Al-Mustaqbal University
Collage Of Pharmacy

Computer Sciences III S1

Lecture 7

Introduction to MS Excel

Part 4

Prepared by Asst. lecturer Sajjad Ibrahim Ismael

Learning Objectives

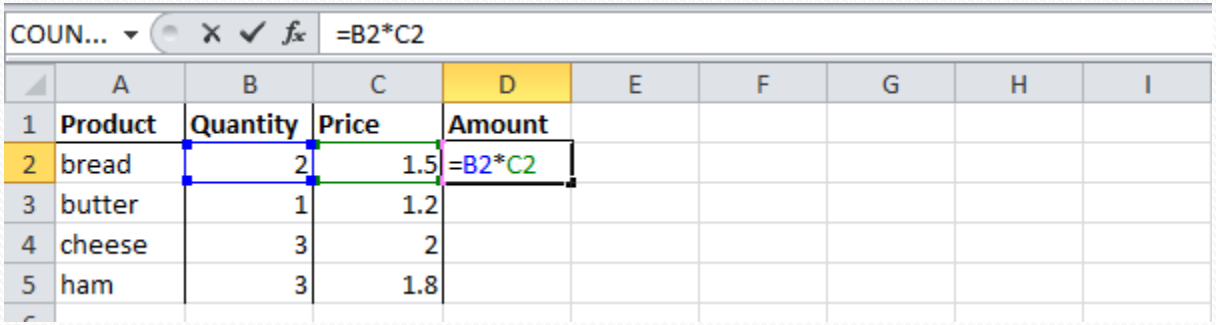
- Understand the difference between relative, absolute and mixed references.
- Understand and apply data sorting.
- Understand and apply data filtering.
- Understand and apply conditional formatting.
- Understand and apply charts creation and modification.

Outlines

- Cell References
  - Relative references
  - Absolute reference
  - Mixed reference.
- Data Analysis
  - Data Sorting
  - Data Filtering
  - Conditional Formatting
  - Charts

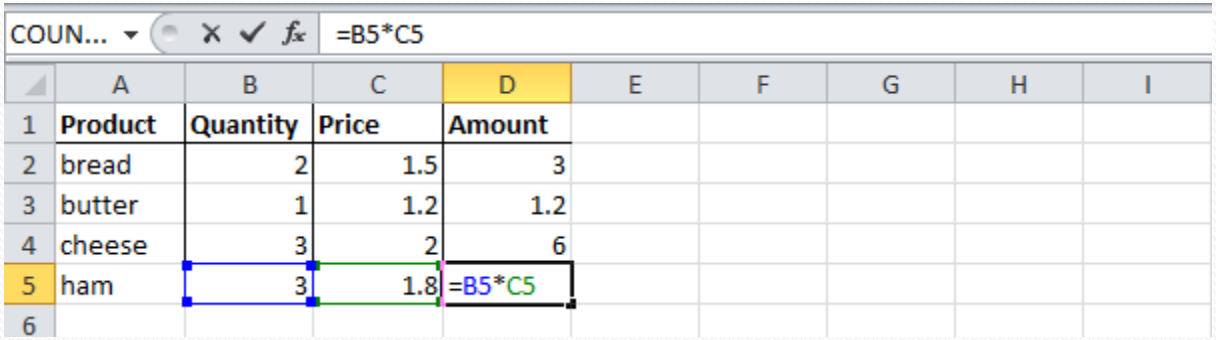
Cell References - Relative Reference

By default, Excel uses **relative reference**. See the formula in cell D2 below. Cell D2 references (points to) cell B2 and cell C2. Both references are relative.



	A	B	C	D	E	F	G	H	I
1	**Product**	**Quantity**	**Price**	**Amount**					
2	bread	2	1.5	=B2*C2					
3	butter	1	1.2						
4	cheese	3	2						
5	ham	3	1.8						

Select cell D2, click on the lower right corner of cell D2 and drag it down to cell D5.

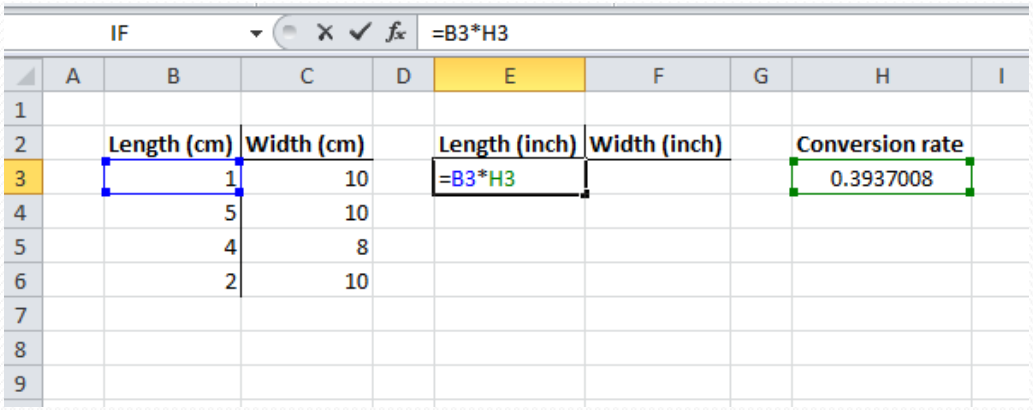


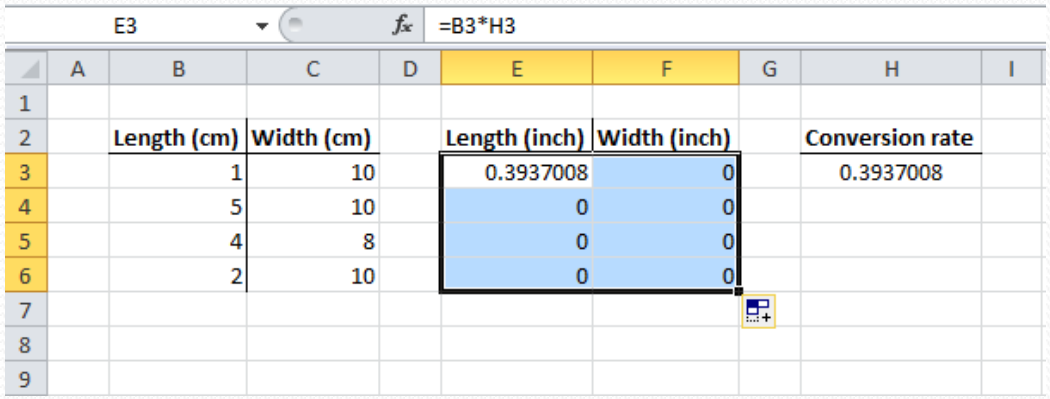
	A	B	C	D	E	F	G	H	I
1	**Product**	**Quantity**	**Price**	**Amount**					
2	bread	2	1.5	3					
3	butter	1	1.2	1.2					
4	cheese	3	2	6					
5	ham	3	1.8	=B5*C5					
6									

Cell D3 references are cell B3 and cell C3.
Cell D4 references are cell B4 and cell C4.
Cell D5 references are cell B5 and cell C5.
In other words: each cell references are **its two neighbors on the left.**

Cell References - Absolute Reference

See the formula in cell E3 below. Now drag to the other cells.





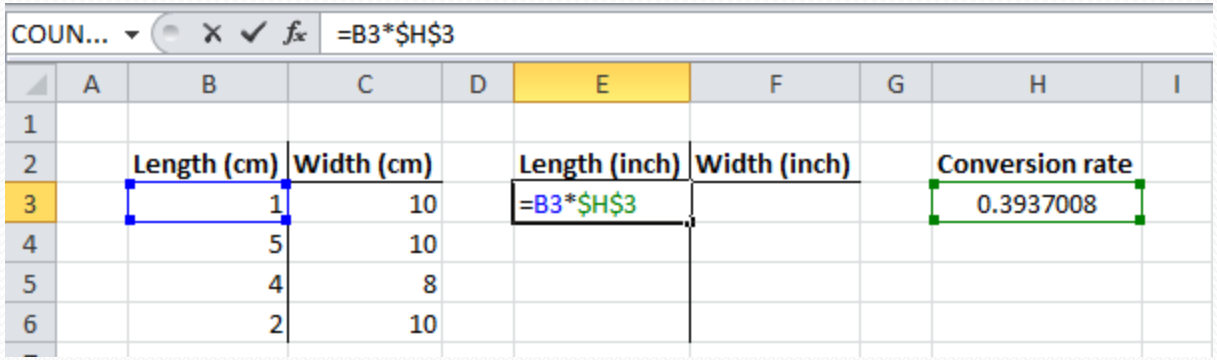
You have got wrong results, **why**?

Because the reference to cell H3 should be fixed.

Cell References - Absolute Reference

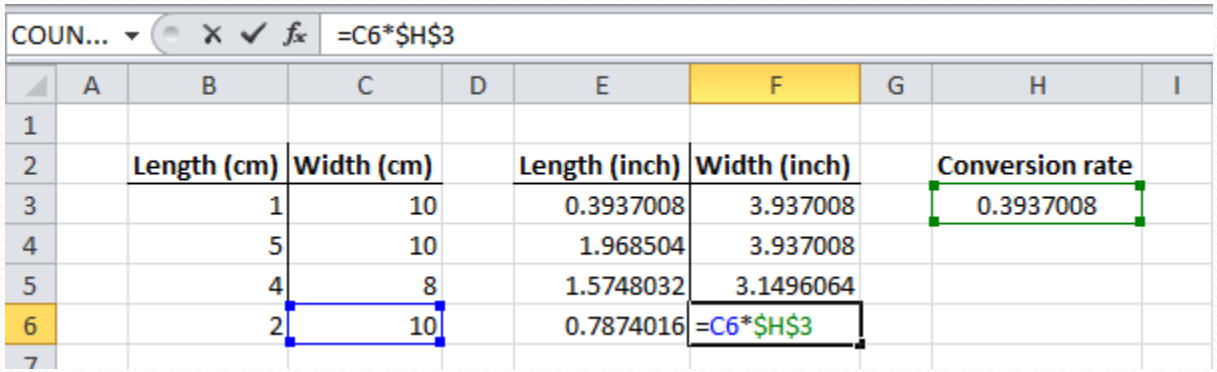
Solution:

Create an absolute reference to cell **H3,** by placing a **$** symbol in front of the column letter and row number of cell H3 (**H3**) in the formula of cell E3.



	A	B	C	D	E	F	G	H	I
1									
2		Length (cm)	Width (cm)		Length (inch)	Width (inch)		Conversion rate	
3		1	10		=B3*H3			0.3937008	
4		5	10						
5		4	8						
6		2	10						

Now you can quickly drag this formula to the other cells.



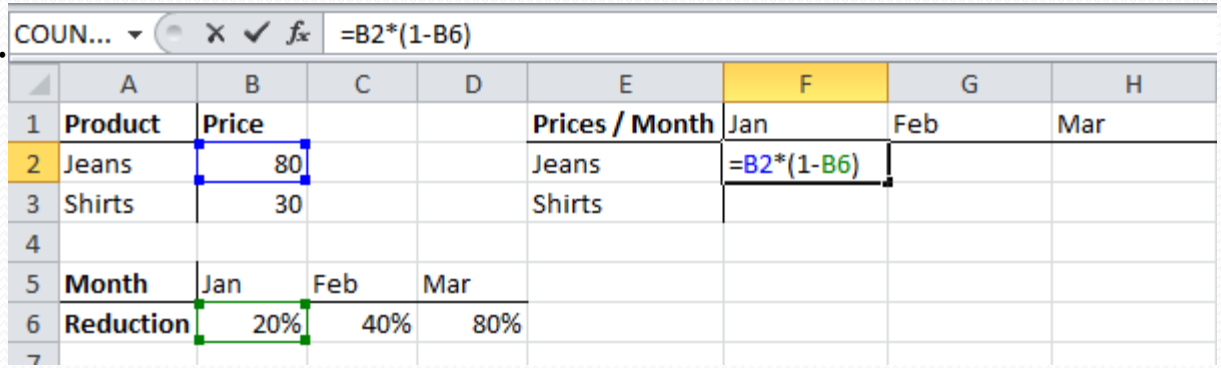
	A	B	C	D	E	F	G	H	I
1									
2		Length (cm)	Width (cm)		Length (inch)	Width (inch)		Conversion rate	
3		1	10		0.3937008	3.937008		0.3937008	
4		5	10		1.968504	3.937008			
5		4	8		1.5748032	3.1496064			
6		2	10		0.7874016	=C6*H3			

The reference to the cell H3 is fixed (when we drag the formula down and across). As a result, the correct lengths and widths in inches are calculated.

Cell References - Mixed Reference

Sometimes we need a combination of relative and absolute references (mixed reference).

See the formula in cell F2 below.

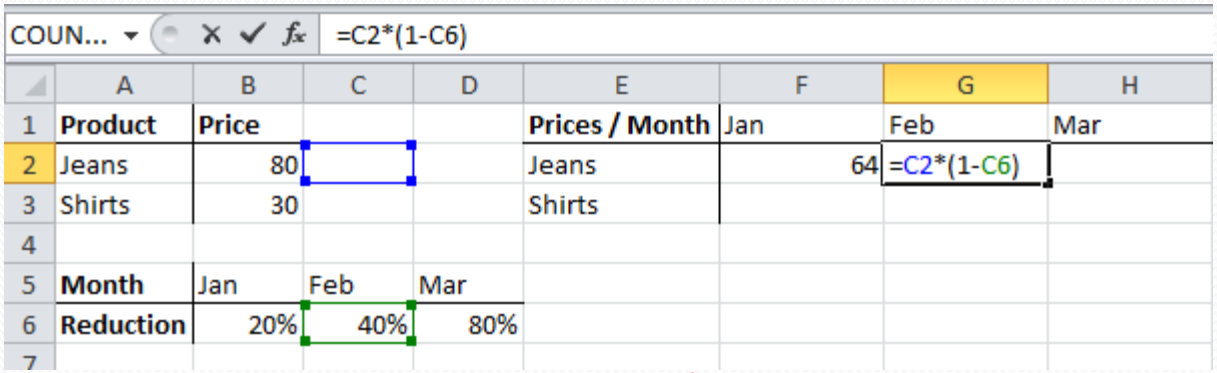


We want to copy this formula to the other cells quickly. Drag cell F2 across one cell, and look at the formula in cell G2.

You got an incorrect result.

Why?

Because the reference to the price should be a fixed reference to column B.



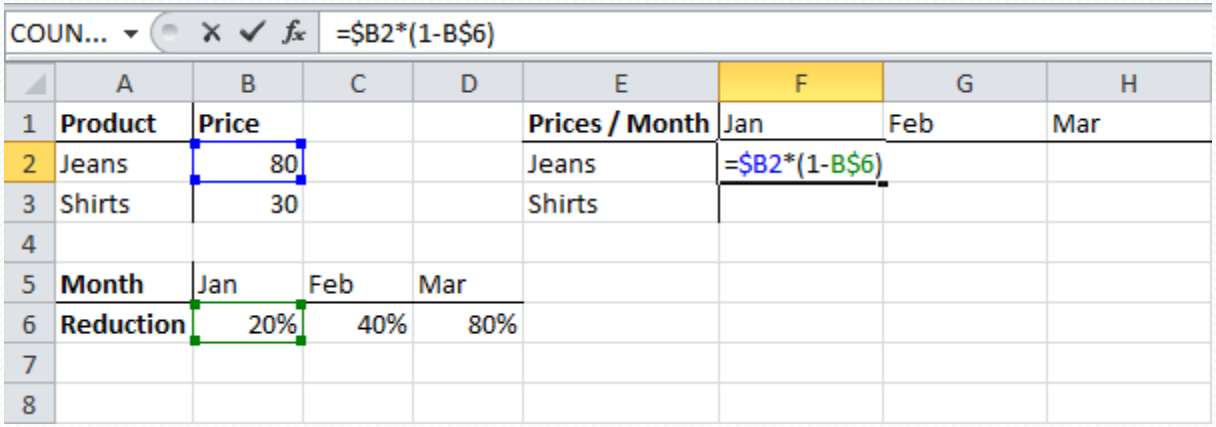
Solution: place a $ symbol in front of the **column letter** of cell B2 ($B2) in the formula of cell F2.

In a similar way, when we drag the cell F2 down, the reference to the reduction should be a fixed reference to row 6.

Solution: place a $ symbol in front of the **row number** of cell B6 (B$6) in the formula of cell F2.

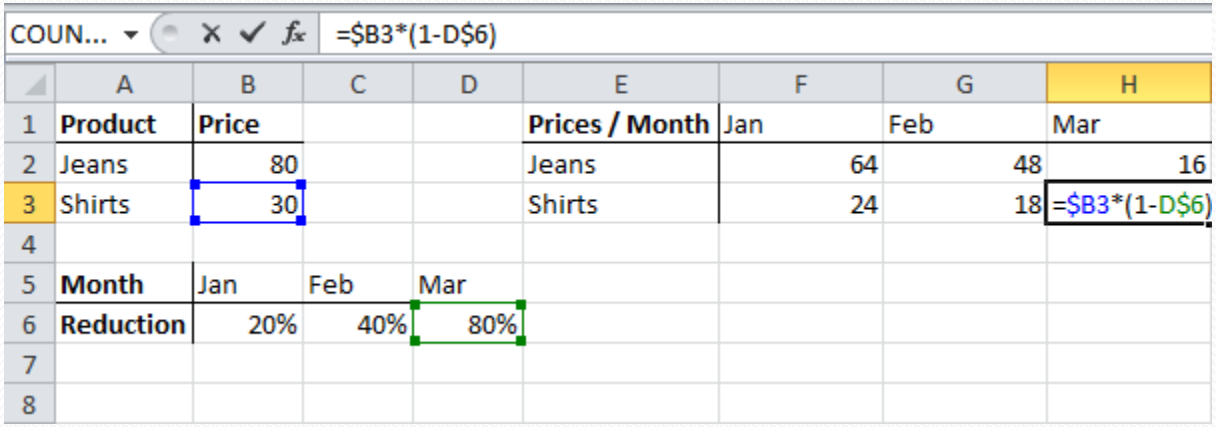
Cell References - Mixed Reference

Result:



	A	B	C	D	E	F	G	H
1	**Product**	**Price**			**Prices / Month**	Jan	Feb	Mar
2	Jeans	80			Jeans	=$B2*(1-B$6)		
3	Shirts	30			Shirts			
4								
5	**Month**	Jan	Feb	Mar				
6	**Reduction**	20%	40%	80%				
7								
8								

Now we can quickly drag this formula to the other cells.



	A	B	C	D	E	F	G	H
1	**Product**	**Price**			**Prices / Month**	Jan	Feb	Mar
2	Jeans	80			Jeans	64	48	16
3	Shirts	30			Shirts	24	18	=$B3*(1-D$6)
4								
5	**Month**	Jan	Feb	Mar				
6	**Reduction**	20%	40%	80%				
7								
8								

The references to column B and row 6 are fixed.

Data Analysis - Sorting Data

You can **sort** your Excel data on one column or multiple columns.

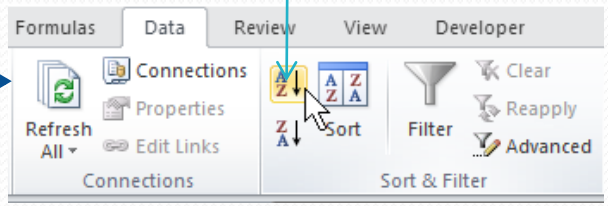
You can sort in ascending or descending order.

One Column Sorting:

1. Click any cell in the column you want to sort.

	A	B	C	D
1	Last Name	Sales	Country	Quarter
2	Brown	$4,865.00	USA	Qtr 4
3	Brown	$3,255.00	USA	Qtr 2
4	Johnson	$14,808.00	USA	Qtr 4
5	Johnson	$9,339.00	UK	Qtr 2
6	Jones	$1,390.00	USA	Qtr 3
7	Jones	$9,213.00	USA	Qtr 4
8	Jones	$7,433.00	UK	Qtr 1
9	Smith	$16,753.00	UK	Qtr 3
10	Smith	$18,919.00	USA	Qtr 3
11	Smith	$9,698.00	USA	Qtr 1
12	Williams	$10,644.00	UK	Qtr 2
13	Williams	$12,438.00	UK	Qtr 1
14	Williams	$14,867.00	USA	Qtr 3
15	Williams	$19,302.00	UK	Qtr 4

2. To sort in ascending order, on the **Data** tab, click **AZ**.



Be careful, don't select the entire column or the cells that are inside it.

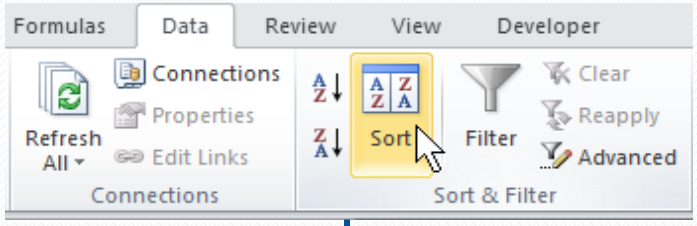
Result

	A	B	C	D
1	Last Name	Sales	Country	Quarter
2	Brown	$4,865.00	USA	Qtr 4
3	Brown	$3,255.00	USA	Qtr 2
4	Johnson	$14,808.00	USA	Qtr 4
5	Johnson	$9,339.00	UK	Qtr 2
6	Jones	$1,390.00	USA	Qtr 3
7	Jones	$9,213.00	USA	Qtr 4
8	Jones	$7,433.00	UK	Qtr 1
9	Smith	$16,753.00	UK	Qtr 3
10	Smith	$18,919.00	USA	Qtr 3
11	Smith	$9,698.00	USA	Qtr 1
12	Williams	$10,644.00	UK	Qtr 2
13	Williams	$12,438.00	UK	Qtr 1
14	Williams	$14,867.00	USA	Qtr 3
15	Williams	$19,302.00	UK	Qtr 4

Data Analysis - Sorting Data

Multiple Column Sorting:

1. On the **Data** tab, click **Sort**.

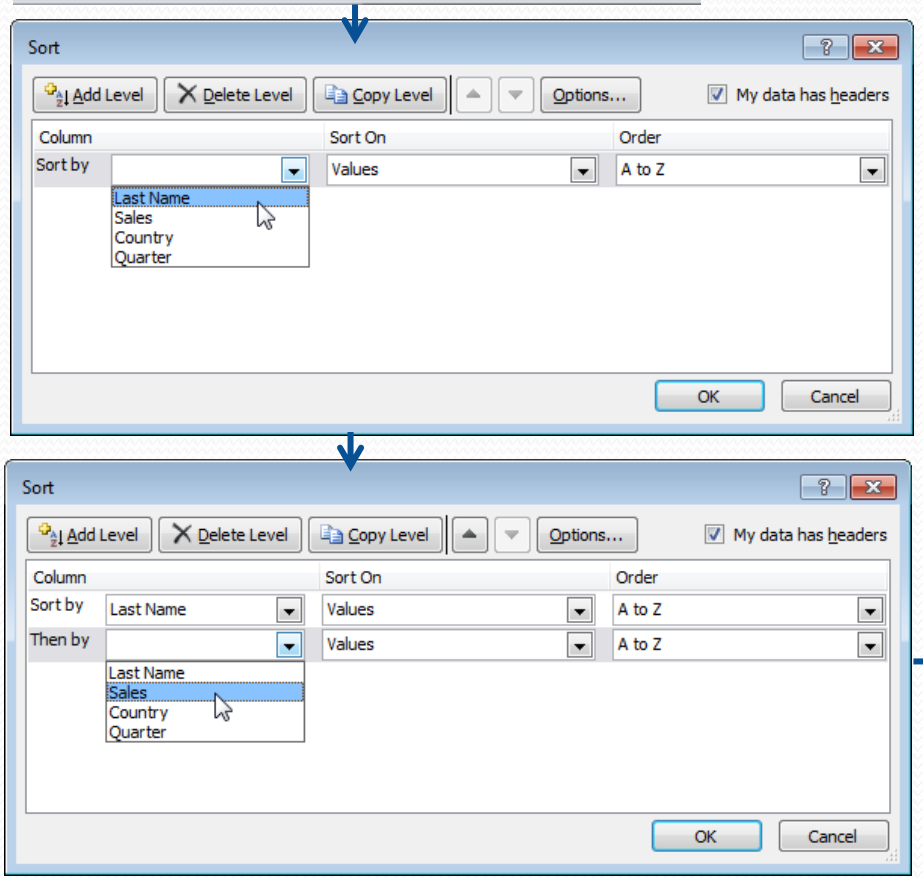


2. Select Last Name from the '**Sort by**' drop-down list.

3. Click on **Add Level**.

4. Select Sales from the '**Then by**' drop-down list.

5. Click **OK**.



Result

A2 fx Brown

	A	B	C	D	E
1	**Last Name**	**Sales**	**Country**	**Quarter**	
2	Brown	$3,255.00	USA	Qtr 2	
3	Brown	$4,865.00	USA	Qtr 4	
4	Johnson	$9,339.00	UK	Qtr 2	
5	Johnson	$14,808.00	USA	Qtr 4	
6	Jones	$1,390.00	USA	Qtr 3	
7	Jones	$7,433.00	UK	Qtr 1	
8	Jones	$9,213.00	USA	Qtr 4	
9	Smith	$9,698.00	USA	Qtr 1	
10	Smith	$16,753.00	UK	Qtr 3	
11	Smith	$18,919.00	USA	Qtr 3	
12	Williams	$10,644.00	UK	Qtr 2	
13	Williams	$12,438.00	UK	Qtr 1	
14	Williams	$14,867.00	USA	Qtr 3	
15	Williams	$19,302.00	UK	Qtr 4	
16					
17					

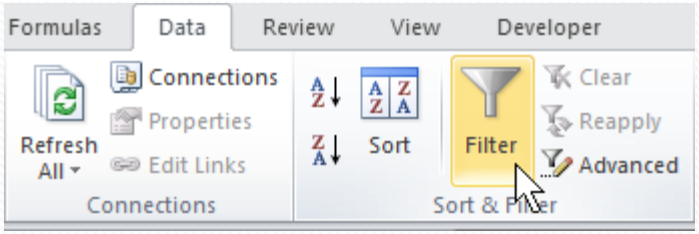
Data Analysis - Data Filtering

Filter your Excel data if you only want to display records that meet certain criteria.

Filtering:

1. Click any cell inside a data set.

2. On the **Data** tab, click **Filter**.



Arrows appear in the column headers.

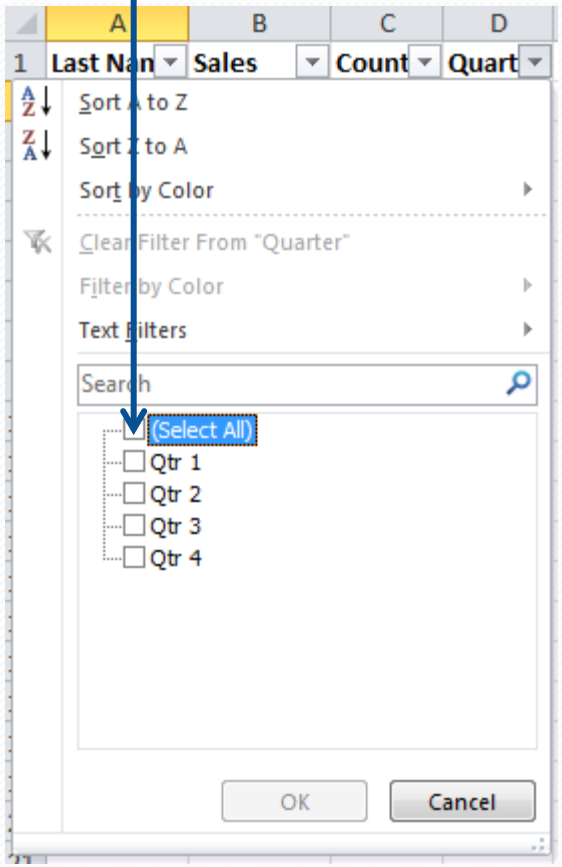
3. Click the **arrow** next to Country.

A3 — Johnson

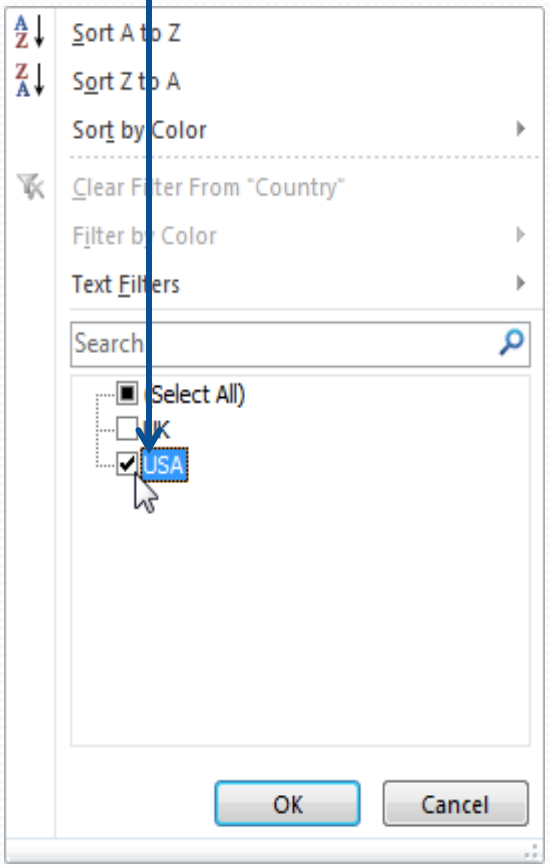
	A	B	C	D	E
1	Last Nan	Sales	Count	Quart	
2	Smith	$16,753.00	UK	Qtr 3	
3	Johnson	$14,808.00	USA	Qtr 4	
4	Williams	$10,644.00	UK	Qtr 2	
5	Jones	$1,390.00	USA	Qtr 3	
6	Brown	$4,865.00	USA	Qtr 4	
7	Williams	$12,438.00	UK	Qtr 1	
8	Johnson	$9,339.00	UK	Qtr 2	
9	Smith	$18,919.00	USA	Qtr 3	
10	Jones	$9,213.00	USA	Qtr 4	
11	Jones	$7,433.00	UK	Qtr 1	
12	Brown	$3,255.00	USA	Qtr 2	
13	Williams	$14,867.00	USA	Qtr 3	
14	Williams	$19,302.00	UK	Qtr 4	
15	Smith	$9,698.00	USA	Qtr 1	
16					
17					

Data Analysis - Data Filtering

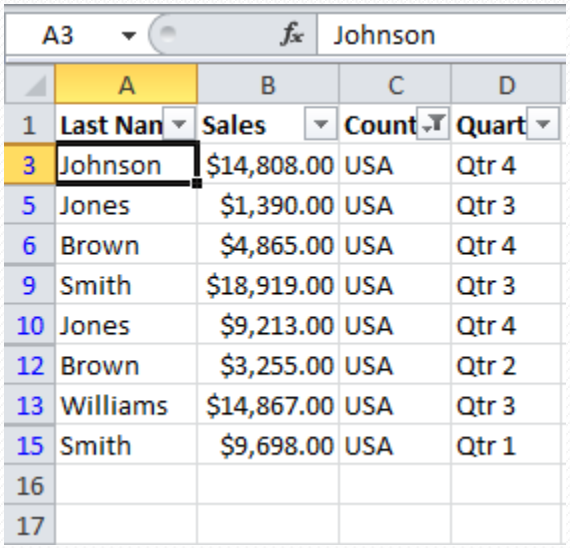
4. Click on **Select All** to clear all the check boxes.



5. Click the check box next to USA.



6. Click **OK**.



A3 | Johnson

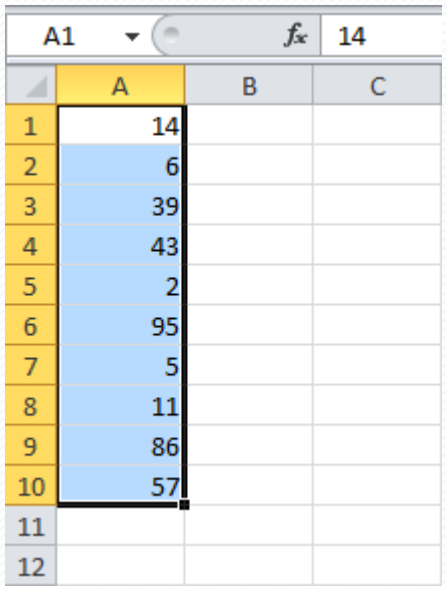
	A	B	C	D
1	Last Nan	Sales	Count	Quart
3	Johnson	$14,808.00	USA	Qtr 4
5	Jones	$1,390.00	USA	Qtr 3
6	Brown	$4,865.00	USA	Qtr 4
9	Smith	$18,919.00	USA	Qtr 3
10	Jones	$9,213.00	USA	Qtr 4
12	Brown	$3,255.00	USA	Qtr 2
13	Williams	$14,867.00	USA	Qtr 3
15	Smith	$9,698.00	USA	Qtr 1
16				
17				

Data Analysis - Conditional Formatting

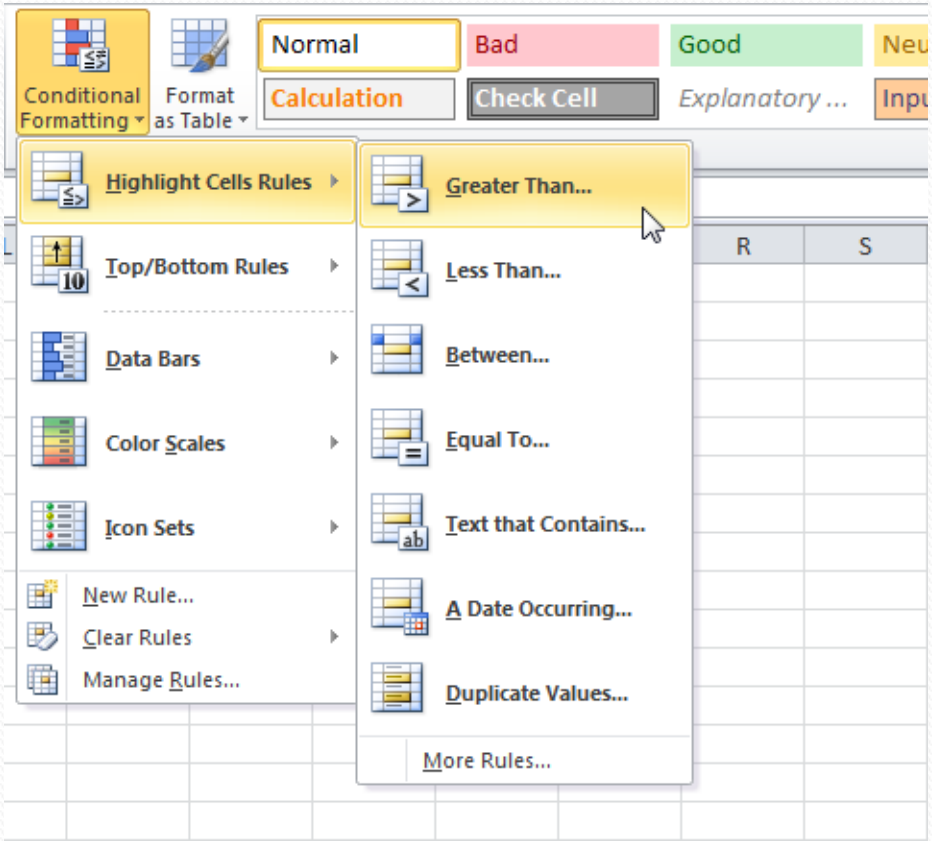
Conditional formatting in Excel enables you to highlight cells with a certain color, depending on the cell's value.

Highlight Cells:

1. Select the range A1:A10.

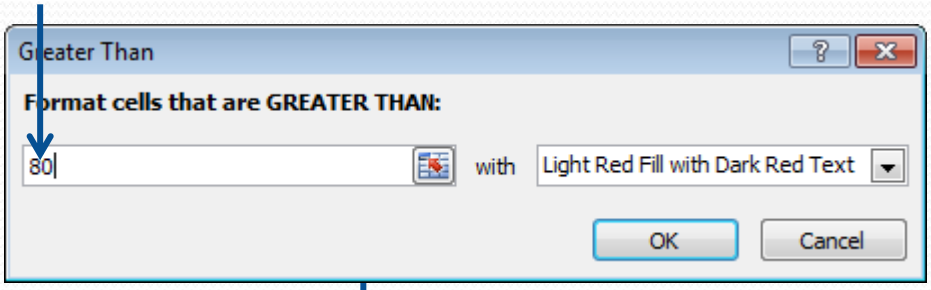


2. On the **Home** tab, click **Conditional Formatting**, **Highlight Cells Rules**, **Greater Than**.

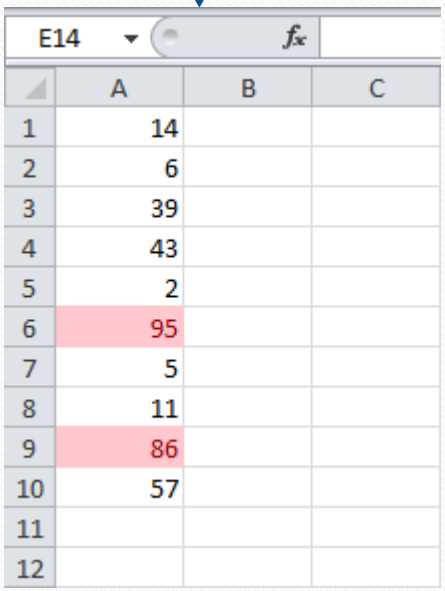


Data Analysis - Conditional Formatting

3. Enter the value 80, select a formatting style, and then click **OK**.



Result **:**Excel highlights the cells that are greater than 80

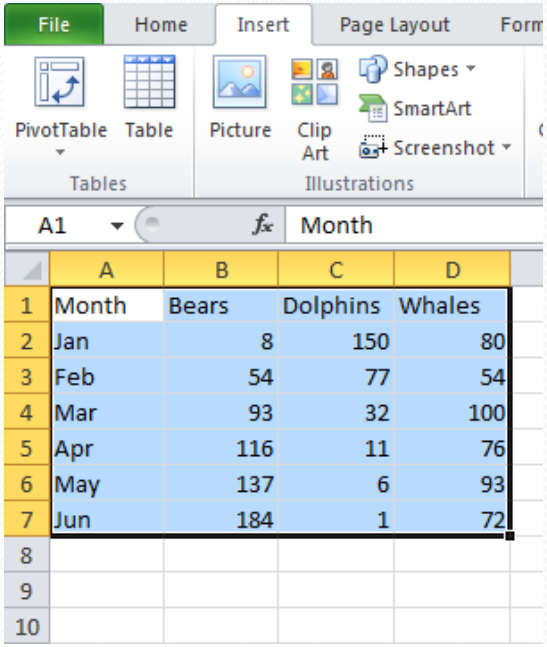


Data Analysis - Charts

A simple **chart** in Excel can say more than a sheet full of numbers.

Creating a Chart:

1. Select the range A1:D7.



	A	B	C	D
1	Month	Bears	Dolphins	Whales
2	Jan	8	150	80
3	Feb	54	77	54
4	Mar	93	32	100
5	Apr	116	11	76
6	May	137	6	93
7	Jun	184	1	72
8				
9				
10				

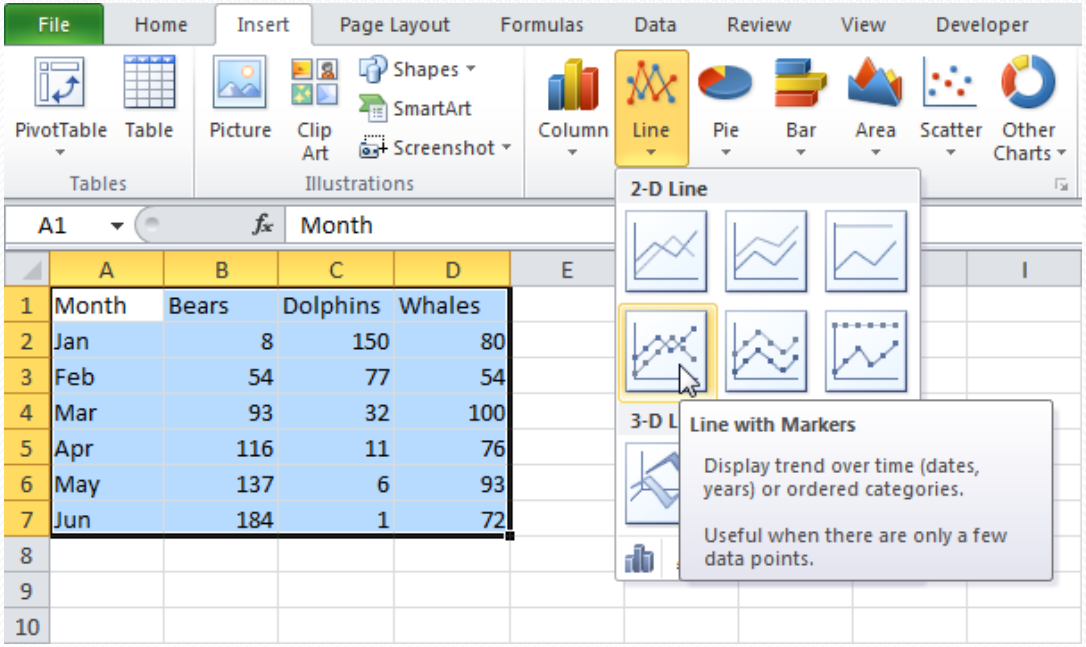
Data Analysis - Charts

A simple **chart** in Excel can say more than a sheet full of numbers.

Creating a Chart:

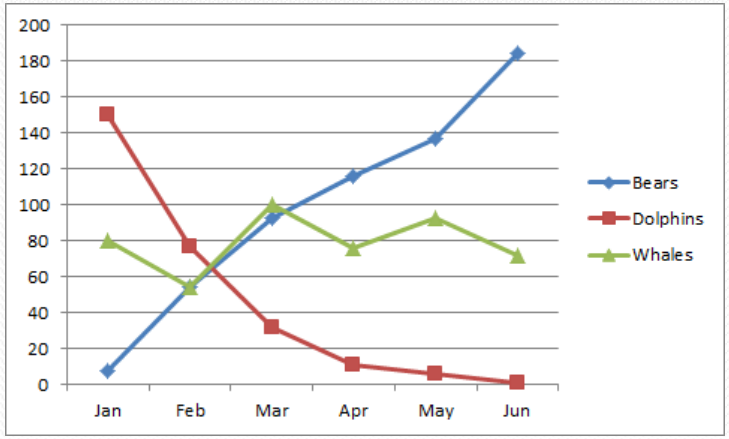
1. Select the range A1:D7.

2.On the **Insert** tab, in the **Charts** group, choose **Line**, and select **Line with Markers**.



	A	B	C	D
1	Month	Bears	Dolphins	Whales
2	Jan	8	150	80
3	Feb	54	77	54
4	Mar	93	32	100
5	Apr	116	11	76
6	May	137	6	93
7	Jun	184	1	72

Result:

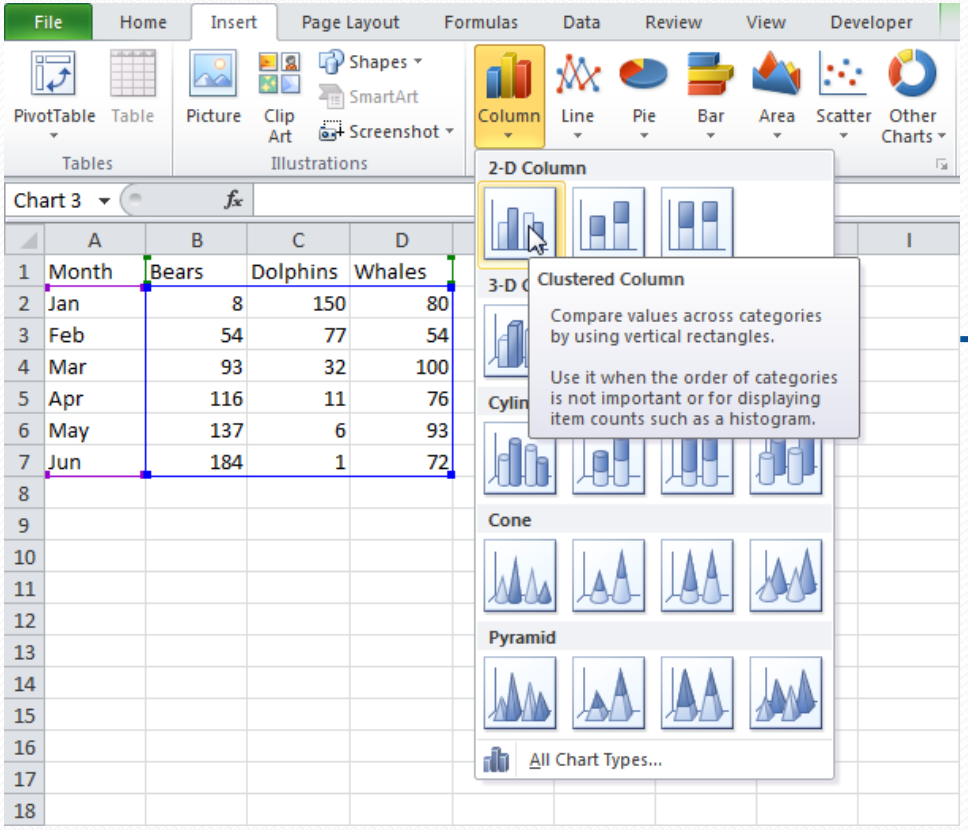


Data Analysis - Charts

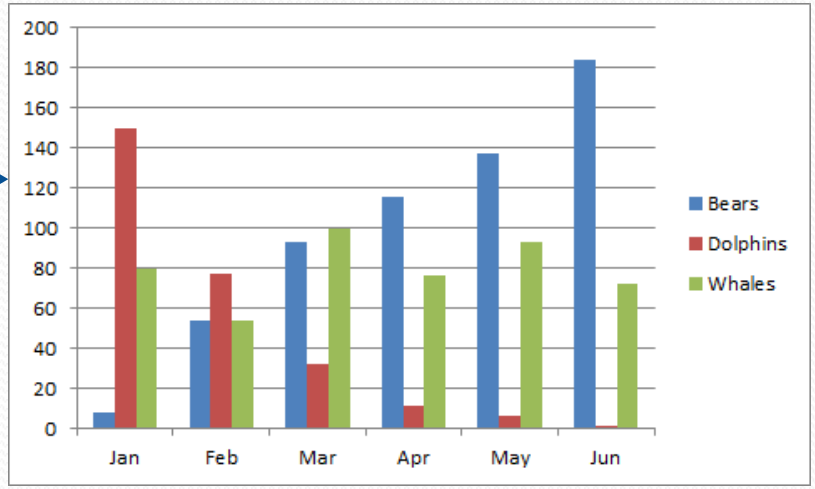
Changing the Chart Type:

1. Select the chart (just click on it).

2. On the **Insert** tab, in the **Charts** group, choose **Column**, and select **Clustered Column**.



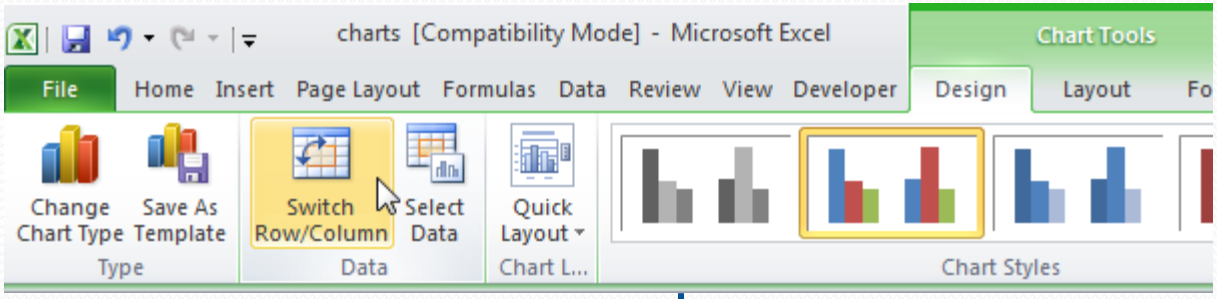
Result:



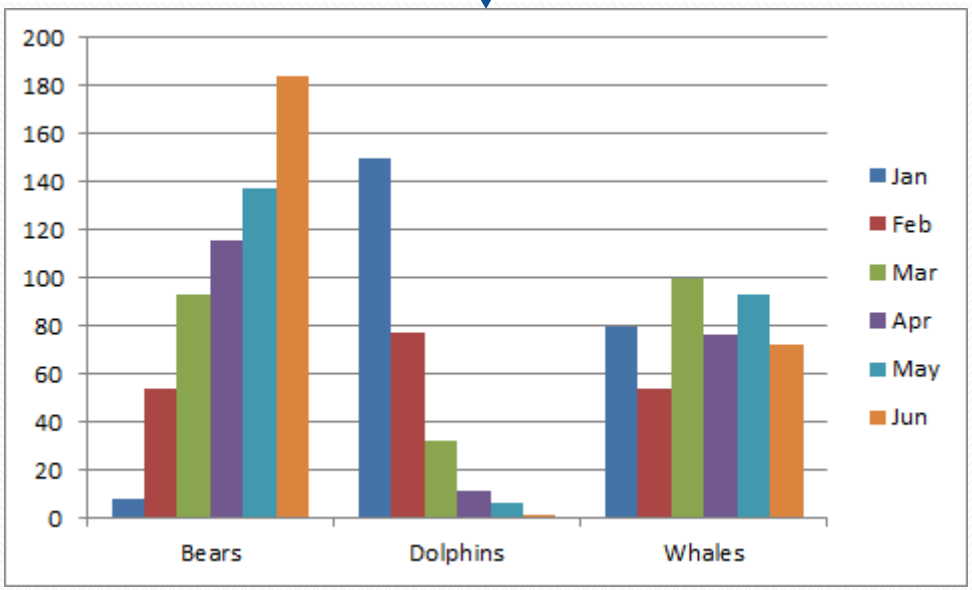
Data Analysis - Charts

Switching Row/Column:

1. Select the chart, The **Chart Tools** contextual tab appears.
2. Click on the **Design** tab, then click **Switch Row/Column**.



Result:

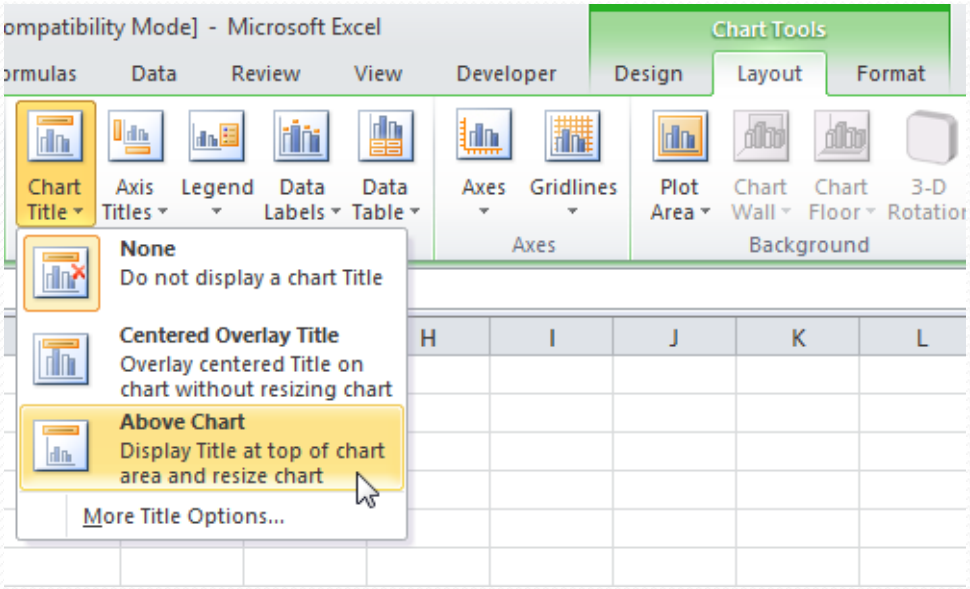


Data Analysis - Charts

Adding Chart Title:

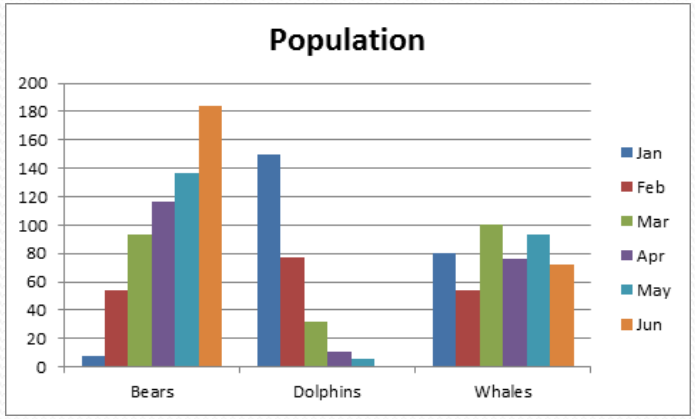
1. Select the chart, The **Chart Tools** contextual tab appears.

2. On the **Layout** tab, click **Chart Title** then **Above Chart**.



3. Enter a title. For example, Population.

Result:

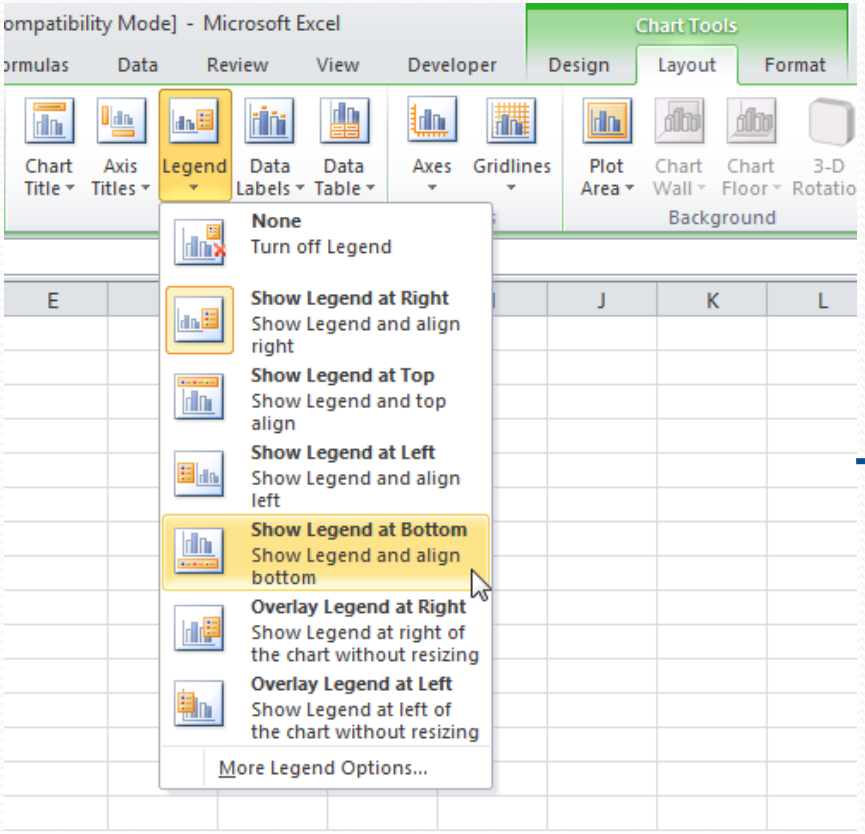


Data Analysis - Charts

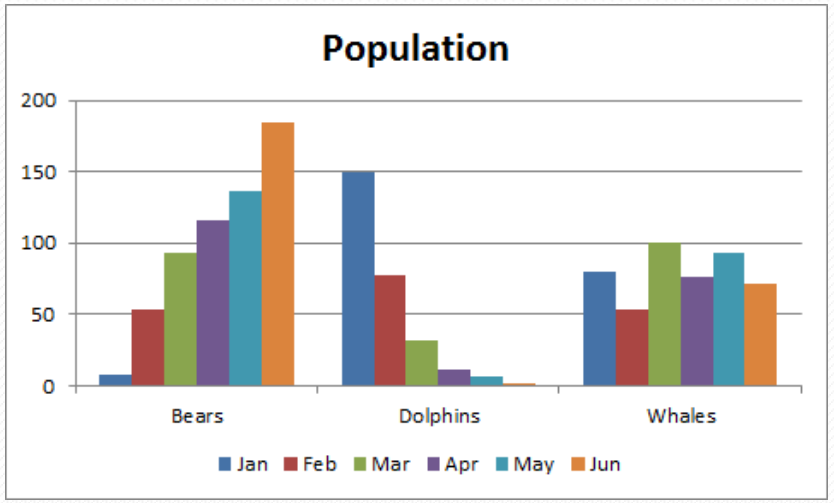
Changing the Legend Position:

1. Select the chart. The **Chart Tools** contextual tab appears.

2. On the **Layout** tab, click **Legend** then **Show Legend at Bottom**.



Result:



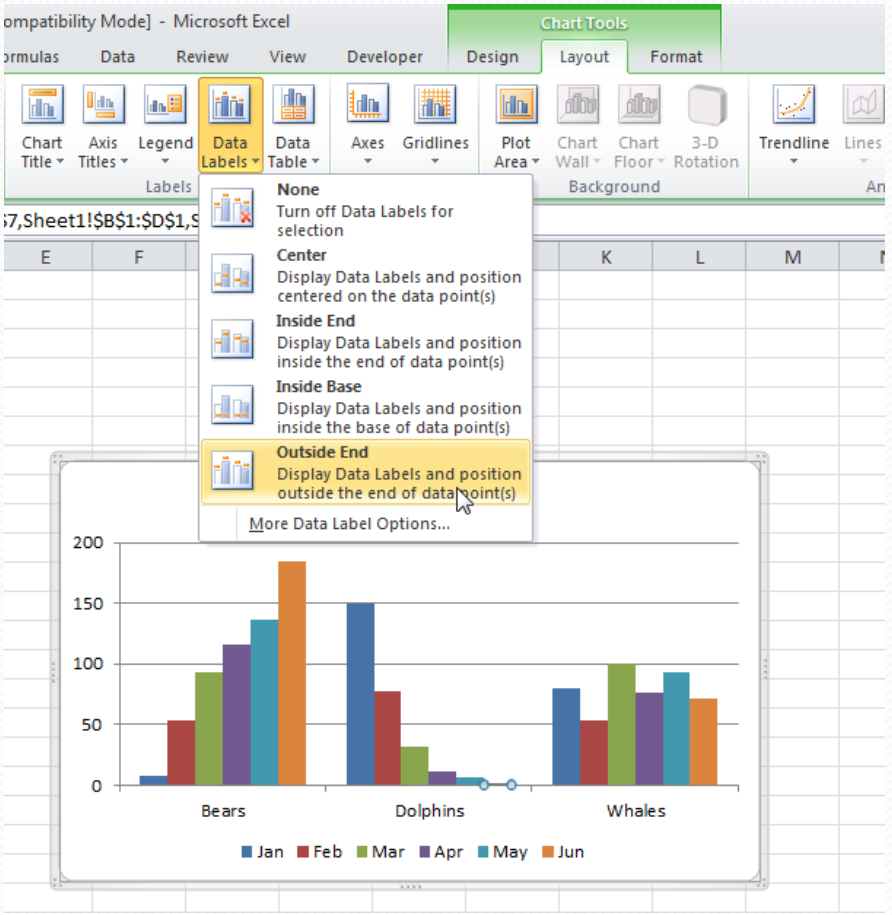
Data Analysis - Charts

Data Labels:

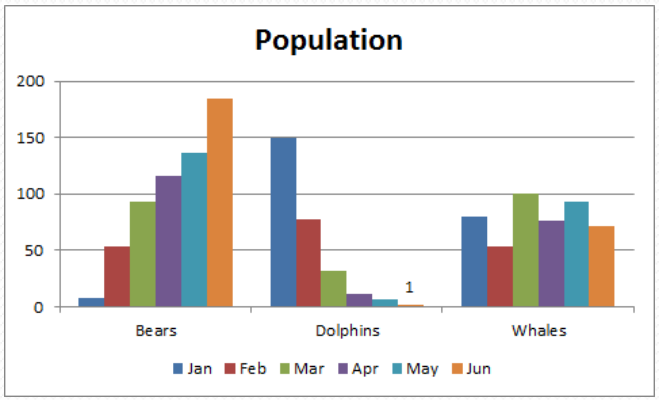
Use them to get the reader's attention on a single data series or data point.

Steps for adding data labels:

1. Select the chart. The **Chart Tools** contextual tab appears.
2. Click an orange bar to select the Jun data series. Click again on an orange bar to select a single data point.
3. On the **Layout** tab, click **Data Labels**, then select **Outside End**.



Result:



Thank you ..

Good Luck and Success

Asst. Lecturer Sajjad Ibrahim