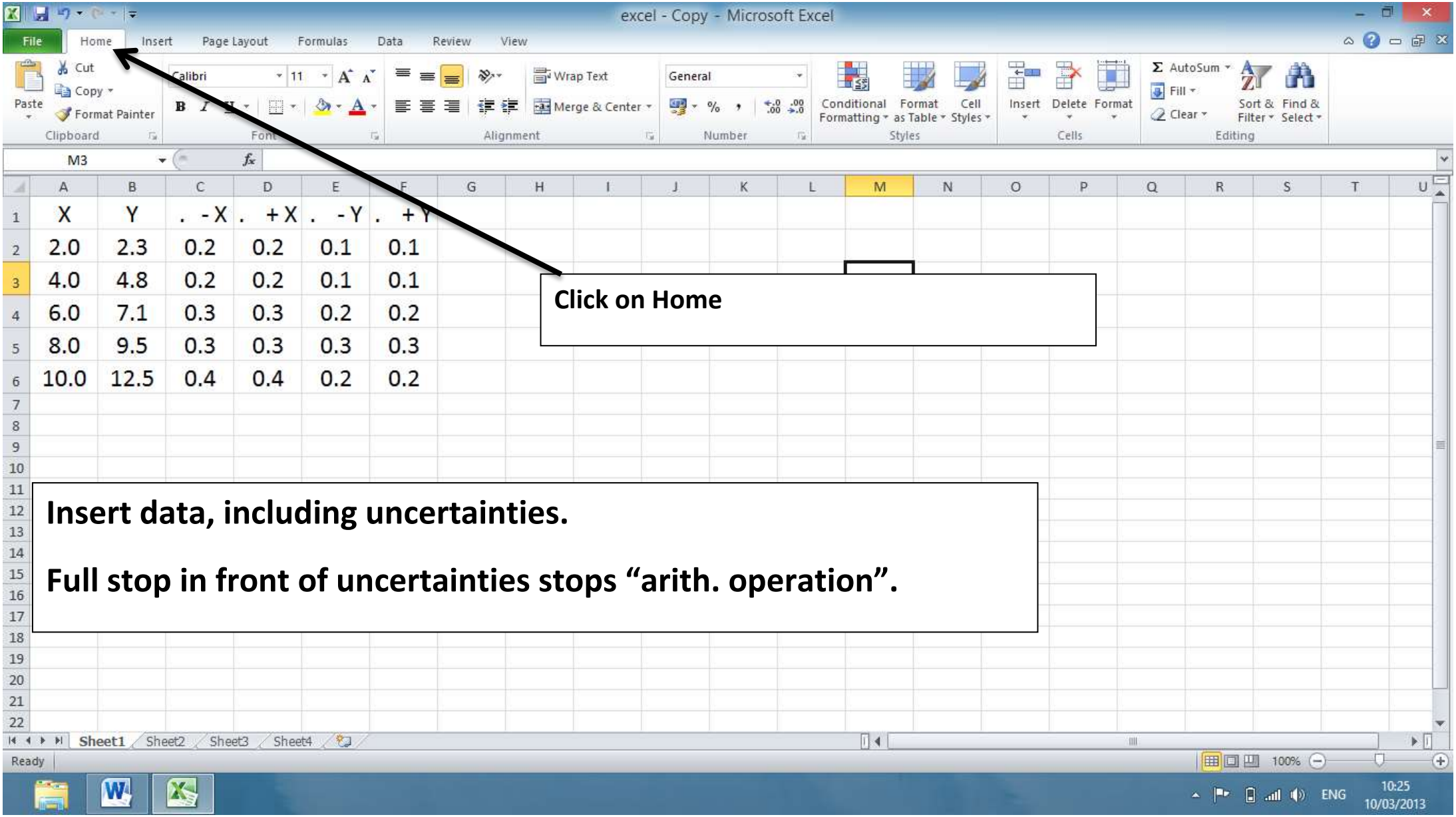
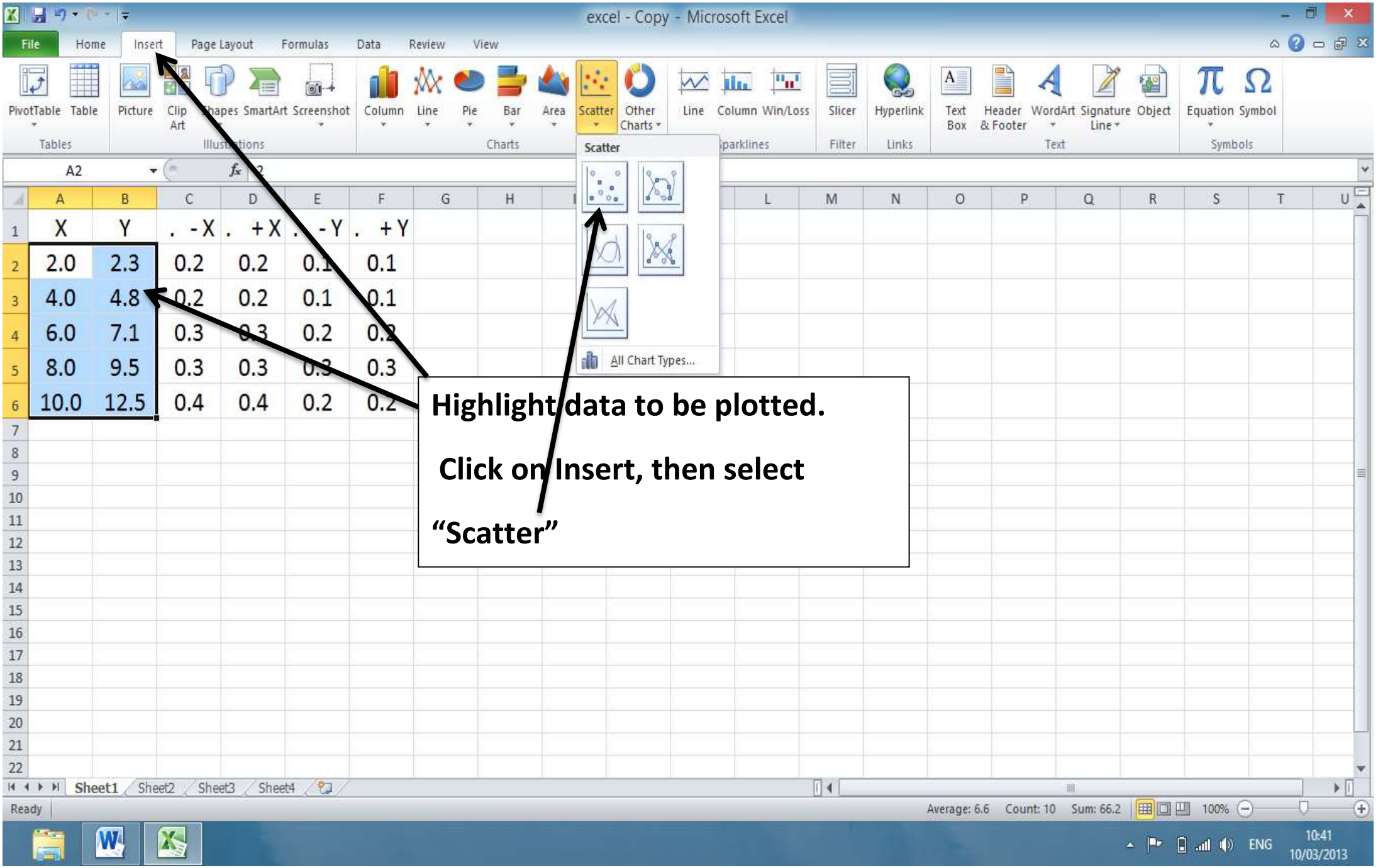
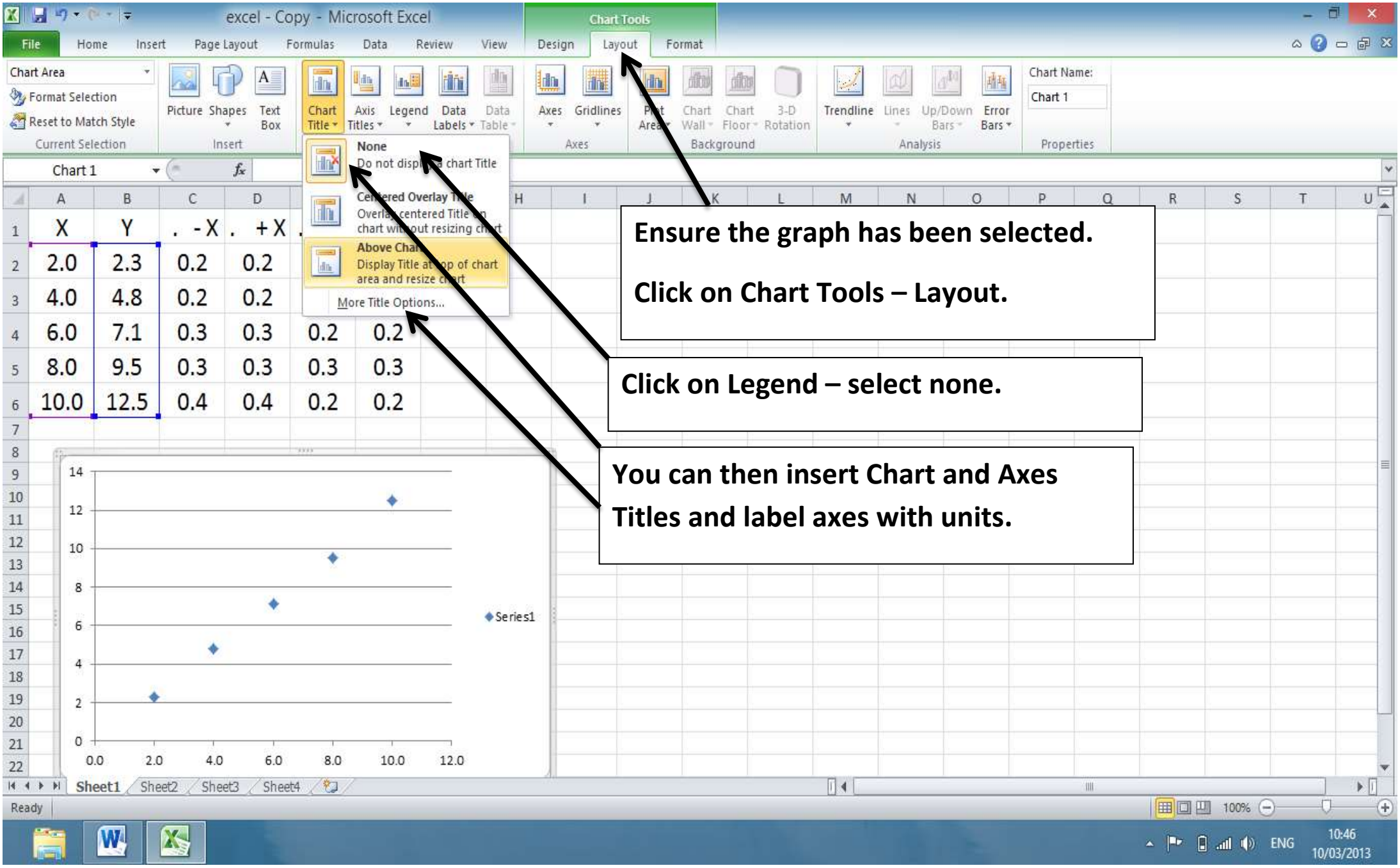
Use of Excel 2010 in AH Physics



	A	B	C	D	E	F
1	X	Y	. -X	. +X	. -Y	. +Y
2	2.0	2.3	0.2	0.2	0.1	0.1
3	4.0	4.8	0.2	0.2	0.1	0.1
4	6.0	7.1	0.3	0.3	0.2	0.2
5	8.0	9.5	0.3	0.3	0.3	0.3
6	10.0	12.5	0.4	0.4	0.2	0.2


excel - Copy - Microsoft Excel
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Scatter
Other Charts
All Chart Types...
A2
X
Y
. -X
. +X
. -Y
. +Y
2.0 2.3 0.2 0.2 0.1 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Highlight data to be plotted.
Click on Insert, then select
"Scatter"
Sheet1
Sheet2
Sheet3
Sheet4
Ready
Average: 6.6
Count: 10
Sum: 66.2
100%
ENG
10:41
10/03/2013

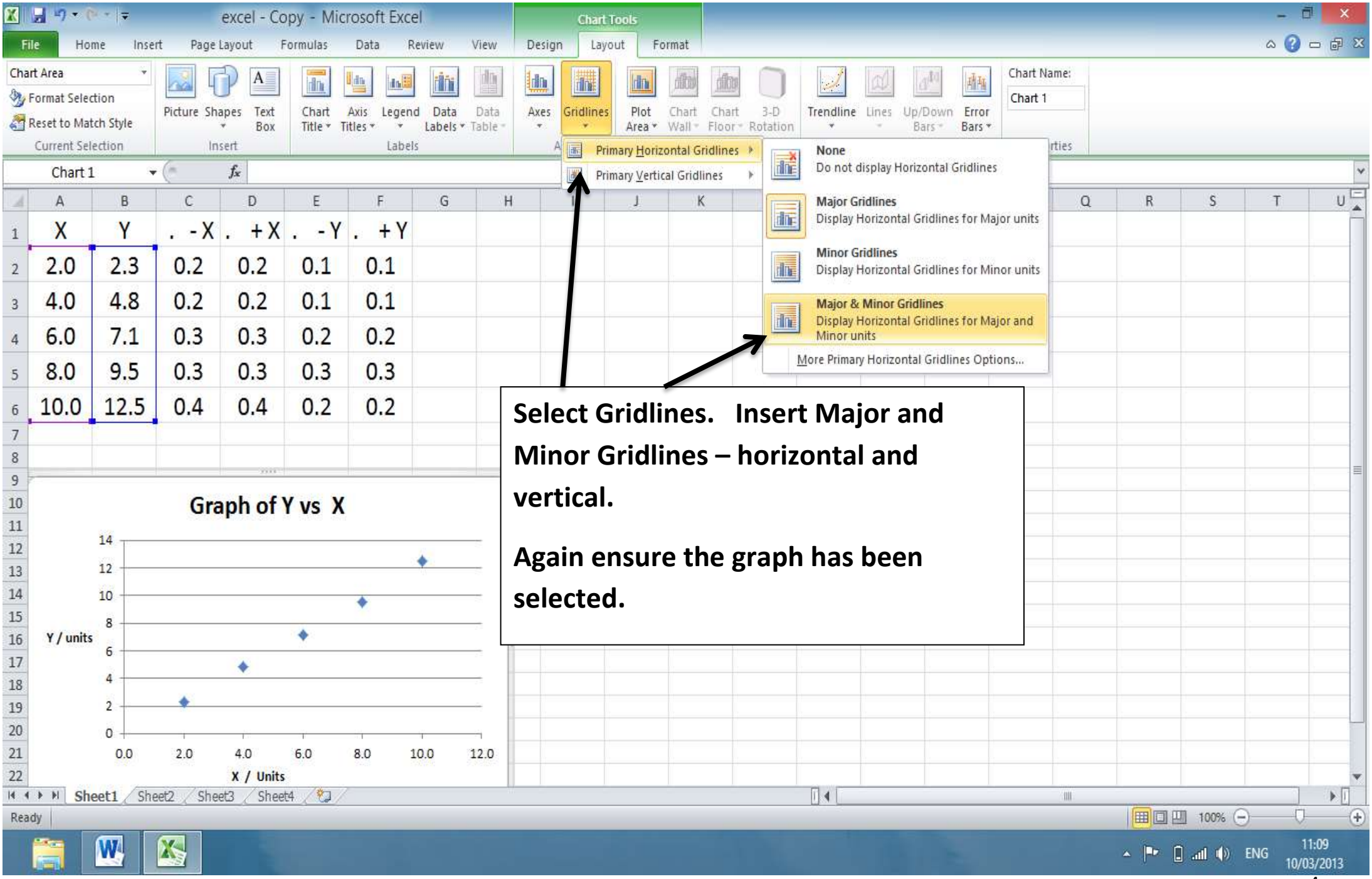


Ensure the graph has been selected.

Click on Chart Tools – Layout.

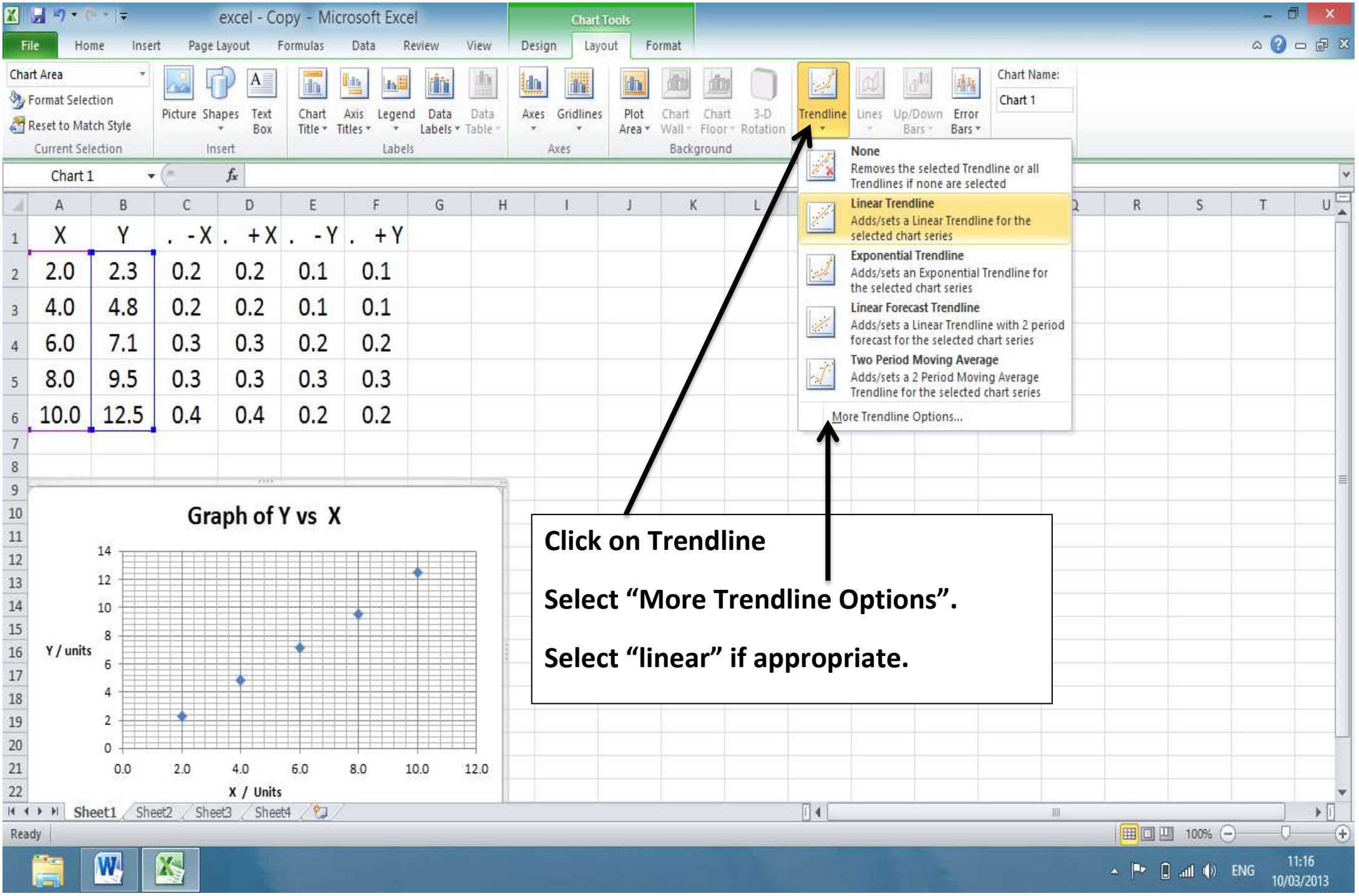
Click on Legend – select none.

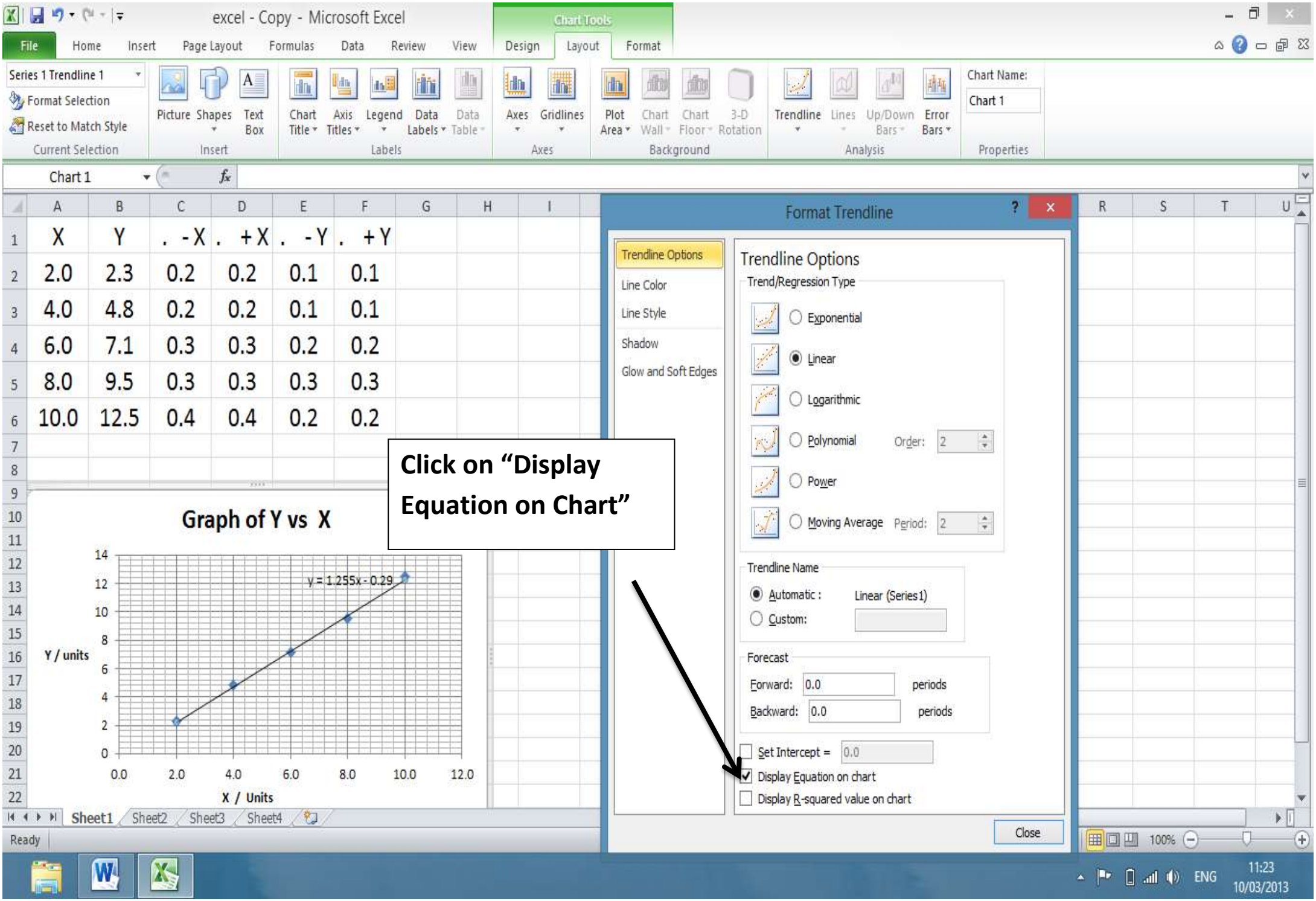
You can then insert Chart and Axes Titles and label axes with units.



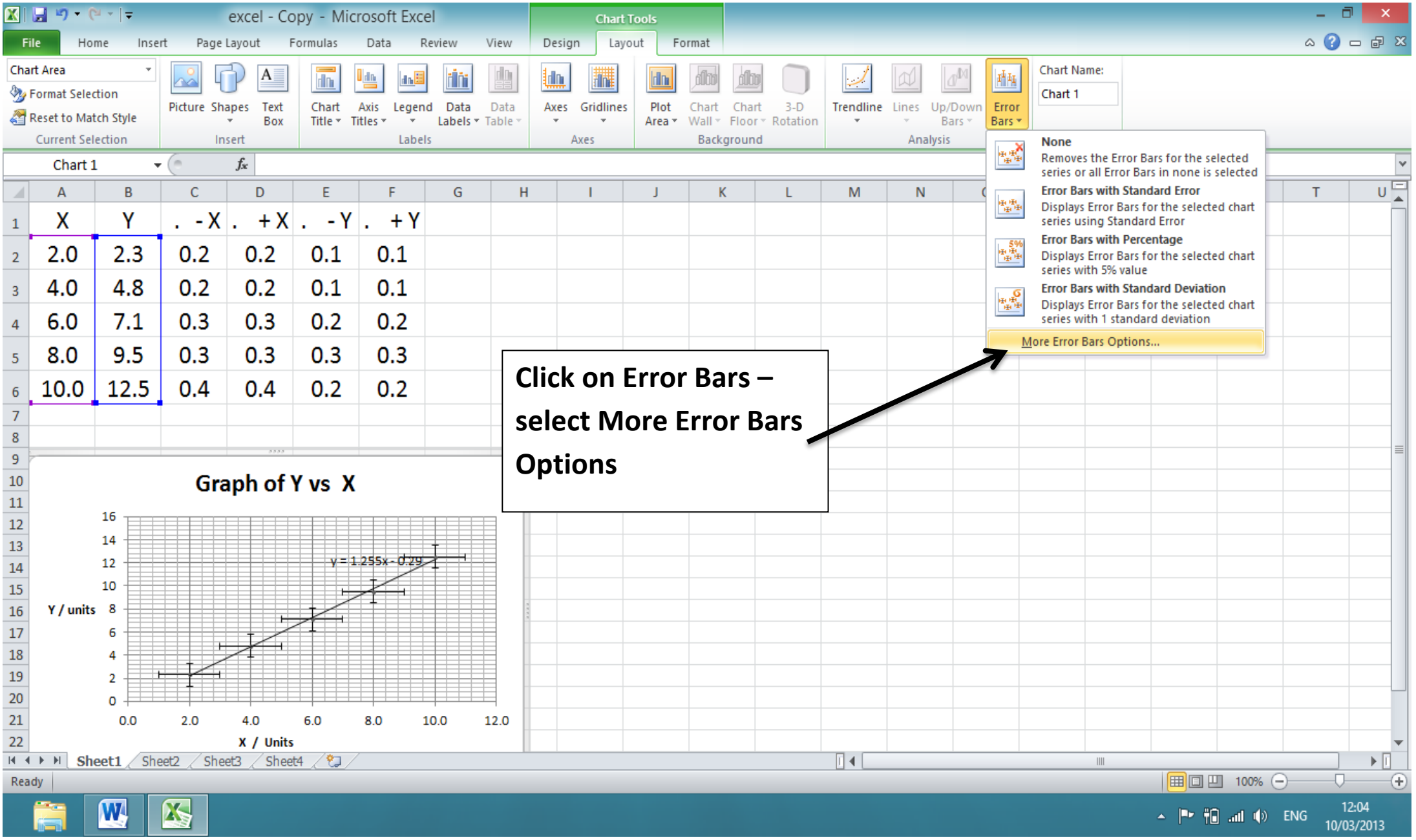
Select Gridlines. Insert Major and Minor Gridlines – horizontal and vertical.

Again ensure the graph has been selected.

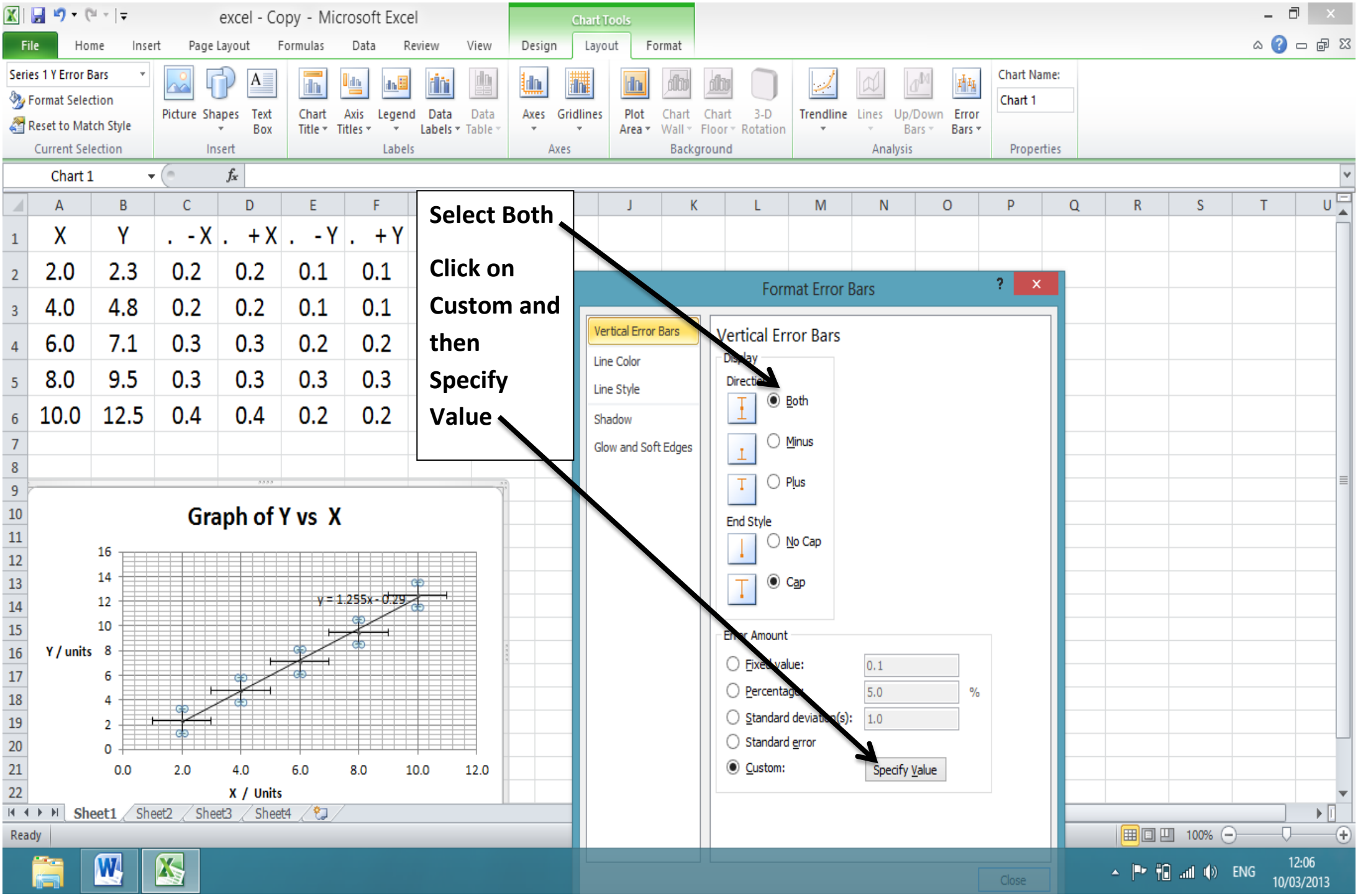

excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Chart Area
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Chart Title
Axis Titles
Legend
Data Labels
Data Table
Labels
Axes
Gridlines
Axes
Plot Area
Chart Wall
Chart Floor
3-D Rotation
Background
Trendline
Lines
Up/Down Bars
Error Bars
Chart Name:
Chart 1
Chart 1
None
Removes the selected Trendline or all Trendlines if none are selected
Linear Trendline
Adds/sets a Linear Trendline for the selected chart series
Exponential Trendline
Adds/sets an Exponential Trendline for the selected chart series
Linear Forecast Trendline
Adds/sets a Linear Trendline with 2 period forecast for the selected chart series
Two Period Moving Average
Adds/sets a 2 Period Moving Average Trendline for the selected chart series
More Trendline Options...
X
Y
. -X
. +X
. -Y
. +Y
2.0 2.3 0.2 0.2 0.1 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Graph of Y vs X
Y / units
X / Units
0
2
4
6
8
10
12
14
0.0
2.0
4.0
6.0
8.0
10.0
12.0
Click on Trendline
Select “More Trendline Options”.
Select “linear” if appropriate.
Sheet1
Sheet2
Sheet3
Sheet4
Ready
100%
ENG
11:16
10/03/2013

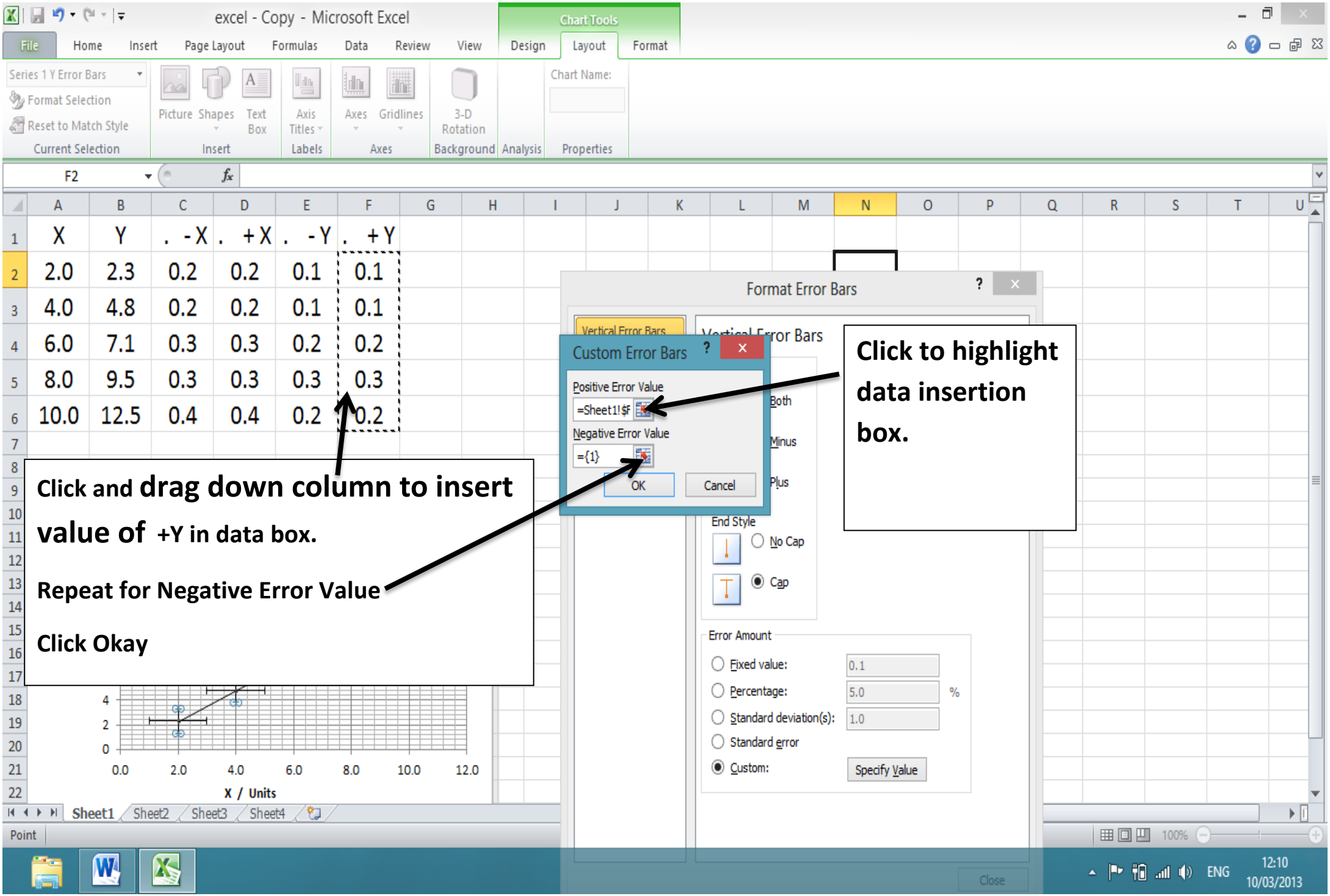

excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 Trendline 1
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Chart Title
Axis Titles
Legend
Data Labels
Data Table
Labels
Axes
Gridlines
Axes
Plot Area
Chart Wall
Chart Floor
3-D Rotation
Background
Trendline
Lines
Up/Down Bars
Error Bars
Analysis
Chart Name:
Chart 1
Properties
Chart 1
X
Y
. -X
. +X
. -Y
. +Y
2.0 2.3 0.2 0.2 0.1 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Graph of Y vs X
y = 1.255x - 0.29
Y / units
X / Units
0.0 2.0 4.0 6.0 8.0 10.0 12.0
0 2 4 6 8 10 12 14
Click on “Display Equation on Chart”
Format Trendline
Trendline Options
Line Color
Line Style
Shadow
Glow and Soft Edges
Trendline Options
Trend/Regression Type
Exponential
Linear
Logarithmic
Polynomial
Order: 2
Power
Moving Average
Period: 2
Trendline Name
Automatic :
Linear (Series1)
Custom:
Forecast
Forward: 0.0
periods
Backward: 0.0
periods
Set Intercept = 0.0
Display Equation on chart
Display R-squared value on chart
Close
Sheet1
Sheet2
Sheet3
Sheet4
Ready
100%
ENG
11:23
10/03/2013

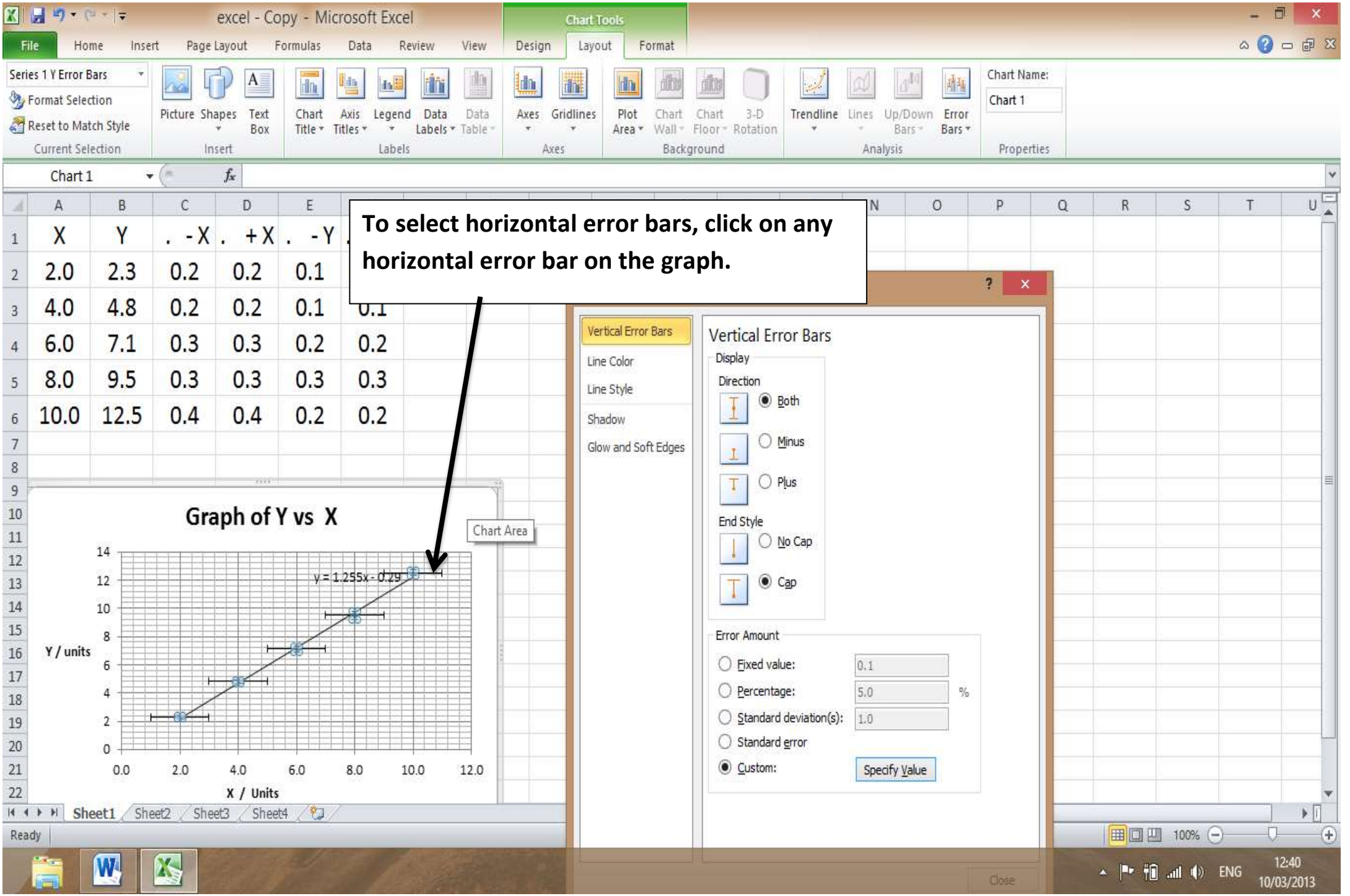
Custom Error Bars

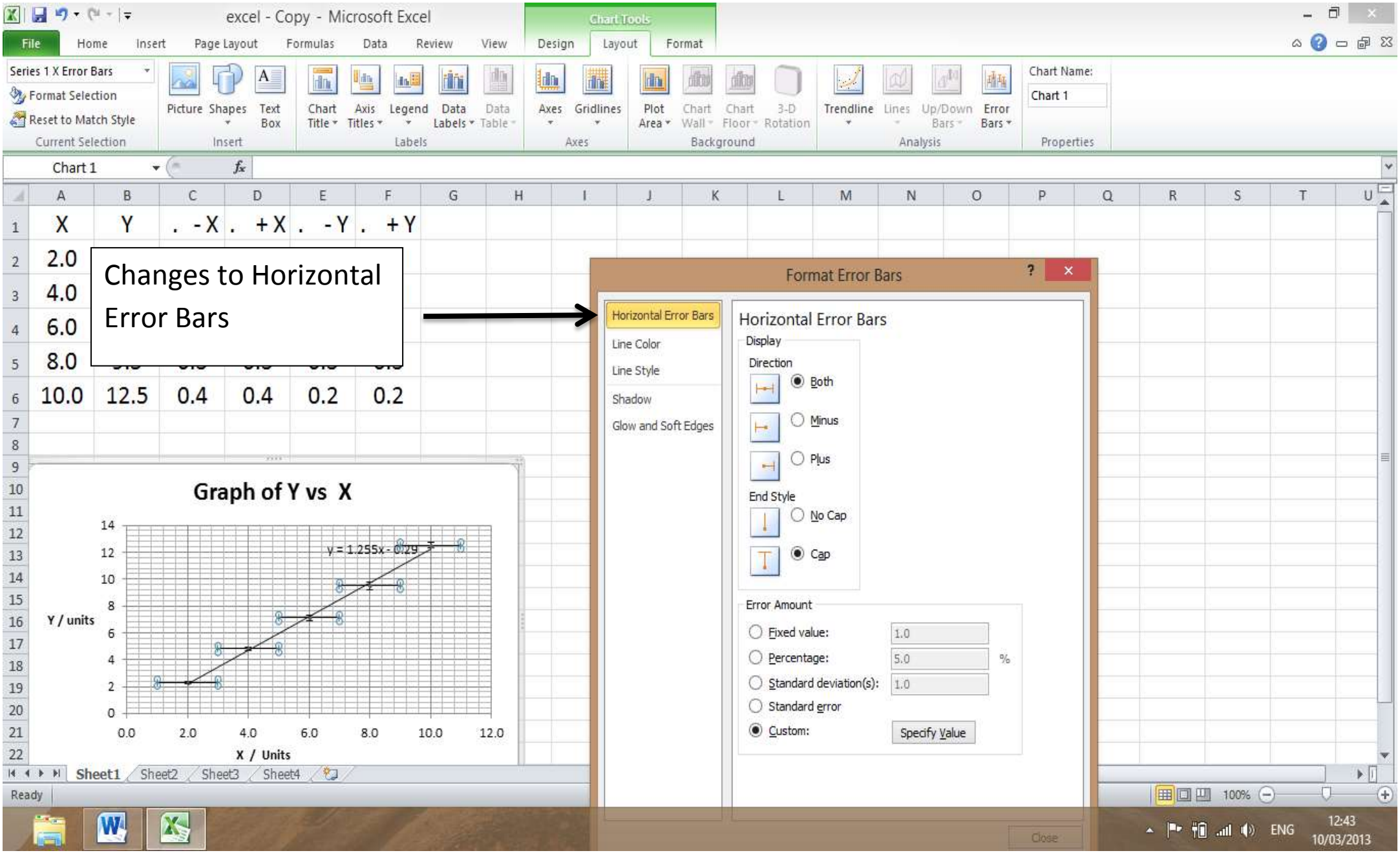


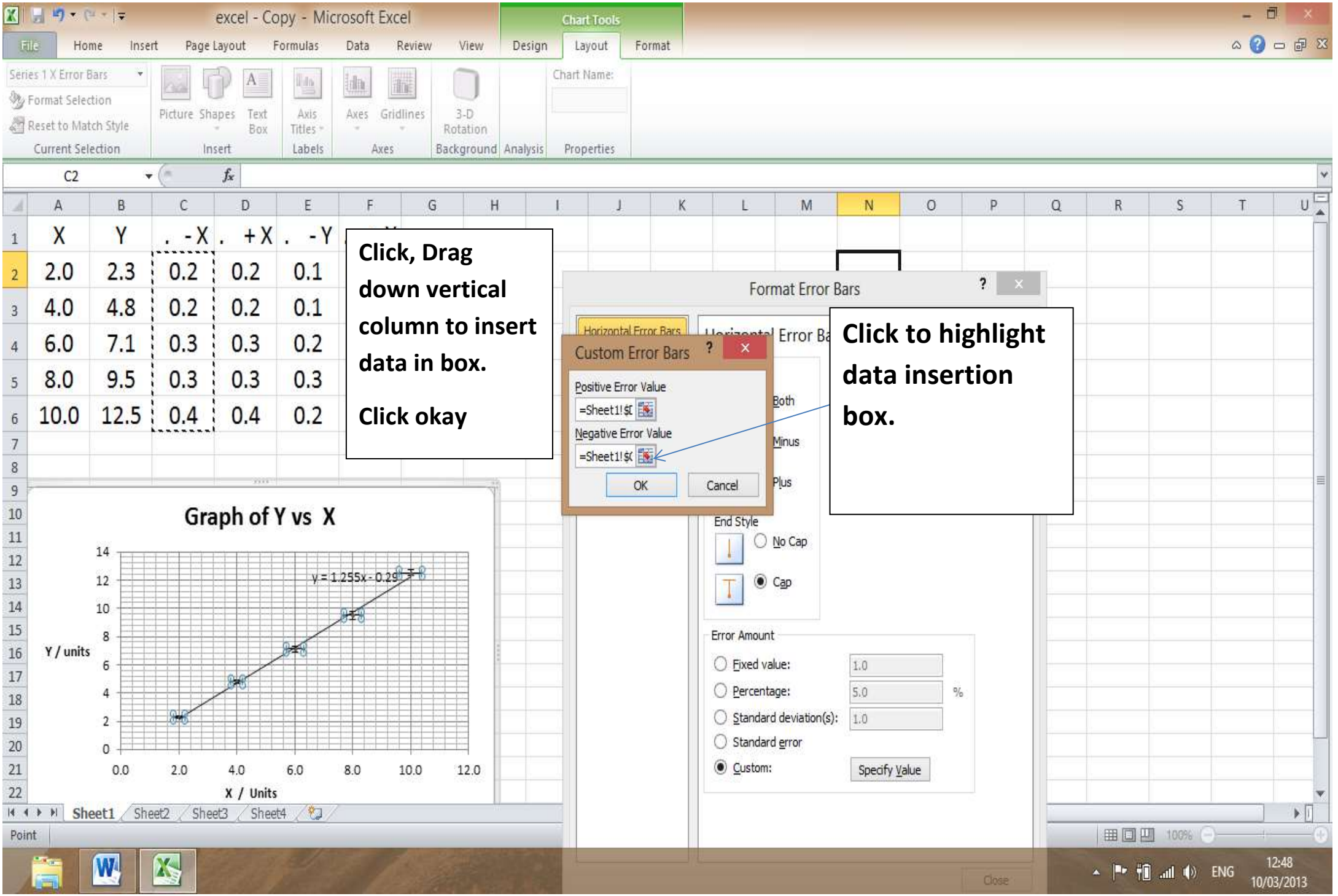
Click on Error Bars – select More Error Bars Options


excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 Y Error Bars
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Chart Title
Axis Titles
Legend
Data Labels
Data Table
Labels
Axes
Gridlines
Axes
Plot Area
Chart Wall
Chart Floor
3-D Rotation
Background
Trendline
Lines
Up/Down Bars
Error Bars
Analysis
Chart Name:
Chart 1
Properties
Chart 1
X
Y
. -X
. +X
. -Y
. +Y
2.0 2.3 0.2 0.2 0.1 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Graph of Y vs X
y = 1.255x - 0.29
Y / units
X / Units
0.0 2.0 4.0 6.0 8.0 10.0 12.0
0 2 4 6 8 10 12 14 16
Sheet1
Sheet2
Sheet3
Sheet4
Ready
Select Both
Click on Custom and then Specify Value
Format Error Bars
Vertical Error Bars
Line Color
Line Style
Shadow
Glow and Soft Edges
Vertical Error Bars
Display
Direction
Both
Minus
Plus
End Style
No Cap
Cap
Error Amount
Fixed value: 0.1
Percentage: 5.0 %
Standard deviation(s): 1.0
Standard error
Custom:
Specify Value
Close
100%
ENG
12:06
10/03/2013

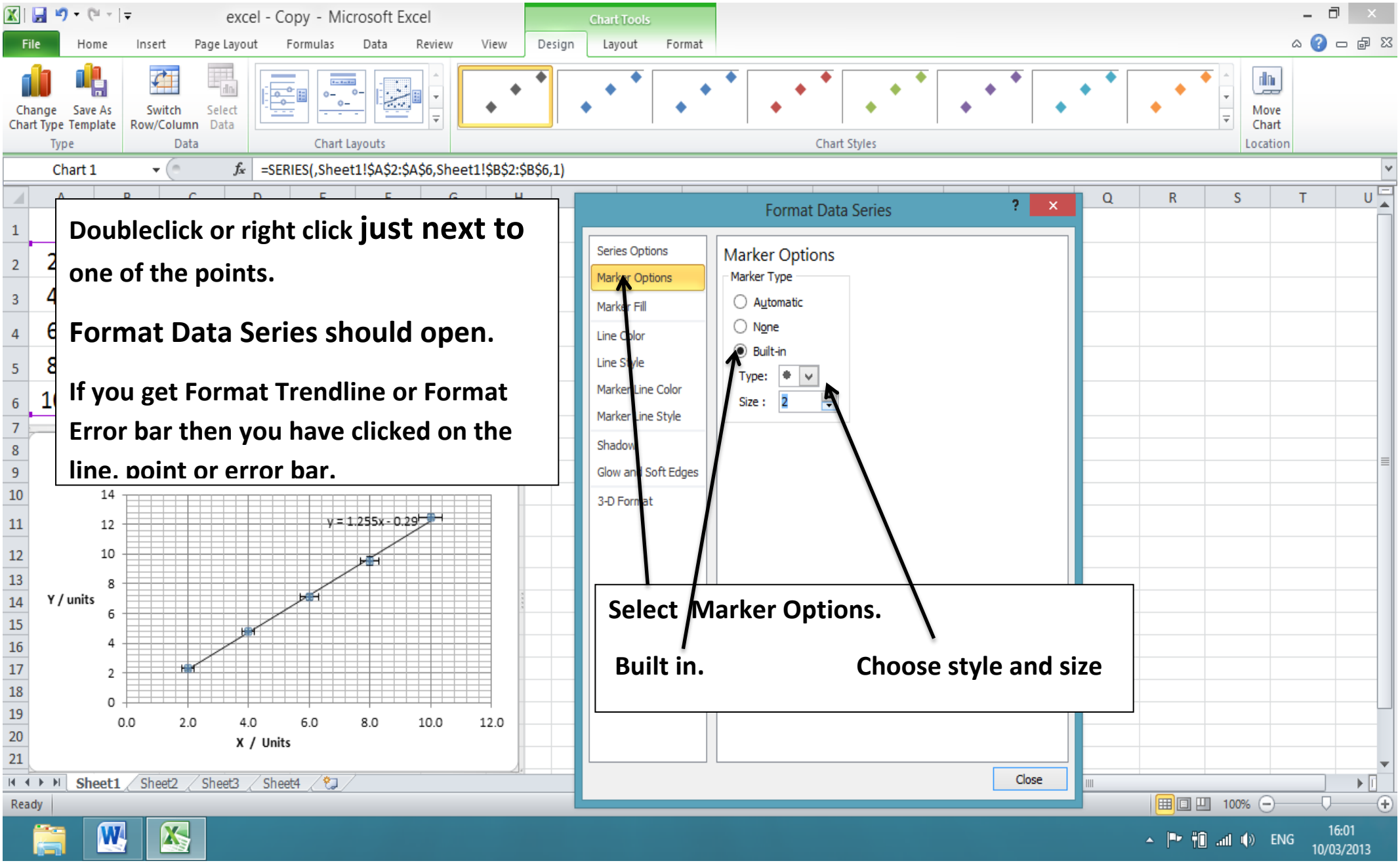

excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 Y Error Bars
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Axis Titles
Labels
Axes
Gridlines
Axes
3-D Rotation
Background
Analysis
Chart Name:
Properties
F2
X
Y
. -X
. +X
. -Y
. +Y
2.0 2.3 0.2 0.2 0.1 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Click and drag down column to insert value of +Y in data box.
Repeat for Negative Error Value
Click Okay
Format Error Bars
Vertical Error Bars
Custom Error Bars
Positive Error Value
=Sheet1!$F
Negative Error Value
={1}
OK
Cancel
Click to highlight data insertion box.
Both
Minus
Plus
End Style
No Cap
Cap
Error Amount
Fixed value:
0.1
Percentage:
5.0
%
Standard deviation(s):
1.0
Standard error
Custom:
Specify Value
Close
4
2
0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
X / Units
Sheet1
Sheet2
Sheet3
Sheet4
Point
100%
ENG
12:10
10/03/2013


excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 Y Error Bars
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Chart Title
Axis Titles
Legend
Data Labels
Data Table
Labels
Axes
Gridlines
Axes
Plot Area
Chart Wall
Chart Floor
3-D Rotation
Background
Trendline
Lines
Up/Down Bars
Error Bars
Analysis
Chart Name:
Chart 1
Properties
Chart 1
To select horizontal error bars, click on any horizontal error bar on the graph.
X
Y
. -X
. +X
. -Y
2.0 2.3 0.2 0.2 0.1
4.0 4.8 0.2 0.2 0.1 0.1
6.0 7.1 0.3 0.3 0.2 0.2
8.0 9.5 0.3 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2 0.2
Graph of Y vs X
Chart Area
y = 1.255x - 0.29
Y / units
X / Units
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
2
4
6
8
10
12
14
Vertical Error Bars
Line Color
Line Style
Shadow
Glow and Soft Edges
Vertical Error Bars
Display
Direction
Both
Minus
Plus
End Style
No Cap
Cap
Error Amount
Fixed value:
0.1
Percentage:
5.0
%
Standard deviation(s):
1.0
Standard error
Custom:
Specify Value
Close
Sheet1
Sheet2
Sheet3
Sheet4
Ready
100%
ENG
12:40
10/03/2013

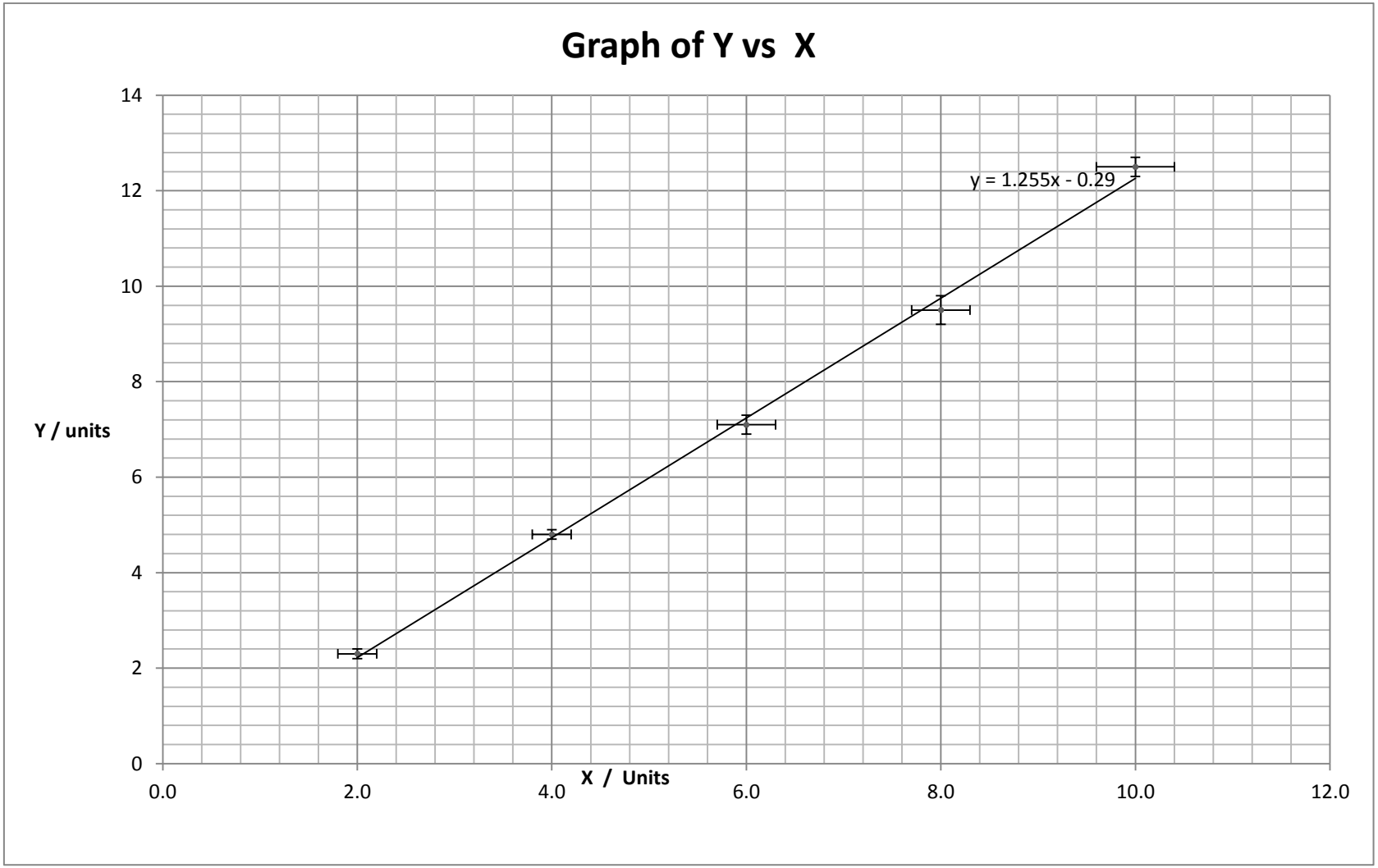

excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 X Error Bars
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Chart Title
Axis Titles
Legend
Data Labels
Data Table
Labels
Axes
Gridlines
Axes
Plot Area
Chart Wall
Chart Floor
3-D Rotation
Background
Trendline
Lines
Up/Down Bars
Error Bars
Analysis
Chart Name:
Chart 1
Properties
Chart 1
X
Y
. -X
. +X
. -Y
. +Y
2.0
4.0
6.0
8.0
10.0
12.5
0.4
0.4
0.2
0.2
Changes to Horizontal Error Bars
Graph of Y vs X
y = 1.255x - 0.29
Y / units
X / Units
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
2
4
6
8
10
12
14
Format Error Bars
Horizontal Error Bars
Line Color
Line Style
Shadow
Glow and Soft Edges
Horizontal Error Bars
Display
Direction
Both
Minus
Plus
End Style
No Cap
Cap
Error Amount
Fixed value:
1.0
Percentage:
5.0
%
Standard deviation(s):
1.0
Standard error
Custom:
Specify Value
Close
Sheet1
Sheet2
Sheet3
Sheet4
Ready
100%
ENG
12:43
10/03/2013


excel - Copy - Microsoft Excel
Chart Tools
File
Home
Insert
Page Layout
Formulas
Data
Review
View
Design
Layout
Format
Series 1 X Error Bars
Format Selection
Reset to Match Style
Current Selection
Picture
Shapes
Text Box
Insert
Axis Titles
Labels
Axes
Gridlines
Axes
3-D Rotation
Background
Analysis
Chart Name:
Properties
C2
X
Y
. -X
. +X
. -Y
2.0 2.3 0.2 0.2 0.1
4.0 4.8 0.2 0.2 0.1
6.0 7.1 0.3 0.3 0.2
8.0 9.5 0.3 0.3 0.3
10.0 12.5 0.4 0.4 0.2
Click, Drag down vertical column to insert data in box.
Click okay
Graph of Y vs X
y = 1.255x - 0.29
Y / units
X / Units
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
2
4
6
8
10
12
14
Format Error Bars
Horizontal Error Bars
Custom Error Bars
Positive Error Value
=Sheet1!$C
Negative Error Value
=Sheet1!$C
OK
Cancel
Both
Minus
Plus
End Style
No Cap
Cap
Error Amount
Fixed value:
1.0
Percentage:
5.0
%
Standard deviation(s):
1.0
Standard error
Custom:
Specify Value
Close
Click to highlight data insertion box.
Sheet1
Sheet2
Sheet3
Sheet4
Point
100%
ENG
12:48
10/03/2013

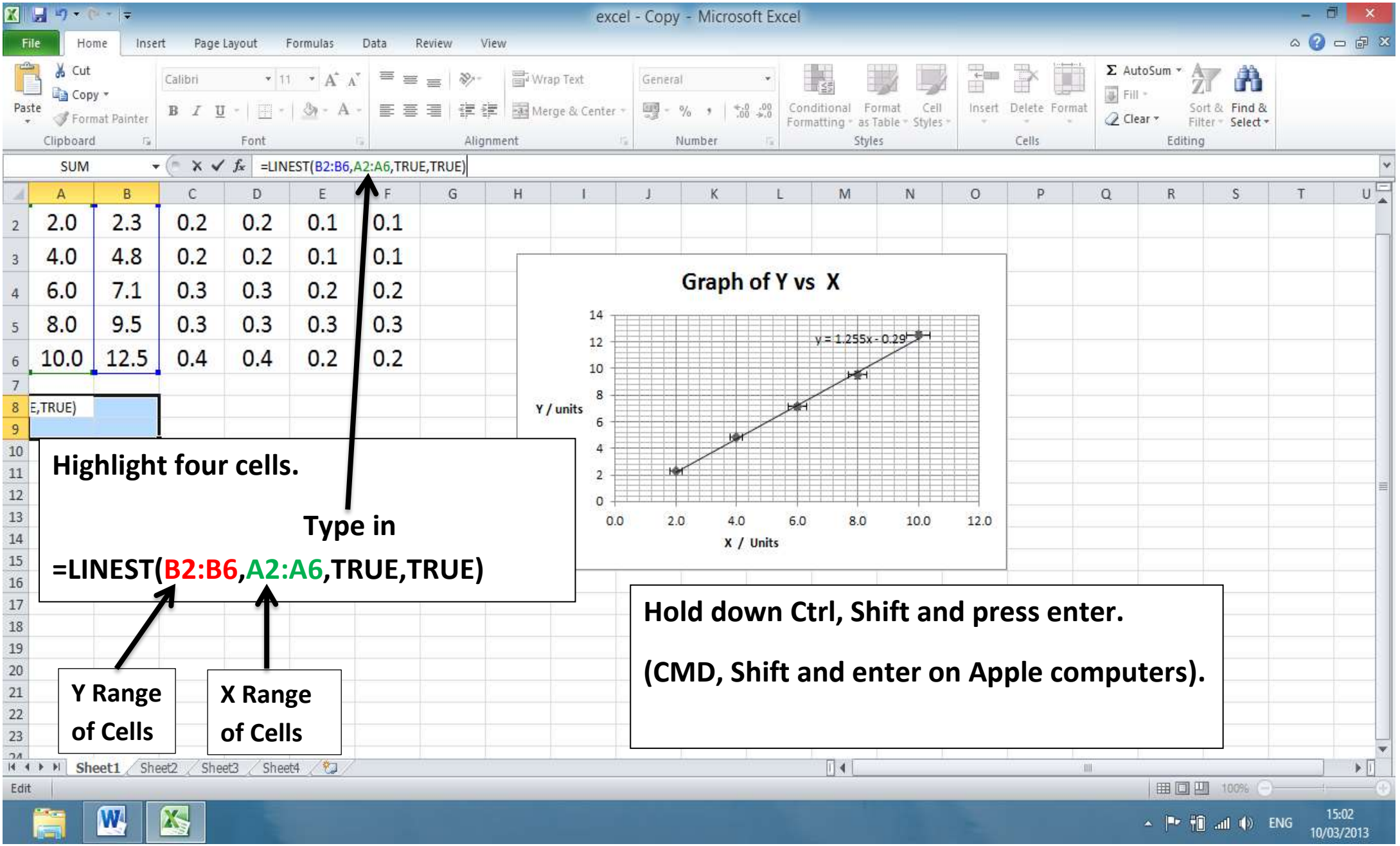
To change dot size / shape. (Use Format Data Series)



Increase the size of the graph to at least half a page.



Uncertainty in Gradient, Intercept - Use of Linest



excel - Copy - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

Cut Copy Format Painter Paste — Clipboard

Calibri 18 — Font

Wrap Text Merge & Center — Alignment

General — Number

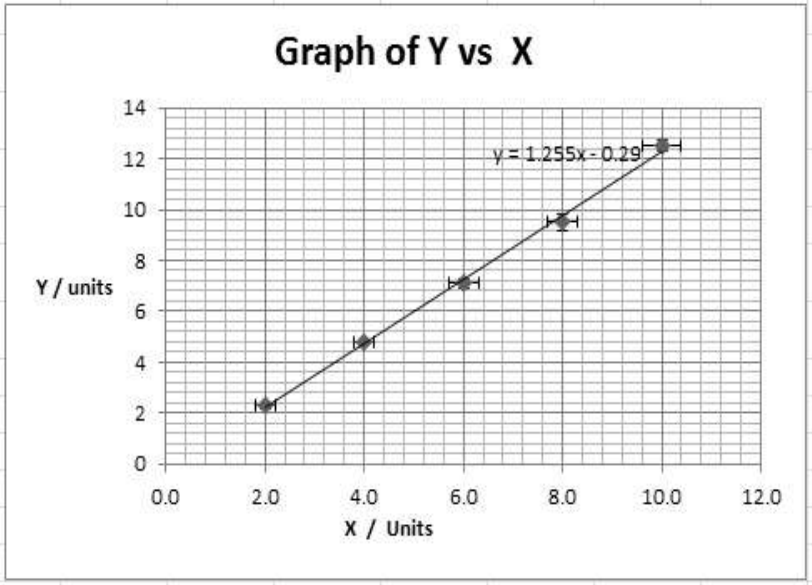
Conditional Formatting Format as Table Cell Styles — Styles

Insert Delete Format — Cells

AutoSum Fill Clear Sort & Filter Find & Select — Editing

A8 {=LINEST(B2:B6,A2:A6,TRUE,TRUE)}

	A	B	C	D	E	F
2	2.0	2.3	0.2	0.2	0.1	0.1
3	4.0	4.8	0.2	0.2	0.1	0.1
4	6.0	7.1	0.3	0.3	0.2	0.2
5	8.0	9.5	0.3	0.3	0.3	0.3
6	10.0	12.5	0.4	0.4	0.2	0.2
7						
8	1.255	-0.29				
9	0.035	0.2353				



Sheet1 Sheet2 Sheet3 Sheet4

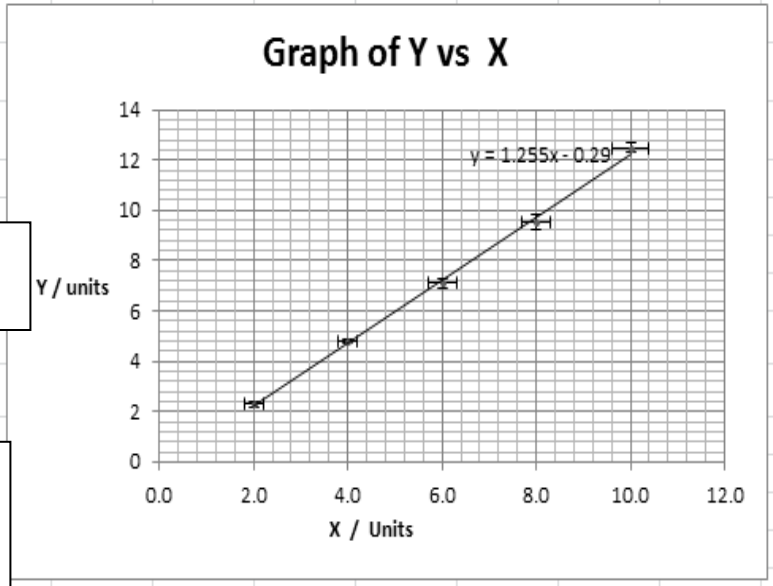
Ready

Average: 0.308943555 Count: 4 Sum: 1.23577422 100%

ENG 15:12 10/03/20

excel - Copy - Microsoft Excel

	X	Y	. - X	. + X	. - Y	. + Y
2	2.0	2.3	0.2	0.2	0.1	0.1
3	4.0	4.8	0.2	0.2	0.1	0.1
4	6.0	7.1	0.3	0.3	0.2	0.2
5	8.0	9.5	0.3	0.3	0.3	0.3
6	10.0	12.5	0.4	0.4	0.2	0.2

Gradient → **1.255** ← **Y Intercept** **-0.29**

Uncertainty in Gradient → **0.035** ← **Uncertainty in Y Intercept** **0.235**