to automatically return the results for a range of cells for common functions like SUM and AVG.

- 1. Select the cell where the answer will appear (E24, for example).
- 2. Click on the **Home** tab.
- 3. In the **Editing** group, click on the **AutoSum** drop-down arrow and select the function you desire (Average, for example).



4. A formula will appear in the selected cell E24. If logically placed, AutoSum will select your cells for you. Otherwise, you will need to click on the cells to choose the argument you desire.

Unit Price	Subtotal	Date Ordered	Date Received					
\$12.03	\$36.09	18-Sep	26-Sep					
\$15.95	\$31.90	18-Sep	26-Sep					
\$5.87	\$58.70	8-Aug	14-Aug					
\$8.83	\$88.30	8-Aug	14-Aug					
\$13.54	\$27.08	22-Jul	29-Jul					
=AVERAGE(19:E23)							
AVERAGE(number1, [number2],)								
Subtotal								

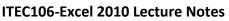
AutoSum selects and dsiplays cell

range

5. Press **Enter** and the result will appear.

\$11.24 Result

The AutoSum command can also be accessed from the Formulas tab.



X

Function Library

There are hundreds of functions in Excel, but only some will be useful for the kind of data you are working with. There is no need to learn every single function, but you may want to explore some of the different kinds to get ideas about which ones might be helpful to you as you create new spreadsheets.

A great place to explore functions is in the **Function Library** on the Formulas tab. Here you may search and select Excel functions based on categories such as **Financial**, **Logical**, **Text**, **Date & Time**, and more.

To Insert a Function from the Function Library:

- 1. Select the cell where the answer will appear (I6, for example)
- 2. Click on the **Formulas** tab.
- 3. From the **Function Library** group, select the **function category** you desire. In this example, we will choose Date & Time.
- 4. Select the desired **function** from the Date & Time drop-down menu. We will choose the NETWORKDAYS function to count the days between the order date and receive date in our worksheet.



fx X X Insert Insert AutoSum Recently Financial Logical Text Used + - - Text Date & Lookup & Math Function Lookup & Text Text Date & Time + Reference + & Trig + Function Id - fx =NETWO		inager ₩ Cr Define
Function Vsed × × × Time Reference × & Trig × Function Function Library DAY	nctions • Mar	nager 🚟 Cr
	E	Define
16 ▼ (<i>f</i> x =NETWO DAY\$360	F	
DA15500	F	
A B EDATE	E	F
2 Office Supply Order Log Jul-Sep 2010 EOMONTH		
3		
4 OfficeMax HOUR		
5 Office Supply Item Number MINUTE	Unit Price	Subtota
6 File Folders EGC38290 MONTH	\$5.86	\$58.6
7 Copy Paper LBG43576 NETWORKDAYS	\$40.26	\$80.5
8 Paperclips CAD789237	\$4.20	\$42.0
9 Binder Clips (Multi) CAD256903	teb bae etch	a holidays)
10 Pens (Blue) KLH78902 NOV NETWORKDAYS(start_		
11 Pens (Red) KLH78904 SEC Returns the number between two dates.		kdays
12 Highligher Pens (Yellow) STA73298	-	
13 Sticky Notes JUG198430	e help.	

Function Library Date & Time category

5. The **Function Arguments** dialog box will appear. Insert the cursor in the **first field** and then enter or select the cell(s) you desire (G6, for example).



itity	Туре	Unit Price	Subtota	Date Ordered D	ate R	eceived	Delivery T	ime
10	boxes	\$5.86	\$58.60	🗘 12-Sep		17-Sep	KDAYS(G6)
2	cartons	\$40.26	\$80.52	12-Sep		17-Sep		
F	unction Argu	ments	100.00	() (imp)		to family		? ×
-	NETWORKDA	YS						
		Start_date G	6] = -	40433		
		End_date		E.] =	any		
		Holidays		E.] =	any		
		where of whole we	dada ya kashiya an	hun dahan	=			
	Returns the hu	mber of whole wo						
nti		Sta	rt_date is a se	rial date number tha	at repre	esents the s	tart date.	
	Formula result	=						
	Help on this fu	nction					ОК	Cancel
	Help on this fu	nction					ОК	Cance

Selecting cell for the Start-date field

6. Insert the cursor in the **next field** and then enter or select the cell(s) you desire (H6, for example).



tity	Туре	Unit Price	Subtotal	Date Ordered	Date Received				
10	boxes	\$5.86	\$58.60	12-Sep	🗘 17-Sep	AYS(G6,H6)			
2	cartons	\$40.26	\$80.52	12-Sep	1/-Sep	3			
F	unction Argu	ments	A 40 00	10.000		_	? ×		
•	NETWORKDA	YS							
ł.		Start_date	G6		= 40433				
ł.		End_date	нө		= 40438				
II.		Holidays			🋐 = any				
ti	Returns the number of whole workdays between two dates. End_date is a serial date number that represents the end date.								
:	Formula result Help on this fur	_	- View	w formula resi	alt C	ОК	Cancel		
6			Contraction of the local division of the loc		and the second se				

Selecting cell for the End_date field

7. Click **OK** and the result will appear. Our results show that it took 5 days to receive the order.

Date Ordered	Date Received		
12-Sep	17-Sep	5 Result	

Insert Function Command

The **Insert Function** command is convenient because it allows you to search for a function by typing a description of what you are looking for or by selecting a category to peruse. The Insert Function command can also be used to easily enter or select more than one argument for a function.

Using the Insert Function command:

In this example, we want to find a function that will count the total number of supplies listed in the Office Supply Order Log. The basic COUNT function only counts cells with numbers; we want to count the cells in the Office Supply



column, which uses text. Therefore, we will need to find a formula that counts cells with text.

- 1. Select the cell where the answer will appear (A27, for example)
- 2. Click on the **Formulas** tab and select the **Insert Function** command.

X 🛃 🧐 - 🍽 - -		_				ex10_office
File Home Insert Page	e Layout	Forr	nulas	Data	Review	View
f_x Σ β	?	A			θ	
Insert AutoSum Recently Financial Function Vsed •	l Logical	Text *		Lookup & Reference		More r Functions *
	Function	n Library				
Insert Function (Shift+F3)	f_x					
Edit the formula in the current cell	В			С	D	E
by choosing functions and editing the arguments.						
	em Nur	nber	Unit (Quantity	Туре	Unit P
Press F1 for more help.	GC38290)		10	boxes	\$
7 Conv Paper	BG43576	-		2	cartons	¢4

- 3. The **Insert Function** dialog box will appear.
- 4. Type a **description** of the function you are searching for and click **Go**. For our example, we will type: *Count cells with text*. (You may also search by selecting a category.)



9	Binder Clips (Multi)	Insert Function	X
10	Pens (Blue)	K Insert Function	
11	Pens (Red)	KI Search for a function:	
12	Highligher Pens (Yellow)	S Count cells with text	
13	Sticky Notes		-2-
14	Staples	S) Or select a category: All	
15		Select a function:	
16		_	
17	USFoods	ABS	
18	Office Supply	It ACCRINTM Type a brief description of	
19	Coffee Filters	78 ACOS ACOSH the function you are	
20	Creamer	98 ADDRESS searching for and click Go	-
21	Paper Towels	7(ABS(number)	
22	Hand Soap	90 Returns the absolute value of a number, a number without its sign.	
23	Garbage Bags	58	
24			
25			
26	Total Supplies	Help on this function OK Can	
27	=		
20			

Searching for a function

5. Review the results to find the function you desire. We will use COUNTA. Then click **OK**.

Insert Function	
Search for a function:	
Count cells with Text	<u>G</u> o
Or select a <u>c</u> ategory: Re	commended 💌
Select a function:	
COUNT COUNTIF DCOUNT COUNTBLANK TEXT	Review the recommended results and select a function. Then click OK.
DCOUNTA COUNTA	
COUNTA(value1,value	2,) s in a range that are not empty.
Help on this function	OK Cancel Reviewing function search

results



6. The **Function Arguments** dialog box will appear. Insert the cursor in the **first field** and then enter or select the cell(s) you desire (A6:A14, for example).

	Function Library				Defined P	eames		ormula Auditi
COUNTA - (*	X ✓ f _x =COUN	NTA(A6:A14)						
A	B	С	D	E	F	G	н	1
4 Office Max	and a second sec							
G Office Supply File Folders	Lunction Argur	ments	-	State Property	And and a local division of the	Bank Delivery	2 ×	
Copy Paper	COUNTA							
Paperclips	d	Value1 A5:A14	4		= {"File Folder	rs ";"Copy Paper";"P	aperc	
Binder Clips (Multi)	d	Value2	8	1	= number			
Pens (Blue)		3201210		(Lines	Section and			
Pens (Red)			2 10 12	e	1500 916			
Highligher Pens (Yellow)) is 📃 🦳	Se Se	lect cell	I range fo	r first ar	gument.		
Sticky Notes	5			CONTRACTOR		and the second second second		
Staples	S				= 9			
	Counts the nur	mber of cells in a ran	nge that are not					
16		v	Alue1: value1	value2 are 11	to 255 argument	ts representing the	values and cells	
17 USFoods			you wa	ant to count. Value	es can be any ty	ype of information.		
18 Office Supply	1							
19 Coffee Filters	7 Formula result							
20 Creamer	g Pornua result	- 9						
21 Paper Towels	7 Help on this fun	nction				ОК	Cancel	
22 Hand Soap	Summer		121112					
23 Garbage Bags	589kjyu	7	2 boxes	\$13.54	\$27.08	22-Jul	29-Jul	
lasting call range for)	A CONTRACTOR OF	07	10000	1.2010/00/00	instruction of		10800-000	

Selecting cell range for Value1 field

7. Insert the cursor in the **next field** and then enter or select the cell(s) you desire (A19:A23, for example). (You may continue to add additional arguments if needed.)

15	Function Arguments			8 8
16 17 USFoods	COUNTA		(FF) (FF) Folder	1. You Day 1. Warney
13 Office Supply 19 Coffee Filters	Value1 Value2		= {"Coffee Filt	s ";"Copy Paper";"Paperc ers";"Creamer";"Paper T
20 Creamer	Value3		🔚 = number	
21 Paper Towels		C Colores o		
22 Hand Soap			ell range for next a	
23 Garbage Bags		Cli	ck OK when finish	ed.
25	Counts the number of cel	ls in a range that are not en	Maria and a second	12 645 245 251
26 Total Supplies			lue2, are 1 to 255 arguments to count. Values can be any typ	s representing the values and ce pe of information.
27 =COUNTA(A6:A14,A19:A23)				
28				
29	Formula result = 14			
H + H Sheet1 Sheet2 Point	Sh Help on this function			OK Cancel

Selecting cell range for Value2 field

8. Click **OK** and the result will appear. Our results show that 14 Total Supplies were ordered from our log.





Challenge!

- 1. Open an existing Excel 2010 workbook. If you want, you can use Lesson10 file.
- 2. Create a function that contains more than one argument.
- 3. Use AutoSum to insert a function. If you are using the example, insert the MAX function in cell E15 to find the highest priced supply.
- 4. Insert a function from the Functions Library. If you are using the example, find the PRODUCT function (multiply) to calculate the Unit Quantity times the Unit Price in cells F19 through F23.
- 5. Use the Insert Function command to search and explore functions.



Lesson11-Sorting Data

Sort	
₽ _A l <u>A</u> dd	Level X Delete Level
Column	
Sort by	Column A 🗨

With over 17 billion cells in a single worksheet, Excel 2010 gives you the ability to work with an **enormous amount of data**. Arranging your data alphabetically, from smallest to largest, or other criteria, can help you find the information you're looking for more quickly.

In this lesson, you will learn how to **sort** data to better view and organize the contents of your spreadsheet.

Basic Sorting

Sorting is a common task that allows you to change or customize the order of your spreadsheet data. For example, you could organize an office birthday list by employee, birthdate, or department, making it easier to find what you're looking for. Custom sorting takes it a step further, giving you the ability to sort multiple levels (such as department first, then birthdate, to group birthdates by department), and more.

To Sort in Alphabetical Order:

1. Select a cell in the column you want to sort by. In this example, we will sort by Last Name.



	С	D	E
1	Last Name	Payment	T-Shirt Color
2	Olivera 🖧	1-Oct	White
3	Richards	4-Oct	Dark Red
4	Hanlon	5-Oct	Heather Grey
5	Means	5-Oct	Dark Red

- 5 Means5-OctDark RedSelecting a column to sort2. Select the Data tab, and locate the Sort and Filter group.
- 3. Click the ascending command ²↓ to **Sort A to Z**, or the descending command ²↓ to **Sort Z to A**.

Insert Page	Layout	Formulas	Data	Revie
Connections Properties		Y	😵 Clear	=
Edit Links	Z↓ Sort	Filter	Advanced	Te Co
nections		Sort & Filt	ter	
• (8	Sort A to 2	z		
С		selection s		
Last Name	lowest va	alues are at	the top of th	e
Olivera				—[
Richards	Press	F1 for more	e help.	
Hanlon	5-Oct		Heather O	irey

4. The data in the spreadsheet will be organized alphabetically.

	С	D	E
1	Last Name	Payment	T-Shirt Color
2	Ackerman	1-Oct	Heather Grey
3	Albee	13-Oct	Heather Grey
4	Bell	11-Oct	Dark Red
5	Benson	11-Oct	White
6	Chen	5-Oct	Dark Red
7	Del Toro	13-Oct	White
8	Ellison	Pending	Dark Red
9	Flores	6-Oct	White
10	Hanlon	5-Oct	Heather Grey
11	Kelly	11-Oct	Dark Red
12	Kelly	11-Oct	Heather Grey
13	Lazar	14-Oct	White
14	MacDonald	Pending	Dark Red
15	Means	Means 5-Oct [
16	Naser	14-Oct	Dark Red
17	Nichols	6-Oct	Dark Red

Sorted by last name, from A to Z



Sorting options can also be found on the Home tab, condensed into the **Sort & Filter** command.

To Sort in Numerical Order:

1. Select a cell in the column you want to sort by.

	А	В	С
1	Homeroom #	First Name	Last Name
2	<u>110 උ</u>	Kris	Ackerman
3	105	Nathan	Albee
4	220-B	Samantha	Bell
5	110	Matt	Benson

- From the Data tab, click the ascending command ²↓ to Sort Smallest to Largest, or the descending command ²↓ to Sort Largest to Smallest.
- 3. The data in the spreadsheet will be organized numerically.

	А	В	С
1	Homeroom #	First Name	Last Name
2	105	Nathan	Albee
3	105	Christiana	Chen
4	105	Sidney	Kelly
5	105	Derek	MacDonald
6	105	Melissa	White
7	105	Esther	Yaron
8	110	Kris	Ackerman
9	110	Matt	Benson
10	110	Gabriel	Del Toro
11	110	Regina	Olivera
12	135	Anisa	Naser
13	135	James	Panarello
14	135	Lia	Richards
15	135	Jordan	Weller
16	135	Chantal	Weller
17	135	Alex	Yuen

Sorted by homeroom number, from

smallest to largest

To Sort by Date or Time:

1. Select a cell in the column you want to sort by.



	D E		F
1	Payment	T-Shirt Color	T-Shirt Size
2	13-Oct	Heather Grey	Medium
3	5-Oct	Dark Red	Medium
4	11-Oct	Dark Red	Medium
5	Pending	Dark Red	Large

2. From the Data tab, click the ascending command 2↓ to Sort Oldest to Newest, or the descending command 4↓ to Sort Newest to Oldest.

3. The data in the spreadsheet will be organized by date or time.

	D	E	F
1	Payment	T-Shirt Color	T-Shirt Size
2	1-Oct	Heather Grey	Large
3	1-Oct	White	Large
4	4-Oct	Dark Red	X-Large
5	5-Oct	Dark Red	Medium
6	5-Oct	Heather Grey	Large
7	5-Oct	Dark Red	Medium
8	5-Oct	Heather Grey	X-Large
9	6-Oct	White	X-Large
10	6-Oct	Dark Red	X-Large
11	7-Oct	Heather Grey	Small
12	7-Oct	Dark Red	Small
13	7-Oct	Heather Grey	Small
14	7-Oct	Heather Grey	Small
15	11-Oct	Dark Red	Medium
16	11-Oct	White	Medium
17	11-Oct	Dark Red	Medium

newest

Custom Sorting

To Sort in the Order of Your Choosing:

You can use a **Custom List** to identify your own sorting order, such as days of the week, or, in this example, t-shirt sizes from smallest to largest (Small, Medium, Large, and X-Large).

1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.

X

ITEC106-Excel 2010 Lecture Notes

Data	Rev	view	View	De	veloper		
Connect	ions	Az↓	A Z Z A		🐺 Clear		
^{II} Properti	es				💫 Reapp	ly	
Edit Link	(S	Z A↓	Sort	Filter	Advan		Text to Columi
nections			G S	ort & Fil			
			Sort				
	D		Show	the Sort	dialog box	to sort	
Paymen	nt		data b once.	ased on	several crit	eria at	
13-Oct							
5-Oct			Pres	ss F1 for	more help.		
11-Oct			Dark Re	d	Mediu	m	

2. Identify the column you want to **Sort by** by clicking the drop-down arrow in the **Column** field. In this example, we will choose T-Shirt Size.

Sort				? ×
⊉ _A j <u>A</u> dd	Level X Delete Level	Copy Level	Options	Wy data has <u>h</u> eaders
Column		Sort On	Order	
Sort by	T-Shirt Size	Values	▼ A to Z	•
	Homeroom # First Name Last Name Payment T-Shirt Color T-Shirt Size			
				Cancel

Selecting a column to sort by

- 3. Make sure **Values** is selected in the **Sort On** field.
- 4. Click the drop-down arrow in the **Order** field, and choose **Custom** List...



Sort				? ×
Palad L	evel X Delete Level	Copy Level)ptions	Wy data has <u>h</u> eaders
Column		Sort On		Order
Sort by	T-Shirt Size 💌	Values	-	A to Z
				A to Z Z to A Custom List
				OK Cancel

Choosing to order by Custom List

- 5. Select **NEW LIST**, and enter how you want your data sorted in the **List entries** box. We will sort t-shirt sizes from smallest to largest.
- 6. Click Add to save the list, then click OK.

Custom Lists		8 ×
Custom Lists		
Custom lists: NEW LIST Sun, Mon, Tue, Wed, Th Sunday, Monday, Tuesd Jan, Feb, Mar, Apr, May January, February, Maro	ay, Wec Large , Jun, J X-Large	▲ Add Delete
Press Enter to separa		·
		OK Cancel Creating

custom list

7. Click **OK** to close the Sort dialog box and sort your data.



Sort				? ×
⊉ _A j <u>A</u> dd	Level X Delete Level	Copy Level	Options	My data has <u>h</u> eaders
Column		Sort On	0	rder
Sort by	T-Shirt Size 🔹	Values	- 5	mall, Medium, Large, X-Large 🗨
				Cancel

Clicking OK to sort

8. The spreadsheet will be sorted in order of Small, Medium, Large, and X-Large.

C	D	E	F
1 Last Name	Payment	T-Shirt Color	T-Shirt Size
6 Naser	14-Oct	Dark Red	Small
7 Lazar	14-Oct	White	Small
8 Ellison	Pending	Dark Red	Small
9 Peyton-Gomez	Pending	White	Small
10 Chen	5-Oct	Dark Red	Medium
11 Means	5-Oct	Dark Red	Medium
12 Benson	11-Oct	White	Medium
13 Bell	11-Oct	Dark Red	Medium
14 Albee	13-Oct	Heather Grey	Medium
15 Del Toro	13-Oct	White	Medium
16 Panarello	15-Oct	White	Medium
17 Ackerman	1-Oct	Heather Grey	Large
18 Olivera	1-Oct	White	Large
19 Weller	5-Oct	Heather Grey	Large
20 Yuen	4-0ct	White	Large
21 MacDonald	Pending	Dark Red	Large
22 Richards	4-Oct	Dark Red	X-Large
23 Hanlon	5-Oct	Heather Grey	X-Large

Sorted by t-shirt size,

from smallest to largest



To Sort by Cell Color, Font Color, or Cell Icon:

- 1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
- 2. Identify the column you want to **Sort by** by clicking the drop-down arrow in the **Column** field.
- 3. Choose whether you want to sort by Cell Color, Font Color, or Cell Icon in the **Sort On** field. In this example, will sort on **Font Color**.

Sort			? ×
⊉ _A j <u>A</u> dd	Level X Delete Level	Copy Level	s Wy data has <u>h</u> eaders
Column		Sort On	Order
Sort by	T-Shirt Color 🗨	Values 💌	A to Z
		Values Cell Color Font Color Cell Icon	
			OK Cancel

Choosing to sort on Font Color

4. In the **Order** field, click the drop-down arrow to choose a color, then decide whether you want it ordered **On Top** or **On Bottom**.

Sort						8 ×
[⊉] ≩I <u>A</u> dd	Level X Delete L	evel	y Level	Options	🔽 M	y data has <u>h</u> eaders
Column		Sort On	1		Order	
Sort by	T-Shirt Color	➡ Font Co	olor	-	•	On Top 👻
					Automatic	5, 45, 31)
					OK	Cancel

Selecting a font color

5. Click **OK**. The data is now sorted by attribute rather than text.



color

	С	D	E
1	Last Name	Payment	T-Shirt Color
2	Richards	4-Oct	Dark Red
3	Means	5-Oct	Dark Red
4	Chen	5-Oct	Dark Red
5	Nichols	6-Oct	Dark Red
6	Yaron	7-Oct	Dark Red
7	Bell	11-Oct	Dark Red
8	Kelly	11-Oct	Dark Red
9	Naser	14-Oct	Dark Red
10	Ellison	Pending	Dark Red
11	MacDonald	Pending	Dark Red
12	Ackerman	1-Oct	Heather Grey
13	Olivera	1-Oct	White

Sorting Multiple Levels

Another feature of custom sorting, **sorting multiple levels** allows you to identify which columns to sort by and when, giving you more control over the organization of your data. For example, you could sort by more than one cell color (such as red, then yellow, then green, to indicate different levels of priority); or, as seen here, sort students by homeroom number, then by last name.

To Add a Level:

- 1. From the **Data** tab, click the **Sort** command to open the **Sort** dialog box.
- 2. Identify the first item you want to **Sort by**. In this example, we will sort Homeroom # from Smallest to Largest.
- 3. Click Add Level to add another item.



Sort		? ×
Add Level	Copy Level	Vy data has <u>h</u> eaders
Column	Sort On	Order
Sort by Homeroom #	Values	Smallest to Largest
		OK Cancel

Adding a level

4. Identify the item you want to sort by next. We will sort Last Name from A to Z.

Sort			8 ×
⊉ <u>A</u> dd	Level X Delete Level	🖹 Copy Level 🔺 💌 Op	tions Vy data has <u>h</u> eaders
Column		Sort On	Order
Sort by	Homeroom #	Values	▼ Smallest to Largest ▼
Then by	Last Name 🗨	Values	▼ A to Z ▼
	Homeroom # First Name		
	Last Name Payment T-Shirt Color T-Shirt Size		
			OK Cancel

Choosing criteria for a second level

- 5. Click **OK**.
- 6. The spreadsheet will be sorted so that homeroom numbers are in order, and within each homeroom, students are listed alphabetically by last name.



	А	В	С
1	Homeroom #	First Name	Last Name
2	105	Nathan	Albee
3	105	Christiana	Chen
4	105	Sidney	Kelly
5	105	Derek	MacDonald
6	105	Melissa	White
7	105	Esther	Yaron
8	110	Kris	Ackerman
9	110	Matt	Benson
10	110	Gabriel	Del Toro
11	110	Regina	Olivera
12	135	Anisa	Naser
13	135	James	Panarello
14	135	Lia	Richards
15	135	Jordan	Weller
16	135	Chantal	Weller
17	135	Alex	Yuen

Copy Level will add a level by duplicating the one you have selected, and allowing you to modify the sorting criteria. This is useful if you need to sort multiple levels that share some criteria, such as the same Column, Sort On, or Order.

To Change the Sorting Priority:

- 1. From the **Data** tab, click the **Sort** command to open the **Custom Sort** dialog box.
- 2. Select the level you want to re-order.
- 3. Use the **Move Up** or **Move Down** arrows. The higher the level is on the list, the higher its priority.



Sort					? ×
⊉ <u>}j A</u> dd	Level X Delete Le	vel	🗈 Copy Level	ns	. Wy data has <u>h</u> eaders
Column			Sort On Move Up (Ctrl+	⊦Up	Arrow)
Sort by	Homeroom #	-	Values 🗸 🗸		Smallest to Largest 📃
Then by	T-Shirt Size	-	Values 🗸]	Small, Medium, Large, X-Large 🛛 🗨
Then by	Last Name	-	Values 👻] [A to Z
					OK Cancel

Changing the sorting priority

4. Click **OK**.

Challenge!

- 1. Open an existing Excel workbook. If you want, you can use Lesson11 file.
- Sort a column in ascending ¹/₂↓ or descending ¹√₄ order. If you are using the example, sort by Homeroom #.
- 3. Add a second level, and sort it according to cell color, font color, or cell icon. If you are using the example, add a second and third level to sort by the red and grey fonts used in T-Shirt Color.
- 4. Add another level, and sort it using a Custom List. If you are using the example, sort by T-Shirt Size in the order of Small, Medium, Large, and X-Large.
- 5. Change the sorting priority. If you are using the example, re-order the list to sort by T-Shirt Color (red), then by T-Shirt Color (grey), then by T-Shirt Size, then by Homeroom #.



Lesson12-Outlining Data

1	2 3		В	
		1	First Name	Last Na
Γ	+	10		
	+	21		
	6	22	Derek	MacDo
	•	23	Kris	Ackerr
	•	24	Jordan	Weller
	•	25	Regina	Oliver
	•	26	Alex	Yuen
	-	27		

Introduction

If the amount of data in your worksheet becomes overwhelming, creating an outline can help. Not only does this allow you to organize your data into groups, and then show or hide them from view; you can also summarize data for quick analysis using the Subtotal command (for example, subtotaling the cost of office supplies depending on the type of product).

In this lesson, you will learn how to **outline** your worksheet in order to summarize and control how your data is displayed.

Outlines give you the ability to group data that you may want to show or hide from view, and create a quick summary using the Subtotal command. Because outlines rely on grouping data that is related, you **must sort before you can outline**.

To Outline Data Using Subtotal:

The **Subtotal** command can be used to outline your worksheet in many different ways. It uses common functions like SUM, COUNT, AVG, and more, to summarize your data, and place it in a **group**. In this example, we will use the Subtotal command to count the number of t-shirt sizes that were ordered at a local high school. This will also place each t-shirt size in a group, making it possible



to show the count, but hide the details that are not crucial to the placing of the order (such as the student's homeroom number and payment date).

1. **Sort** according to the data you want to outline. Outlines rely on grouping data that is related. In this example, we will outline the worksheet by T-Shirt Size, which has been sorted from smallest to largest.

	С	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
4	Ellison	Pending	Dark Red	Small
5	White	7-Oct	Heather Grey	Small
6	Reynolds	7-Oct	Heather Grey	Small
7	Shaw	7-Oct	Heather Grey	Small
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10	Chen	5-Oct	Dark Red	Medium
11	Kelly	11-Oct	Dark Red	Medium
12	Means	5-Oct	Dark Red	Medium
13	Bell	11-Oct	Dark Red	Medium
14	Albee	13-Oct	Heather Grey	Medium
15	Kelly	11-Oct	Heather Grey	Medium
16	Benson	11-Oct	White	Medium
17	Del Toro	13-Oct	White	Medium
18	Panarello	15-Oct	White	Medium
19	Weller	15-Oct	White	Medium
20	MacDonald	Pending	Dark Red	Large
21	Ackerman	1-Oct	Heather Grey	Large
22	Weller	5-Oct	Heather Grey	Large
23	Olivera	1-Oct	White	Large
24	Yuen	5-Oct	White	Large
25	Richards	4-Oct	Dark Red	X-Large

2. Select the **Data** tab, and locate the **Outline** group.

3. Click the **Subtotal** command to open the Subtotal dialog box.



Group	Ungroup		를 Show Detail 를 Hide Detail 대
К	L	together subtotals selected o	eral rows of related of by automatically ins and totals for the cells. F 1 for more help.

- 4. In the **At each change in** field, select the column you want to use to outline your worksheet. In this example, we will choose T-Shirt Size.
- 5. In the **Use function** field, choose from the list of functions that are available for subtotaling. We will use the COUNT function to tally the number of each size.
- 6. Select the **column** you want the subtotal to appear in. We will choose the T-Shirt Size column.

7. Click OK .	
Subtotal	
At each change in:	
T-Shirt Size	
Use function:	
Count	
Add subtotal to:	
Homeroom # First Name Last Name Payment	
T-Shirt Color ✓ T-Shirt Size ✓	
 Replace current subtotals Page break between groups Summary below data 	
Remove All OK Cancel	Clia

- Clicking OK to subtotal
- 8. The contents of your worksheet will be outlined. Each t-shirt size will be placed in its own group, and the subtotal (in this case, count) will be listed below each group.



1 2 3		С	D	E	F
	1	Last Name	Payment	T-Shirt Color	T-Shirt Size
ΓΓ・	2	Yaron	7-Oct	Dark Red	Small
	3	Naser	14-Oct	Dark Red	Small
.	4	Ellison	Pending	Dark Red	Small
·	5	White	7-Oct	Heather Grey	Small
·	6	Reynolds	7-Oct	Heather Grey	Small
·	7	Shaw	7-Oct	Heather Grey	Small
·	8	Peyton-Gomez	Pending	White	Small
·	9	Lazar	14-Oct	White	Small
—	10			Small Count	8
٢·	11	Chen	5-Oct	Dark Red	Medium
·	12	Kelly	11-Oct	Dark Red	Medium
·	13	Means	5-Oct	Dark Red	Medium
·	14	Bell	11-Oct	Dark Red	Medium
·	15	Albee	13-Oct	Heather Grey	Medium
·	16	Kelly	11-Oct	Heather Grey	Medium
·	17	Benson	11-Oct	White	Medium
·	18	Del Toro	13-Oct	White	Medium
· ·	19	Panarello	15-Oct	White	Medium
· ·	20	Weller	15-Oct	White	Medium
-	21			Medium Count	10

subtotal

Showing or Hiding Data

To Show or Hide a Group:

1. Click the minus sign, also known as the **Hide Detail** symbol, to collapse the group.



1 2 3		С	D	E	F
	1	Last Name	Payment	T-Shirt Color	T-Shirt Size
	8	Peyton-Gomez	Pending	White	Small
.	9	Lazar	14-Oct	White	Small
Ē	10			Small Count	8
Γ·	11	Chen	5-Oct	Dark Red	Medium
•	12	Kelly	11-Oct	Dark Red	Medium
·	13	Means	5-Oct	Dark Red	Medium
•	14	Bell	11-Oct	Dark Red	Medium
•	15	Albee	13-Oct	Heather Grey	Medium
•	16	Kelly	11-Oct	Heather Grey	Medium
·	17	Benson	11-Oct	White	Medium
•	18	Del Toro	13-Oct	White	Medium
•	19	Panarello	15-Oct	White	Medium
	20	Weller	15-Oct	White	Medium
Ę.	21			Medium Count	10
	22	MacDonald	Pending	Dark Red	Large
•	23	Ackerman	1-Oct	Heather Grey	Large
.	24	Weller	5-Oct	Heather Grey	Large
·	25	Olivera	1-Oct	White	Large
·	26	Yuen	5-Oct	White	Large
—	27			Large Count	5

expanded group

2. Click the plus sign, also known as the **Show Detail** symbol, to expand the group again.



1 2 3		С	D	E	F
	1	Last Name	Payment	T-Shirt Color	T-Shirt Size
·	8	Peyton-Gomez	Pending	White	Small
·	9	Lazar	14-Oct	White	Small
	10			Small Count	8
+	21			Medium Count	10
- hr	22	MacDonald	Pending	Dark Red	Large
· ·	23	Ackerman	1-Oct	Heather Grey	Large
·	24	Weller	5-Oct	Heather Grey	Large
·	25	Olivera	1-Oct	White	Large
·	26	Yuen	5-Oct	White	Large
—	27			Large Count	5
ſ٠	28	Richards	4-Oct	Dark Red	X-Large
·	29	Nichols	6-Oct	Dark Red	X-Large
·	30	Hanlon	4-Oct	Heather Grey	X-Large
·	31	Flores	6-Oct	White	X-Large
-	32			X-Large Count	4
-	33			Grand Count	27

collapsed group

You can also use the Show Detail or Hide Detail commands on the **Data** tab in the Outline group. First select a cell in the group you want to show or hide, then click the appropriate command.

To View Groups by Level:

The groups in your outline, based on their hierarchy, are placed on different levels. You can quickly display as little or as much information as you want by clicking the level symbols 123 to the left of your worksheet. In this example, we will view levels in descending order, starting with the entire worksheet on display, then finishing with the grand total. While this example contains only 3 levels, Excel can accommodate up to 8.

1. Click the **highest level** (in this example, level **3**) to view and expand all of your groups. Viewing groups at the highest level will display the entirety of your worksheet.



23		С	D	E	F
4	1	Last Name	Payment	T-Shirt Color	T-Shirt Size
٢·٦	2	Yaron	7-Oct	Dark Red	Small
	3	Naser	14-Oct	Dark Red	Small
	4	Ellison	Pending	Dark Red	Small
	5	White	7-Oct	Heather Grey	Small
•	6	Reynolds	7-Oct	Heather Grey	Small
•	7	Shaw	7-Oct	Heather Grey	Small
•	8	Peyton-Gomez	Pending	White	Small
·	9	Lazar	14-Oct	White	Small
_	10			Small Count	-
「 ·	11	Chen	5-Oct	Dark Red	Medium
•	12	Kelly	11-Oct	Dark Red	Medium
•	13	Means	5-Oct	Dark Red	Medium
•	14	Bell	11-Oct	Dark Red	Medium
•	15	Albee	13-Oct	Heather Grey	Medium
•	16	Kelly	11-Oct	Heather Grey	Medium
·	17	Benson	11-Oct	White	Medium
•	18	Del Toro	13-Oct	White	Medium
•	19	Panarello	15-Oct	White	Medium
•	20	Weller	15-Oct	White	Medium
-	21			Medium Count	1
Γ·	22	MacDonald	Pending	Dark Red	Large
•	23	Ackerman	1-Oct	Heather Grey	Large
•	24	Weller	5-Oct	Heather Grey	Large

the highest level

2. Click the **next level** (in this example, level **2**) to hide the detail of the previous level. In this example, level 2 contains each subtotal.

1 2	2,3		С	D	E	F	
	13	1	Last Name	Payment	T-Shirt Color	T-Shirt Size	
Γ.	F	10			Small Count	8	
-	F	21			Medium Count	10	
-	•	27			Large Count	5	
-	•	32			X-Large Count	4	
		33			Grand Count	27	
		34					Viewing data or

level 2

3. Click the **lowest level** (level **1**) to display the lowest level of detail. In this example, level 1 contains only the grand total.



1 2 3		С	D	E	F	
3	1	Last Name	Payment	T-Shirt Color	T-Shirt Size	
+	33			Grand Count		27
	34					
	35					

level 1

Removing Groups and Subtotaling

To Ungroup Data:

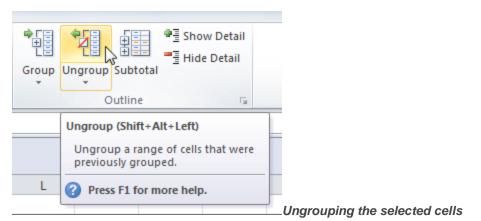
1. Select the rows or columns that you want to ungroup. In this example, we will ungroup size Small.

1 2	3		С	D	E	F
		1	Last Name	Payment	T-Shirt Color	T-Shirt Size
ΓΓ	•	2	Yaron	7-Oct	Dark Red	Small
	•	3	Naser	14-Oct	Dark Red	Small
	•	4	Ellison	Pending	Dark Red	Small
	•	5	White	7-Oct	Heather Grey	Small
	•	6	Reynolds	7-Oct	Heather Grey	Small
	•	7	Shaw	7-Oct	Heather Grey	Small
	•	8	Peyton-Gomez	Pending	White	Small
	•	9	Lazar	14-Oct	White	Small
ļĖ	•	10			Small Count	8
Γ	· ·	11	Chen	5-Oct	Dark Red	Medium
	•	12	Kelly	11-Oct	Dark Red	Medium
	•	13	Means	5-Oct	Dark Red	Medium
	•	14	Bell	11-Oct	Dark Red	Medium
	•	15	Albee	13-Oct	Heather Grey	Medium
	•	16	Kelly	11-Oct	Heather Grey	Medium
	•	17	Benson	11-Oct	White	Medium

to ungroup

2. From the **Data** tab, click the **Ungroup** command. The range of cells will be ungrouped.



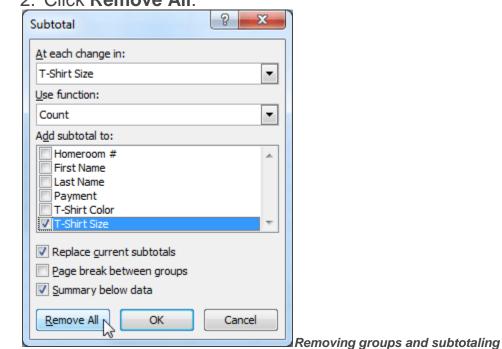


To ungroup all the groups in your outline, open the drop-down menu under the **Ungroup** command, and choose**Clear Outline**.

Ungroup and **Clear Outline** will not remove subtotaling from your worksheet. Summary or subtotal data will stay in place and continue to function until you remove it.

To Ungroup Data and Remove Subtotaling:

- 1. From the **Data** tab, click the **Subtotal** command to open the Subtotal dialog box.
- 2. Click Remove All.





	С	D	E	F
1	Last Name	Payment	T-Shirt Color	T-Shirt Size
4	Ellison	Pending	Dark Red	Small
5	White	7-Oct	Heather Grey	Small
6	Reynolds	7-Oct	Heather Grey	Small
7	Shaw	7-Oct	Heather Grey	Small
8	Peyton-Gomez	Pending	White	Small
9	Lazar	14-Oct	White	Small
10	Chen	5-Oct	Dark Red	Medium
11	Kelly	11-Oct	Dark Red	Medium
12	Means	5-Oct	Dark Red	Medium
13	Bell	11-Oct	Dark Red	Medium
14	Albee	13-Oct	Heather Grey	Medium
15	Kelly	11-Oct	Heather Grey	Medium
16	Benson	11-Oct	White	Medium
17	Del Toro	13-Oct	White	Medium
18	Panarello	15-Oct	White	Medium
19	Weller	15-Oct	White	Medium
20	MacDonald	Pending	Dark Red	Large
21	Ackerman	1-Oct	Heather Grey	Large
22	Weller	5-Oct	Heather Grey	Large
23	Olivera	1-Oct	White	Large
24	Yuen	5-Oct	White	Large
25	Richards	4-Oct	Dark Red	X-Large

3. All data will be ungrouped, and subtotals will be removed.

subtotaling

Creating Your Own Groups

The **Group** command allows you to group any range of cells - either columns or rows. It does not calculate a subtotal, or rely on your data being sorted. This gives you the ability to show or hide any part of your worksheet, and display only the information you need.

To Create and Control Your Own Group:

In this example, we will prepare a list of t-shirt colors and sizes that need to be distributed to each homeroom. Some of the data in the worksheet is not relevant



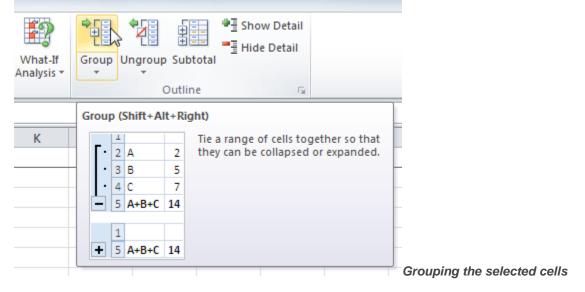
to the distribution of the t-shirts; however, instead of deleting it, we will group it, then temporarily hide it from view.

	0 1			
	В	С	D	E
1	First Name	Last Name	Payment	T-Shirt Color
2	Esther	Yaron	7-Oct	Dark Red
3	Anisa	Naser	14-Oct	Dark Red
4	Brigid	Ellison	Pending	Dark Red
5	Melissa	White	7-Oct	Heather Grey
6	Malik	Reynolds	7-Oct	Heather Grey
7	Windy	Shaw	7-Oct	Heather Grey
8	Christopher	Peyton-Gomez	Pending	White
9	Michael	Lazar	14-Oct	White
10	Christiana	Chen	5-Oct	Dark Red
11	Sidney	Kelly	11-Oct	Dark Red

1. Select the range of cells that you want to group. In this example, we will group the First Name, Last Name, and Payment columns.

cells to group

2. From the **Data** tab, click the **Group** command.



3. Excel will group the selected columns or rows.



1	r			
2	•	•	•	
	В	С	D	E
1	First Name	Last Name	Payment	T-Shirt Color
2	Esther	Yaron	7-Oct	Dark Red
3	Anisa	Naser	14-Oct	Dark Red
4	Brigid	Ellison	Pending	Dark Red
5	Melissa	White	7-Oct	Heather Grey
6	Malik	Reynolds	7-Oct	Heather Grey
7	Windy	Shaw	7-Oct	Heather Grey
8	Christopher	Peyton-Gomez	Pending	White
9	Michael	Lazar	14-Oct	White
10	Christiana	Chen	5-Oct	Dark Red
11	Sidney	Kelly	11-Oct	Dark Red

- 4. Click the minus sign, also known as the **Hide Detail** symbol, to hide the group.
- 5. The group will be hidden from view.

1 2		+		
	А	E	F	
1	Homeroom #	T-Shirt Color	T-Shirt Size	
2	105	Dark Red	Small	
3	135	Dark Red	Small	
4	220-A	Dark Red	Small	
5	105	Heather Grey	Small	
6	220-B	Heather Grey	Small	
7	220-B	Heather Grey	Small	
8	220-A	White	Small	
9	220-B	White	Small	
10	105	Dark Red	Medium	
11	105	Dark Red	Medium	Click to show a

group

Click the plus sign, also known as the **Show Detail** symbol, to show the group again.

Challenge!

1. Open an existing Excel workbook. If you want, you can use this lesson12 file



- 2. Outline your worksheet using the Subtotal command. If you are using the example, outline by t-shirt size.
- 3. Display the first level of groups in your outline.
- 4. Display the highest level to view your entire worksheet again.
- 5. Create your own group of rows or columns, then hide the group from view.
- 6. Ungroup any range of data.
- 7. Remove subtotaling from your worksheet.



Challenge!Lesson10

- 1. Open an existing Excel 2010 workbook. If you want, you can use Lesson10 file.
- 2. Create a function that contains more than one argument.
- 3. Use AutoSum to insert a function. If you are using the example, insert the MAX function in cell E15 to find the highest priced supply.
- 4. Insert a function from the Functions Library. If you are using the example, find the PRODUCT function (multiply) to calculate the Unit Quantity times the Unit Price in cells F19 through F23.
- 5. Use the Insert Function command to search and explore functions.

Challenge! Lesson11

- 1. Open an existing Excel workbook. If you want, you can use Lesson11 file.
- Sort a column in ascending ¹/₂↓ or descending ¹√₄ order. If you are using the example, sort by Homeroom #.
- 3. Add a second level, and sort it according to cell color, font color, or cell icon. If you are using the example, add a second and third level to sort by the red and grey fonts used in T-Shirt Color.
- 4. Add another level, and sort it using a Custom List. If you are using the example, sort by T-Shirt Size in the order of Small, Medium, Large, and X-Large.
- 5. Change the sorting priority. If you are using the example, re-order the list to sort by T-Shirt Color (red), then by T-Shirt Color (grey), then by T-Shirt Size, then by Homeroom #.



Challenge! Lesson12

- 1. Open an existing Excel workbook. If you want, you can use this lesson12 file
- 2. Outline your worksheet using the Subtotal command. If you are using the example, outline by t-shirt size.
- 3. Display the first level of groups in your outline.
- 4. Display the highest level to view your entire worksheet again.
- 5. Create your own group of rows or columns, then hide the group from view.
- 6. Ungroup any range of data.
- 7. Remove subtotaling from your worksheet.