Part I, Chapters 4 & 5

Data Tables and Data Analysis
Statistics and Figures

Descriptive Statistics, Simple Graphs and Histograms

Descriptive Statistics 1

This is the first decision you need to make!

Are data points clumped?

(order variable / exp. variable)

- **Concentrated around one value?**
- **Concentrated in several areas?**

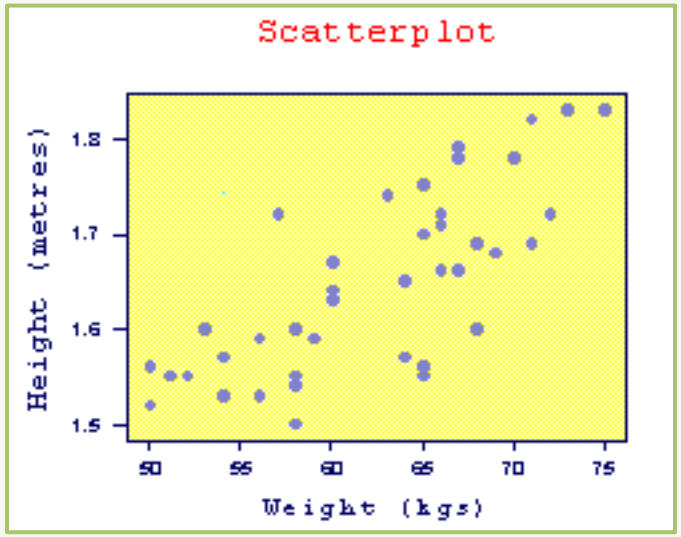
Do data point pairs show a pattern?

(exp. variable #1 / exp. variable #2)

- **Straight line?**
- **Parabola?**
- **Sin function?**

Scatter Graphs

A scatterplot is a useful summary of a set of bivariate data (two variables), usually drawn *before* working out a linear correlation coefficient or fitting a regression line. Each unit contributes one point to the scatterplot, on which points are plotted but not joined. The resulting pattern indicates the type and strength of the relationship between the two variables.

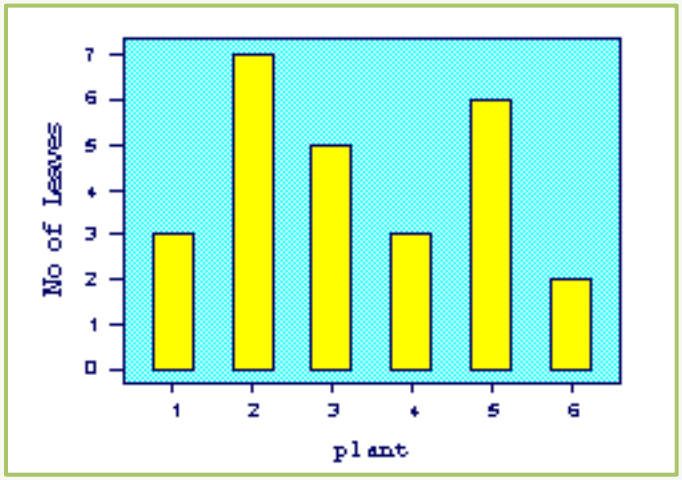


- Gives a good visual picture of the relationship between the variables
- Aids the interpretation of the correlation coefficient or regression model

http://www.stats.gla.ac.uk/steps/glossary/presenting_data.html

Bar and Column Graphs

A bar / column graph is a way of summarising a set of categorical data. It is often used in exploratory data analysis to illustrate the major features of the distribution of the data in a convenient form. It displays the data using a number of rectangles, of the same width, each of which represents a particular category. The length (and hence area) of each rectangle is proportional to the number of cases in the category it represents, for example, age group, religious affiliation.

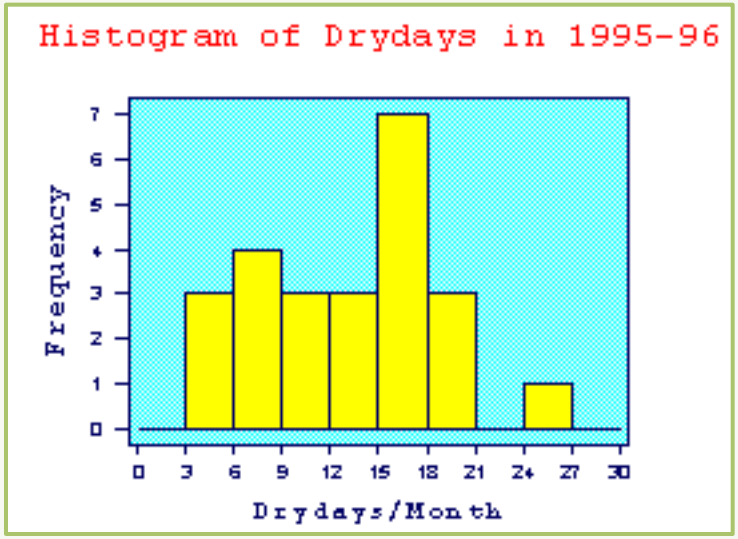


- Summarize nominal or ordinal data
- Displayed horizontally (bars) or vertically (column)
- Drawn with a gap between the bars (rectangles)

http://www.stats.gla.ac.uk/steps/glossary/presenting_data.html

Frequency Analysis: Histograms

A histogram is a way of summarizing data that are measured on an interval scale (either discrete or continuous). It is often used in exploratory data analysis to illustrate the major features of the distribution of the data in a convenient form. It divides up the range of possible values in a data set into classes or groups. For each group, a rectangle is constructed with a base length equal to the range of values in that specific group, and an area proportional to the number of observations falling into that group. This means that the rectangles might be drawn of non-uniform height.



- Variables are numerical
- Variables are measured on an interval scale
- Used with large data sets (>100 observations)
- Detect unusual observations (outliers, gaps)

http://www.stats.gla.ac.uk/steps/glossary/presenting_data.html

Descriptive Statistics 2

Does the Study Matter?

Size – Total number of Data Points, N

-- Number of reactions performed

-- Numbers of points measured (i.e., for a spectrum)

Does the Parameter Matter?

Range – Distance between smallest and largest data value

-- Min., Max., and Range = Max. – Min.

-- Average ± Difference/2

How Does the Parameter Matter?

Middle – There are many types of averages

-- Average = Mean = Arithmetic Mean: Sum(Data) / N

-- Geometric Mean: $[\ \text{Product(Data)}\ ]^{1/N}$

-- Mode: Most frequent data value

-- Median: N/2 data are below and above.

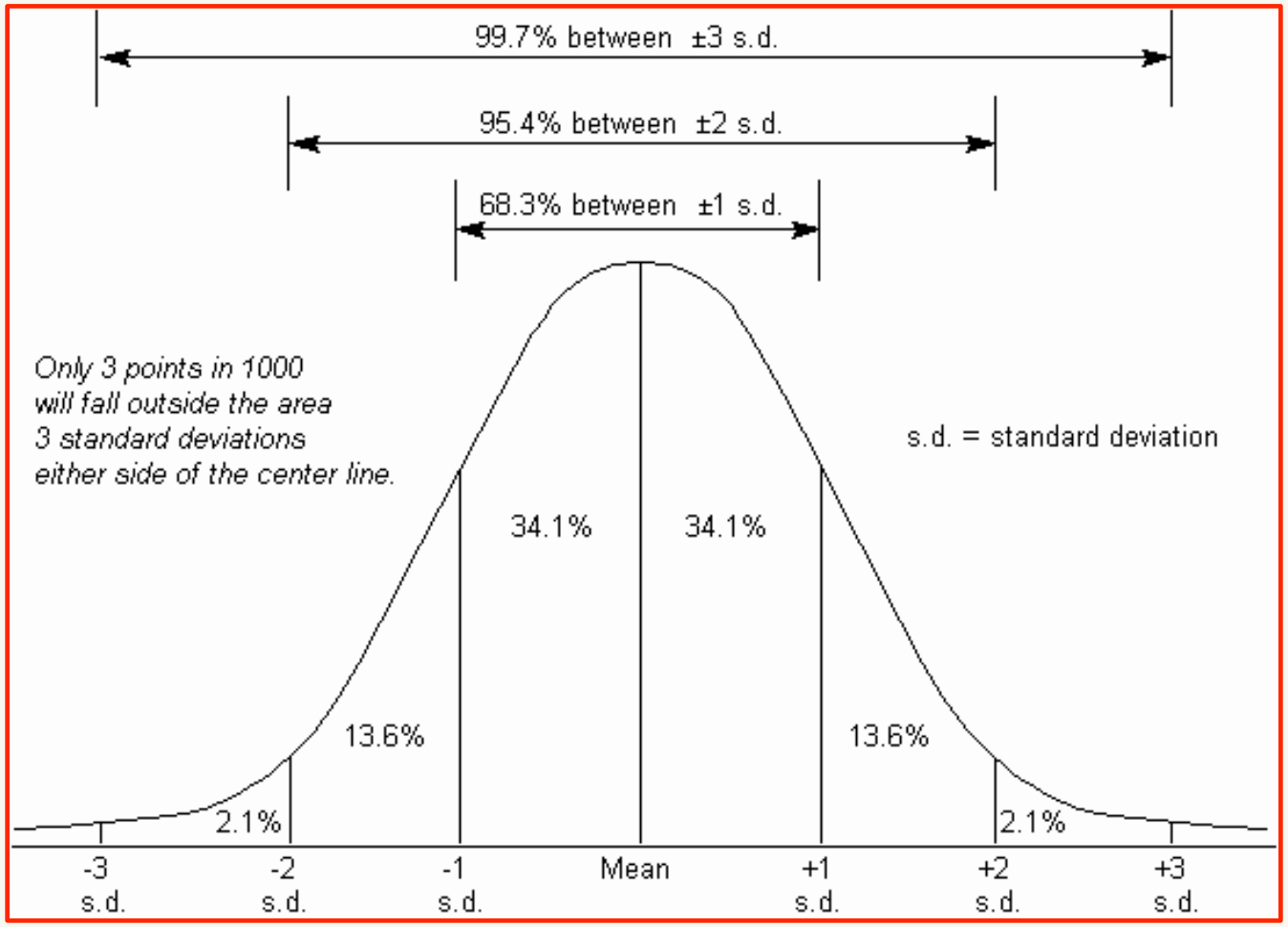
How Frequent Are Deviations?

Spread – Frequency of Significant Deviation

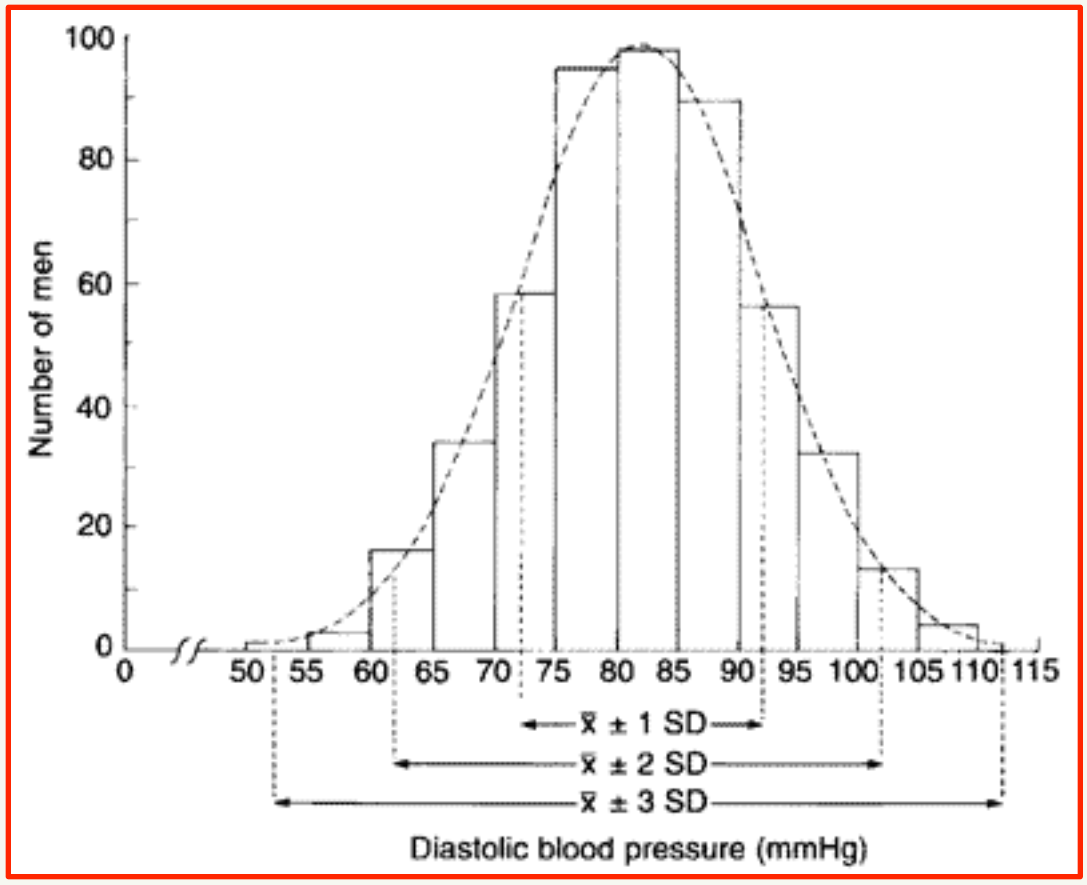
-- Standard Deviation

-- Central 50%

Standard Deviation



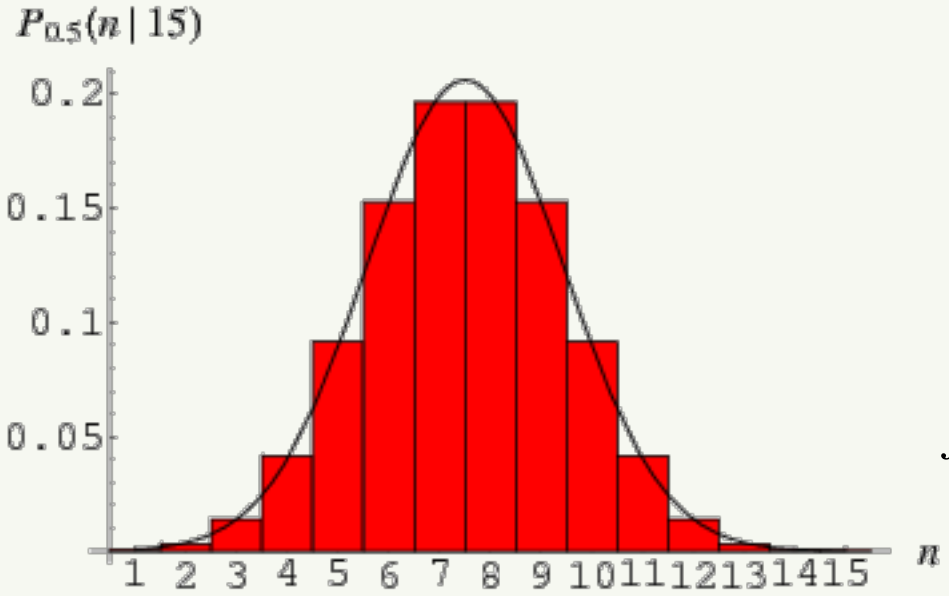
Standard Deviation



Real Work Sample:
Data Histogram

Mathematical World:
Inferential statistics maps the data by a formula that describes the population.

Normal or Gaussian Distribution Bell Curve



A normal distribution in a variante *x* with mean *a* and variance σ^2 is a statistic distribution with probability density function

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left\{-\frac{(x-a)^2}{2\sigma^2}\right\}$$

If Gaussian, then: Mean = Median = Mode

Mean and Standard Deviation determine the distribution

http://mathworld.wolfram.com/NormalDistribution.html

Significance Test & p-Value

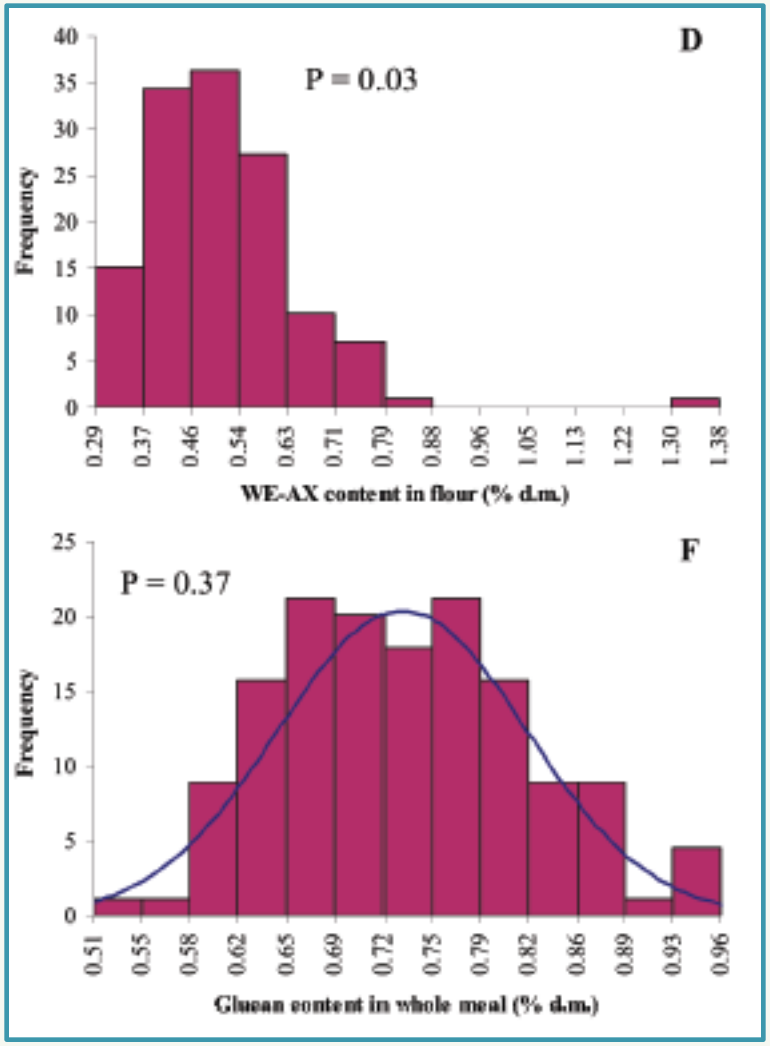
p-value = alpha level = significance level

For significance tests there is a hypothesized condition (called null hypothesis, H_0) that one is testing to see if it is true. For a test of fit the hypothesized condition is that the selected distribution (i.e., a normal distribution) generated the data.

The p-value is the probability that the data have been generated under the hypothesized condition. A p-value of 0.05 indicates that the chance of the observed data is low, 1 in 20, due to variation alone. This is good evidence that the data was not generated under the hypothesized condition. The hypothesized condition is rejected if the p-value is 0.05 or below.

A p-value of 0.05 provides 95% confidence the hypothesized condition is not true (i.e., no normal distribution). The confidence level is calculated from the p-value as 100*(1 – p).

Cramer von Mises Test
Andersen-Darling Test



A "quadratic EDF statistics"
EDF = empirical dist. function

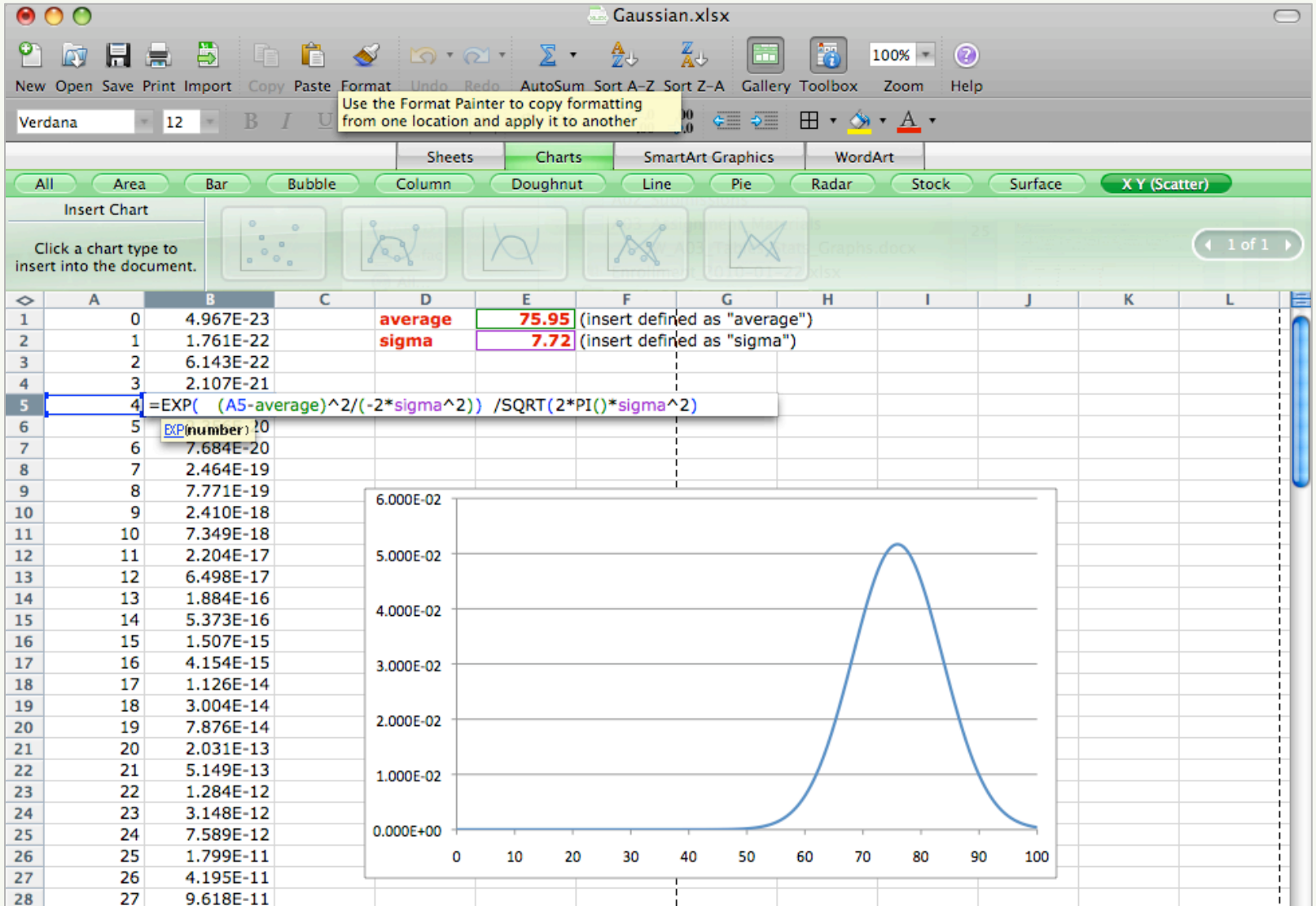
$$n\int_{-\infty}^{\infty}\left[F_n(x)-F(x)\right]^2 w(x)\,dF(x)$$

$$CvM: \quad w(x)=1$$

$$AD: \quad w(x)=\frac{1}{F(x)-F(x)^2}$$

AD value –{Statistics}-> p-value

Normal Distribution, 1D-Gaussian



Scatter Graph In Electronics Research

Electron Transport through CO Studied by Gold Break-Junctions in Nonpolar Liquids

D. den Boer,*,† M. J. J. Coenen,† M. van der Maas,† T. P. J. Peters,† O. I. Shklyarevskii,†,‡
J. A. A. W. Elemans,† A. E. Rowan,† and S. Speller†

Electron Transport through CO

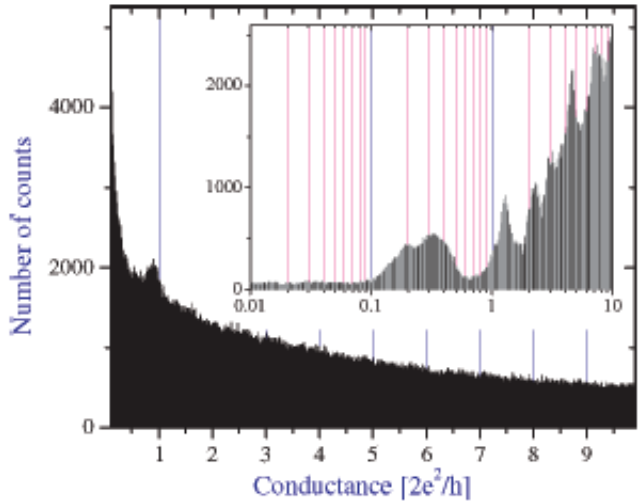


Figure 7. Conductance histogram for gold in toluene saturated with carbon monoxide. Inset: conductance histogram measured in diluted solution for the traces with steps in the range 0.1−0.4 G_0 (about 20% of data set).

J. Phys. Chem. C, Vol. 113, No. 34, 2009 **15415**

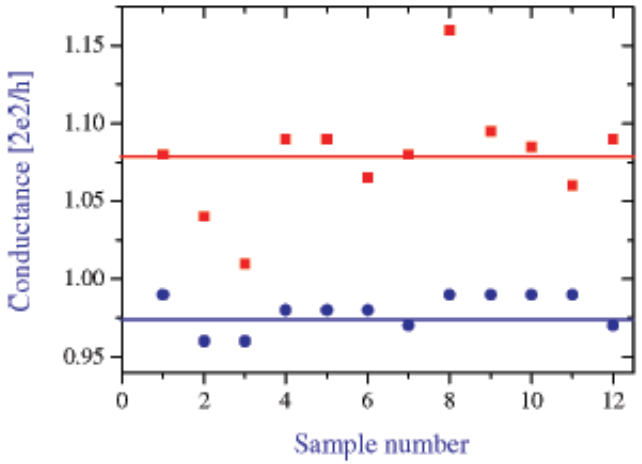
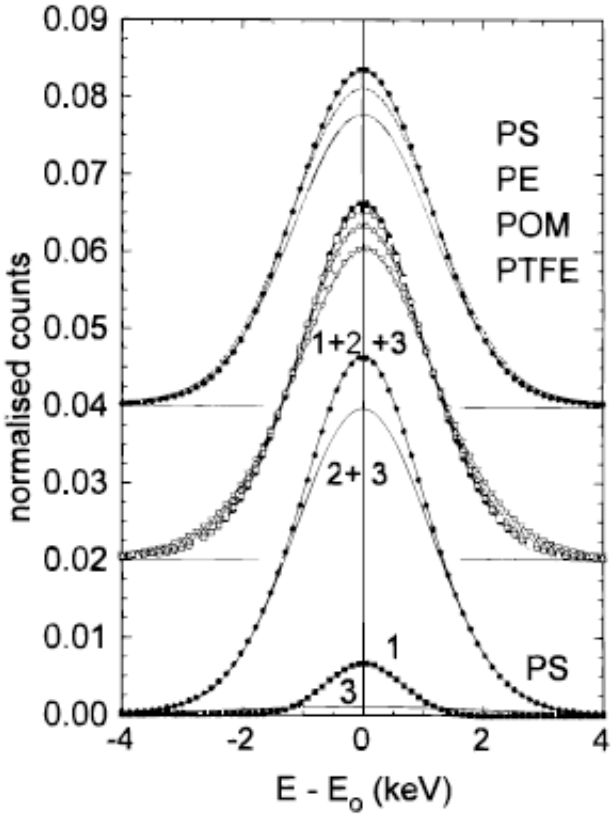


Figure 8. Position of the peak related to the single-atom contact between gold electrodes in the original conductance histograms (circles) and in the histograms constructed from selected traces with the steps in the range 0.2−0.4 G_0 (squares). The first six points are related to the measurements in toluene, while the last six are related to the measurements in cyclohexane.

Gaussian Dist. In Polymer Research

Positron/Positronium Annihilation as a Probe for the Chemical Environment of Free Volume Holes in Polymers

G. Dlubek,*,†,‡ H. M. Fretwell,†,§ and M. A. Alam†



Macromolecules, Vol. 33, No. 1, 2000

Figure 1. DB spectra in polymers corrected for nonconstant background. Middle: as-measured distributions for two hydrocarbon-based polymers (PS and PE) and for two polymers containing hydrocarbons plus oxygen (POM) and fluorine (PTFE). All curves are normalized to the same area. Bottom: fitting of the distributions with one narrow (1) (p-Ps self-annihilation) and two broad components (3, 2). Top: the broader components for the four polymers (after subtraction of the narrow component and normalization to the same area).

Gaussian Dist. In Food Chemistry

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Variation in the Content of Dietary Fiber and Components Thereof in Wheats in the HEALTHGRAIN Diversity Screen

KURT GEBRUERS,*,† EMMIE DORNEZ,† DANUTA BOROS,§ ANNA FRAŚ,§ WIOLETTA DYNKOWSKA,§ ZOLTAN BEDŐ,# MARIANN RAKSZEGI,# JAN A. DELCOUR,† AND CHRISTOPHE M. COURTIN†

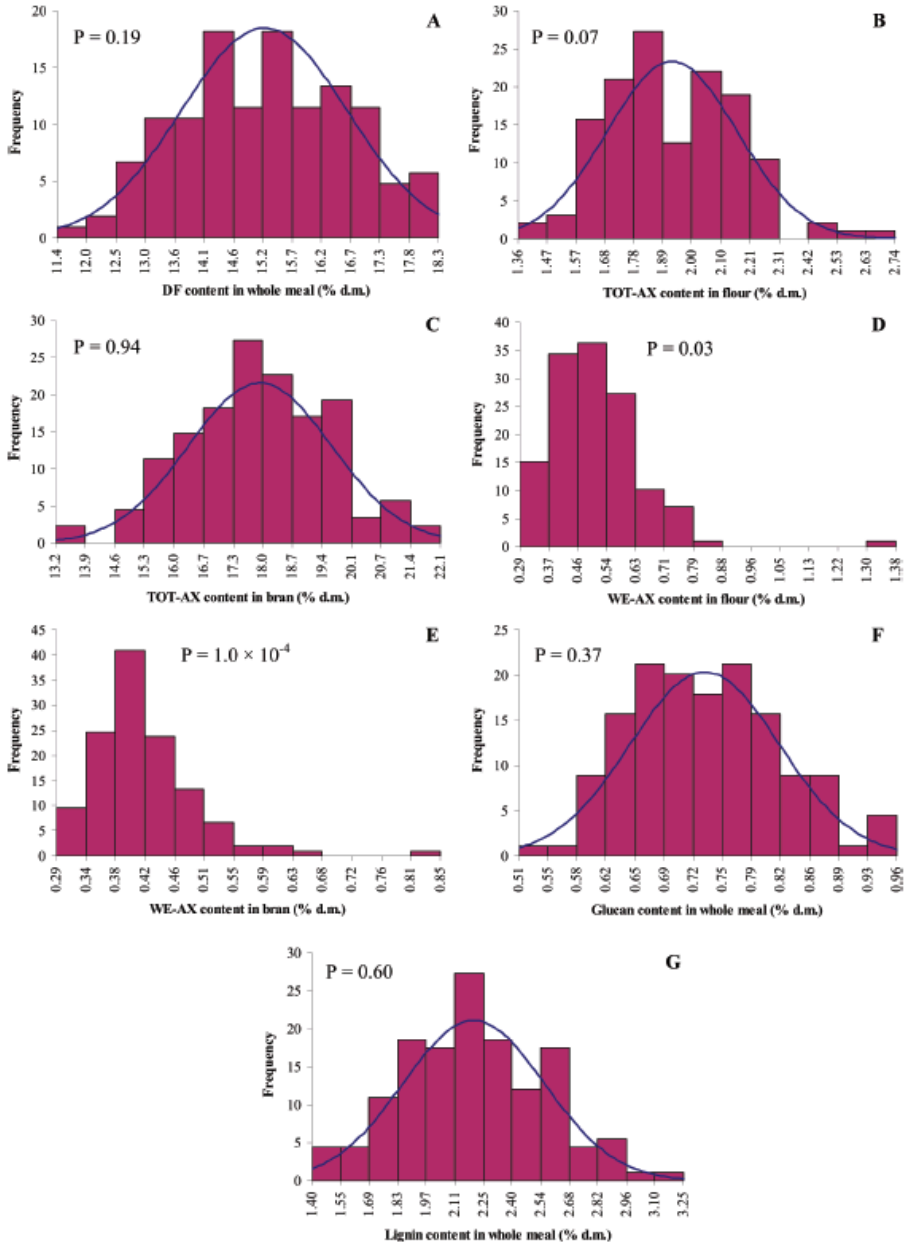


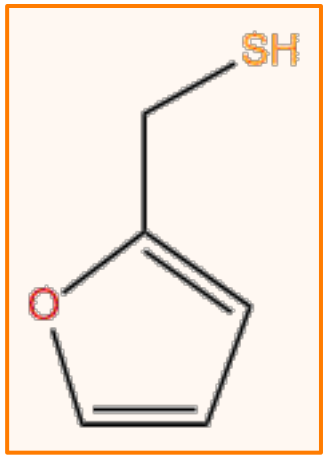
Figure 1. Frequency histograms (bars) for contents of DF in whole meal (**A**), TOT-AX in flour (**B**), and bran (**C**), WE-AX in flour (**D**) and bran (**E**), β-glucan in whole meal (**F**), and lignin in whole meal (**G**) from winter wheats. For the normally distributed data (Anderson−Darling P value > 0.05) also the corresponding normal distribution curves are shown.

Histogram In Food Chemistry

Analysis, Occurrence, and Potential Sensory Significance of Five Polyfunctional Mercaptans in White Wines

LAURA MATEO-VIVARACHO, JULIÁN ZAPATA, JUAN CACHO, AND VICENTE FERREIRA*

Laboratory for Flavor Analysis and Enology, Analytical Chemistry, Faculty of Sciences, University of Zaragoza, 50009 Zaragoza, Spain



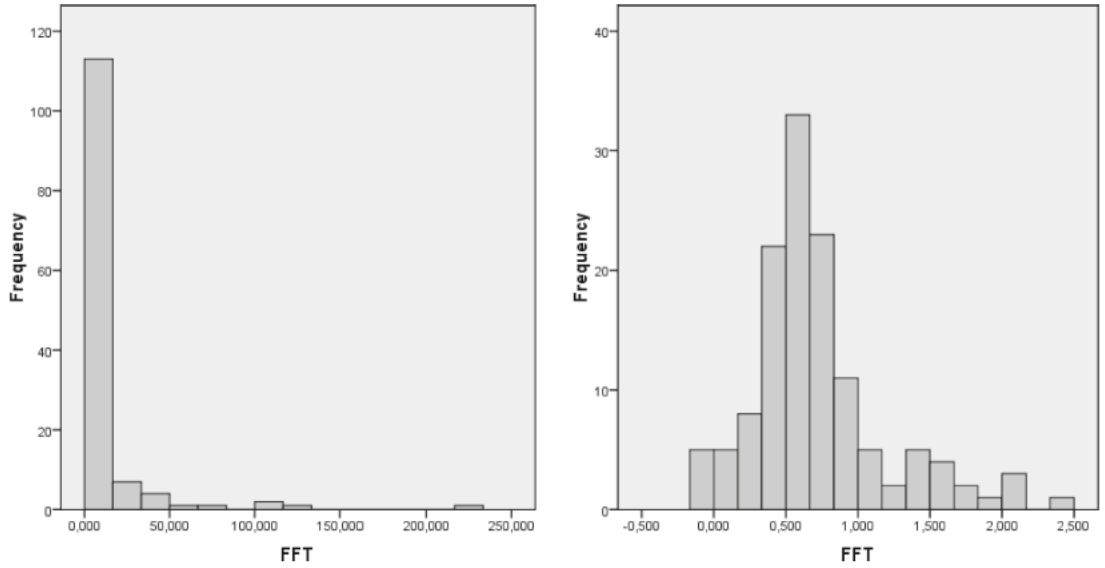


Figure 1. Histogram representing the distribution of FFT in the whole data set of samples in normal (left) or in logarithmic scales (right).

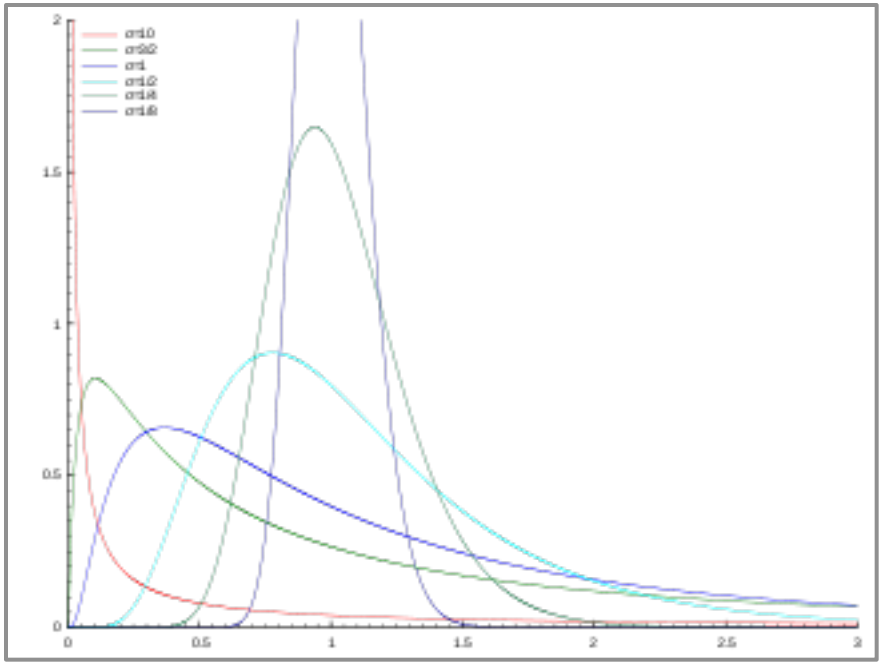
A log-normal distribution: variable whose logarithm is normally distributed.

Histogram In Nano Chemistry

J. Phys. Chem. C **2010,** *114,* 5773–5785

PRD = Particle Radius Distribution

A log-normal distribution: variable whose logarithm is normally distributed.



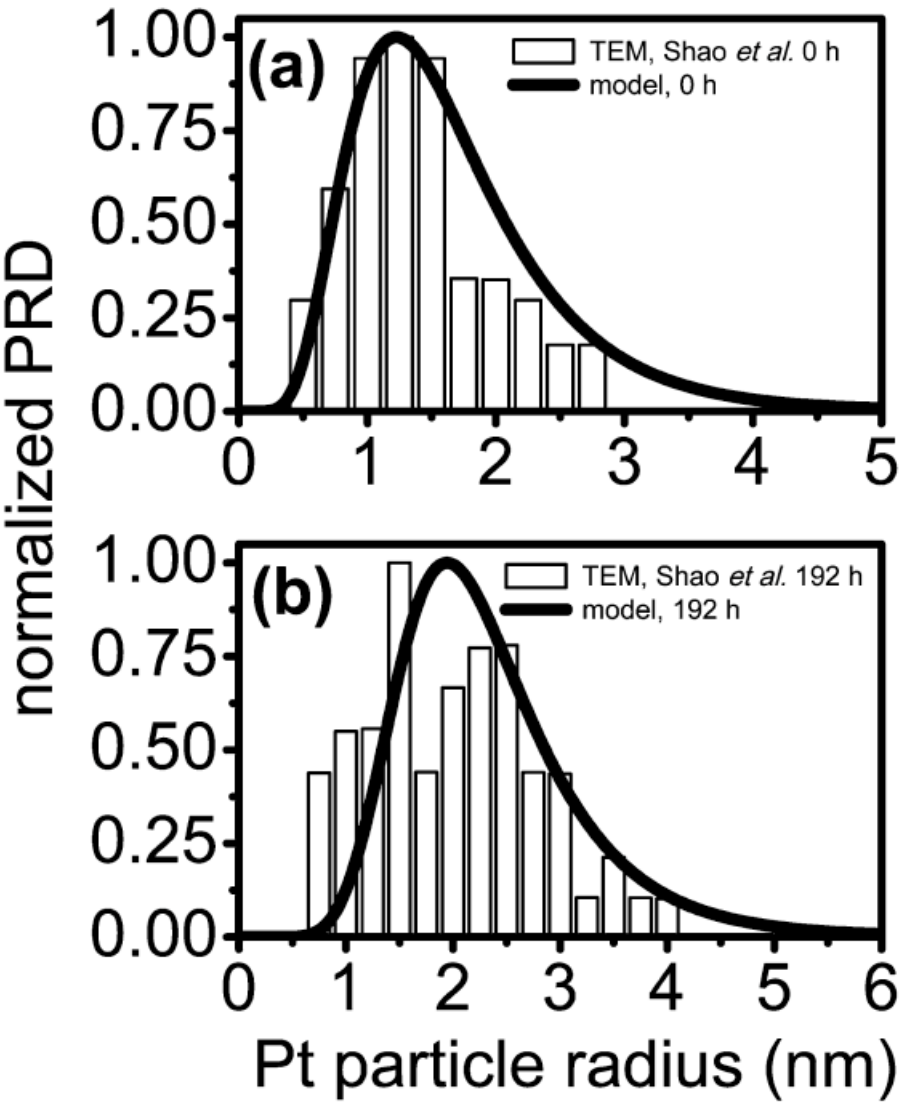


Figure 8. Comparison of initial (a) and final (b) particle radius distributions obtained from TEM micrographs in Shao et al.[26] Input parameters and experimental conditions are given in Table 1. An initial log-normal distribution with $r_0 = 1.5$ nm and $\sigma_{SD} = 0.45$ was used.

Histogram In Polymer Research

Macromolecules, Vol. 31, No. 15, 1998

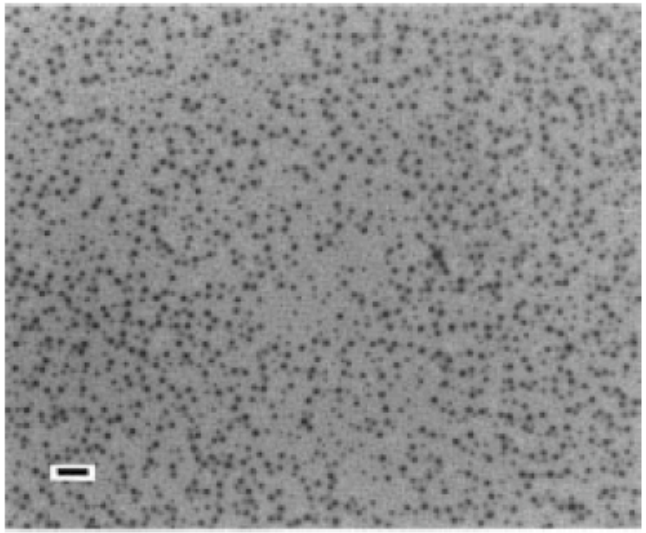


Figure 1. Electron micrograph of a mixture of two PVP–PS diblock copolymers (M_w 18k–75k and 102k–75k) after 1 h of aging. Scale bar represents 200 nm.

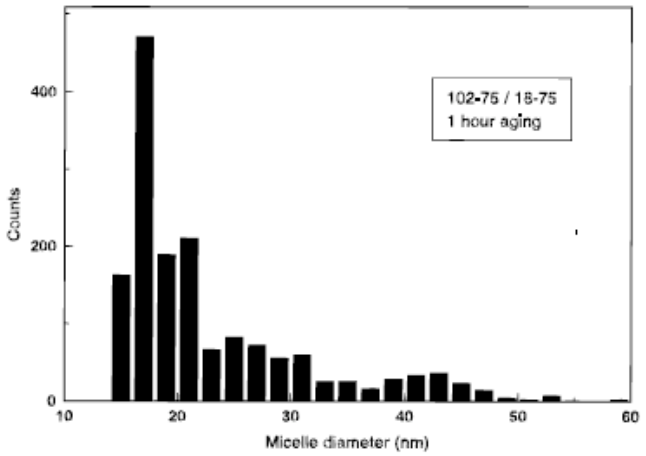


Figure 2. Histogram showing the size distribution belonging to Figure 1.

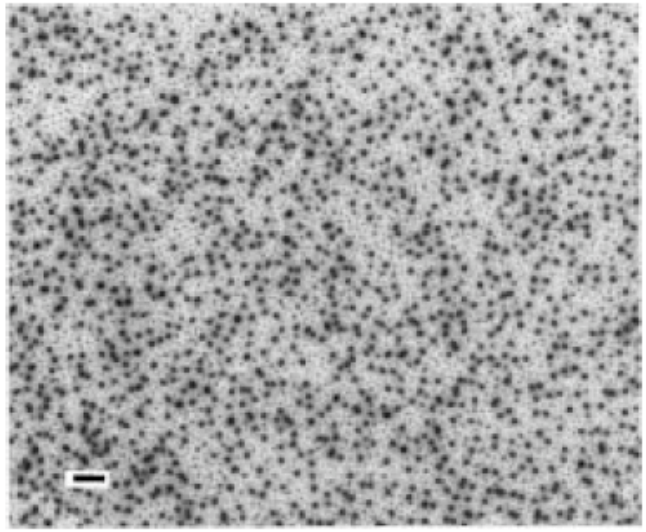


Figure 3. Electron micrograph of a mixture of two PVP–PS diblock copolymers (M_w 18k–75k and 102k–75k) after 38 days of aging. Scale bar represents 200 nm.

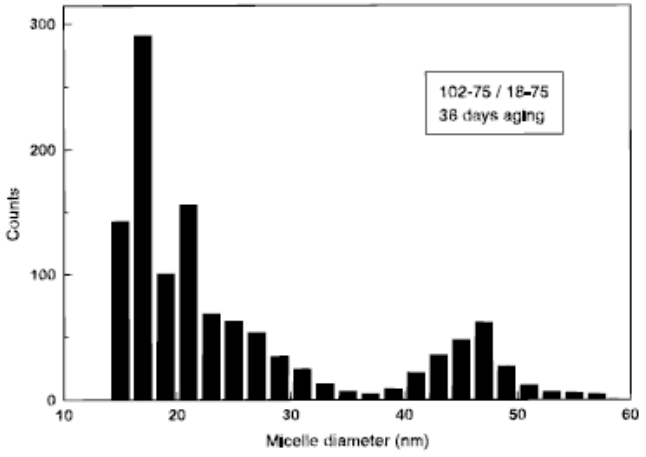


Figure 4. Histogram showing the size distribution belonging to Figure 3.

Histogram In Solid State Research

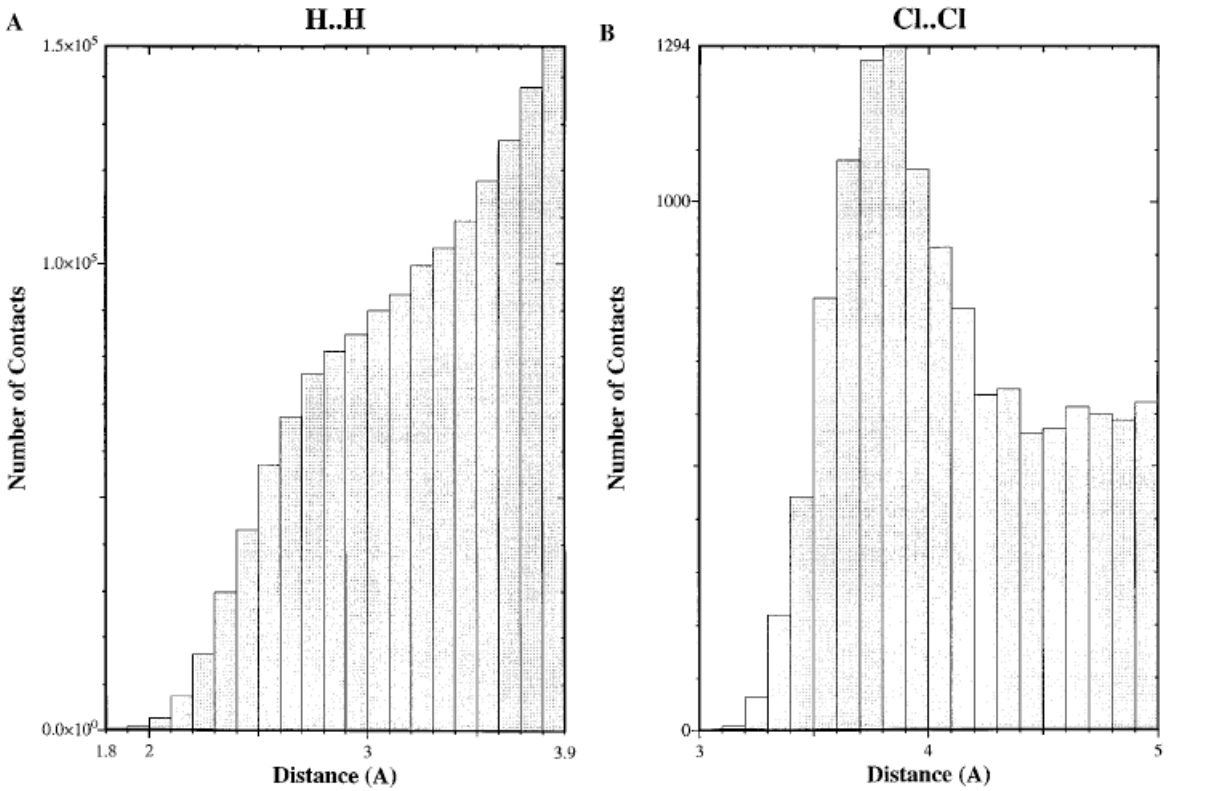
7384 *J. Phys. Chem.* **1996**, *100*, 7384−7391

Intermolecular Nonbonded Contact Distances in Organic Crystal Structures: Comparison with Distances Expected from van der Waals Radii

R. Scott Rowland* and Robin Taylor*

Cambridge Crystallographic Data Centre, 12 Union Road, Cambridge CB2 1EZ, U.K.

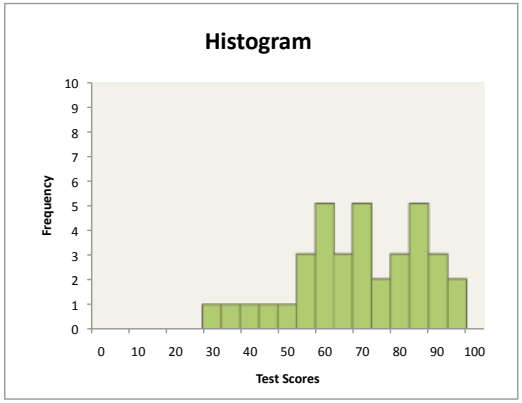
Received: October 24, 1995; In Final Form: January 28, 1996®

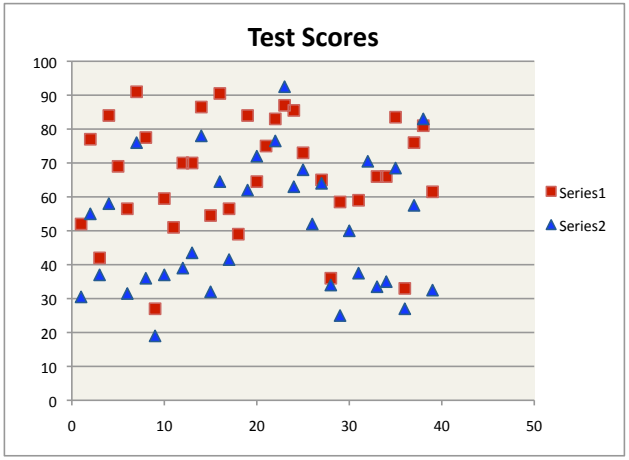


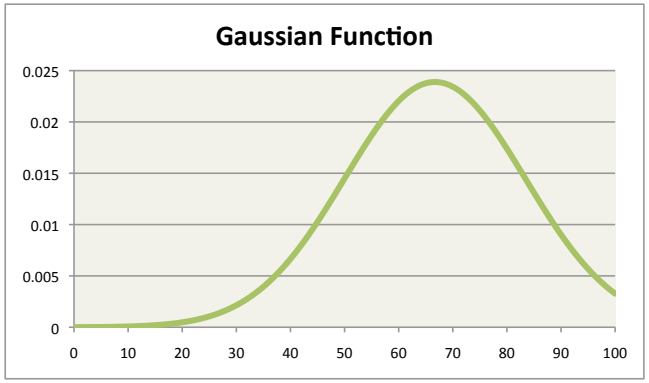
How to Compute Descriptive Statistics, Present Scatter Graphs & Histograms, and Plot Functions using Excel

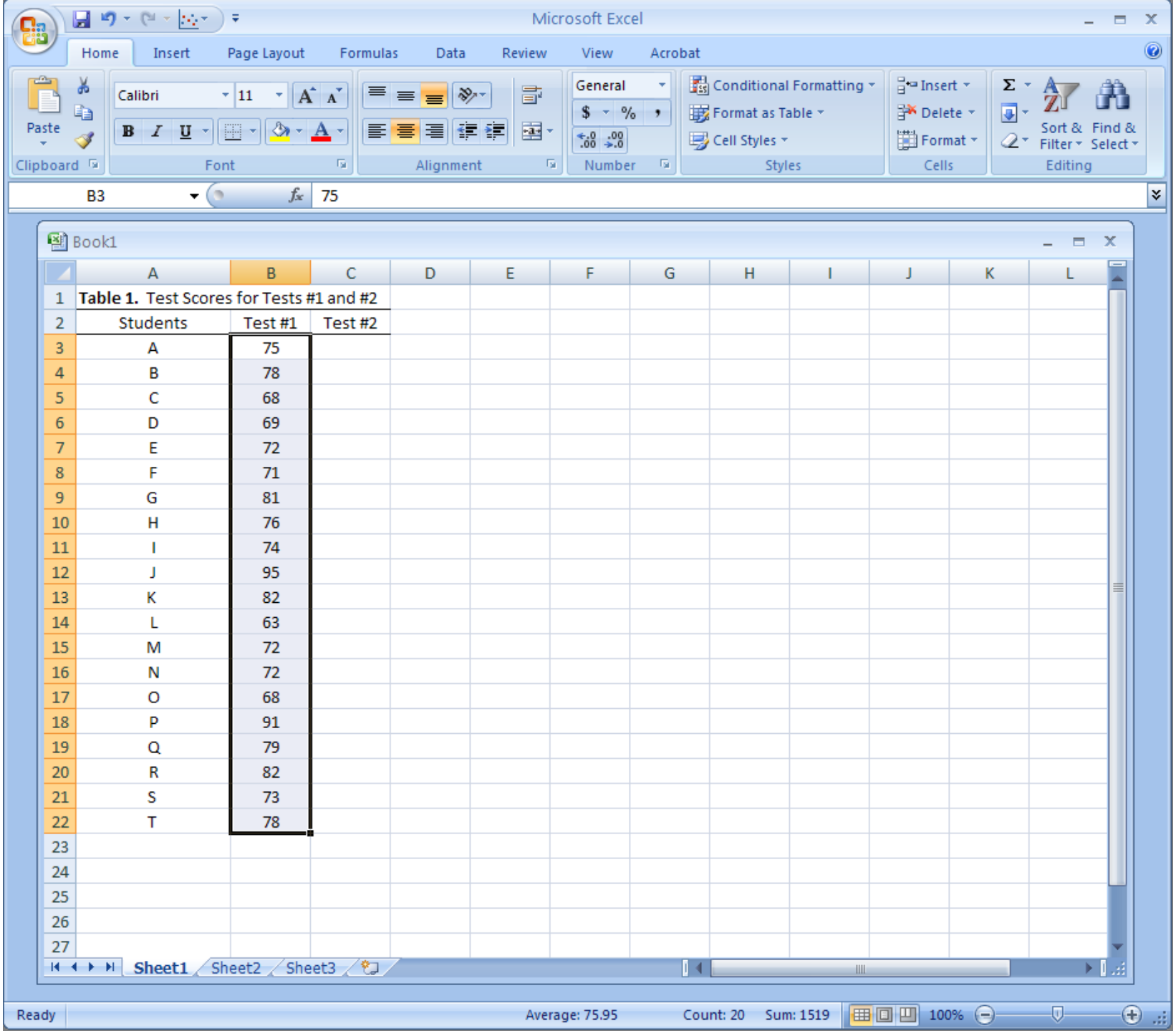
Example in Lecture: Test Scores

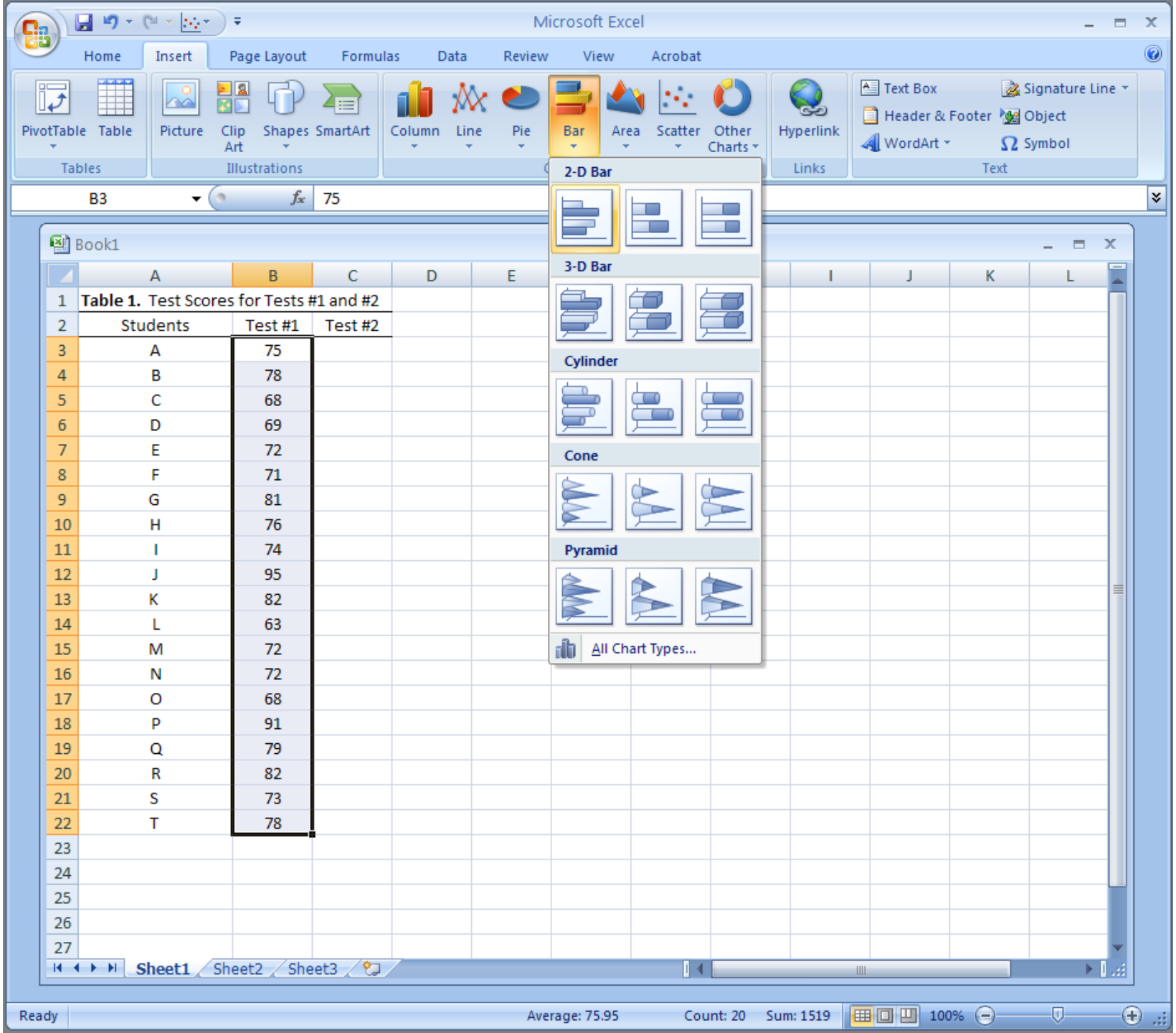
Assign. #3: Handout & online.








Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
Paste
Calibri
11
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
Sort & Filter
Find & Select
Clipboard
Font
Alignment
Number
Styles
Cells
Editing
B3
75
Book1
Table 1. Test Scores for Tests #1 and #2
Students
Test #1
Test #2
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
Sheet1
Sheet2
Sheet3
Ready
Average: 75.95
Count: 20
Sum: 1519
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
PivotTable
Table
Picture
Clip Art
Shapes
SmartArt
Column
Line
Pie
Bar
Area
Scatter
Other Charts
Hyperlink
Text Box
Header & Footer
WordArt
Signature Line
Object
Symbol
Tables
Illustrations
Links
Text
B3
75
Book1
Table 1. Test Scores for Tests #1 and #2
Students
Test #1
Test #2
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
2-D Bar
3-D Bar
Cylinder
Cone
Pyramid
All Chart Types...
Sheet1
Sheet2
Sheet3
Ready
Average: 75.95
Count: 20
Sum: 1519
100%

Microsoft Excel

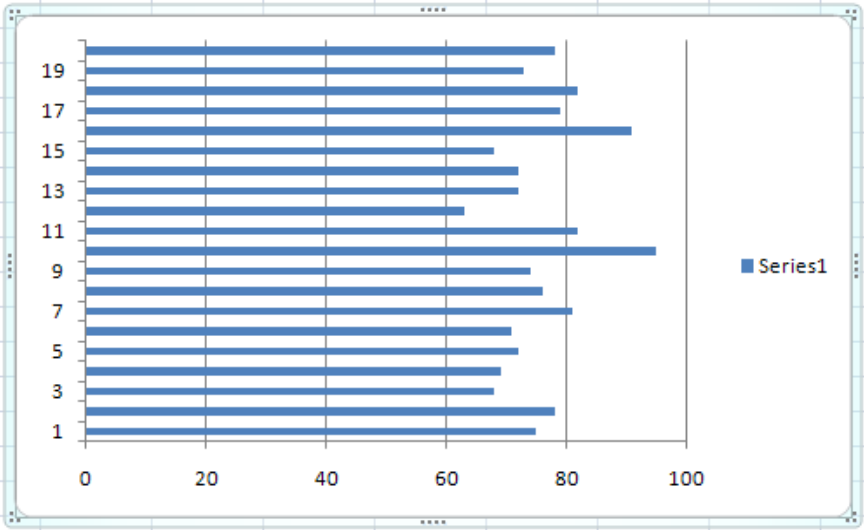
Picture Tools

Home | Insert | Page Layout | Formulas | Data | Review | View | Acrobat | Format

Chart 1

Book1

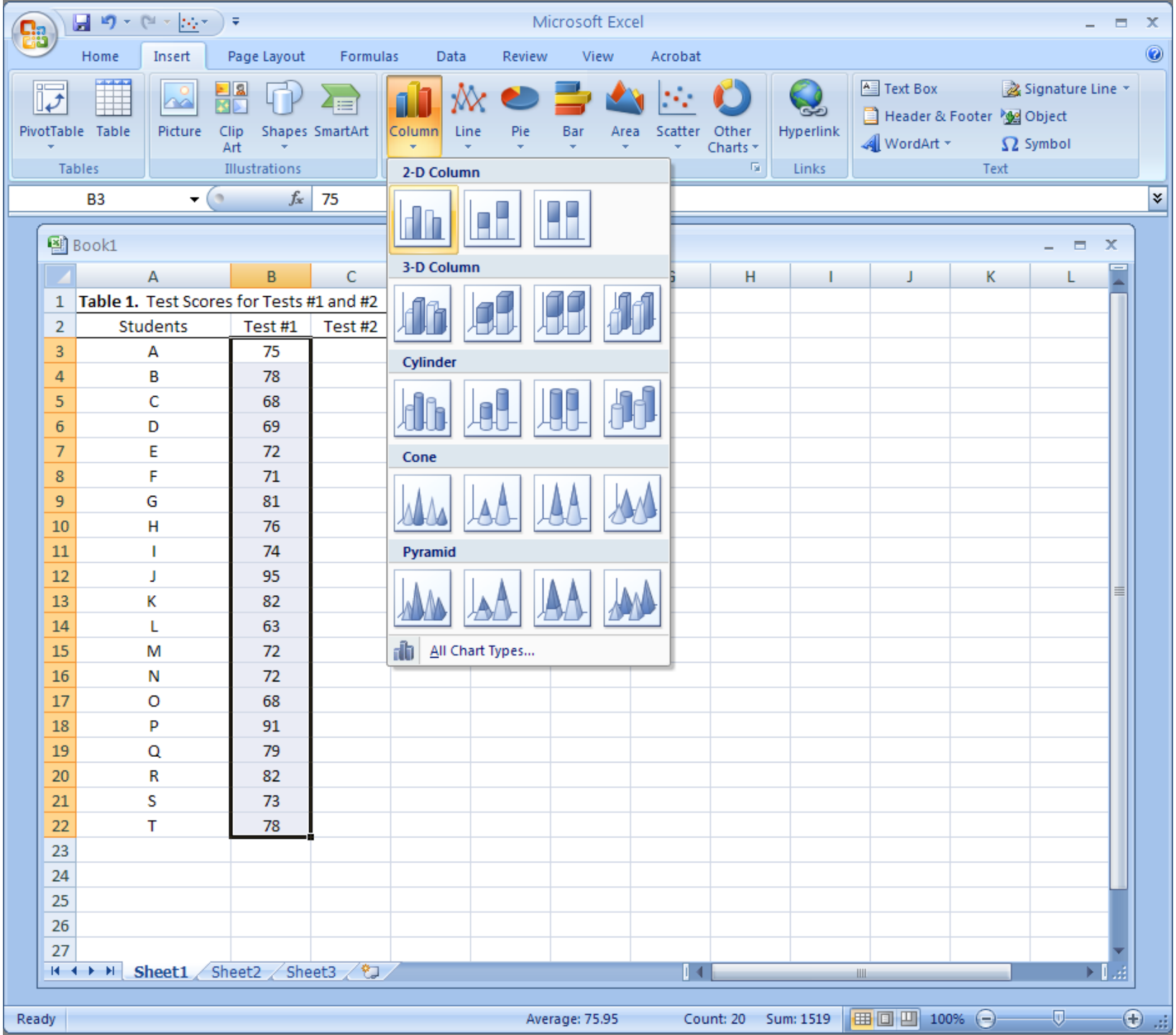
	A	B	C
1	**Table 1.** Test Scores for Tests #1 and #2		
2	Students	Test #1	Test #2
3	A	75	
4	B	78	
5	C	68	
6	D	69	
7	E	72	
8	F	71	
9	G	81	
10	H	76	
11	I	74	
12	J	95	
13	K	82	
14	L	63	
15	M	72	
16	N	72	
17	O	68	
18	P	91	
19	Q	79	
20	R	82	
21	S	73	
22	T	78	



Sheet1 | Sheet2 | Sheet3

Ready

Average: 75.95 Count: 20 Sum: 1519 100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
PivotTable
Table
Picture
Clip Art
Shapes
SmartArt
Column
Line
Pie
Bar
Area
Scatter
Other Charts
Hyperlink
Text Box
Header & Footer
WordArt
Signature Line
Object
Symbol
Tables
Illustrations
Links
Text
B3
75
2-D Column
3-D Column
Cylinder
Cone
Pyramid
All Chart Types...
Book1
Table 1. Test Scores for Tests #1 and #2
Students
Test #1
Test #2
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
Sheet1
Sheet2
Sheet3
Ready
Average: 75.95
Count: 20
Sum: 1519
100%

Microsoft Excel

Chart Tools

Home | Insert | Page Layout | Formulas | Data | Review | View | Acrobat | Design | Layout | Format

Change Chart Type | Save As Template | Type

Switch Row/Column | Select Data | Data

Chart Layouts

Chart Styles

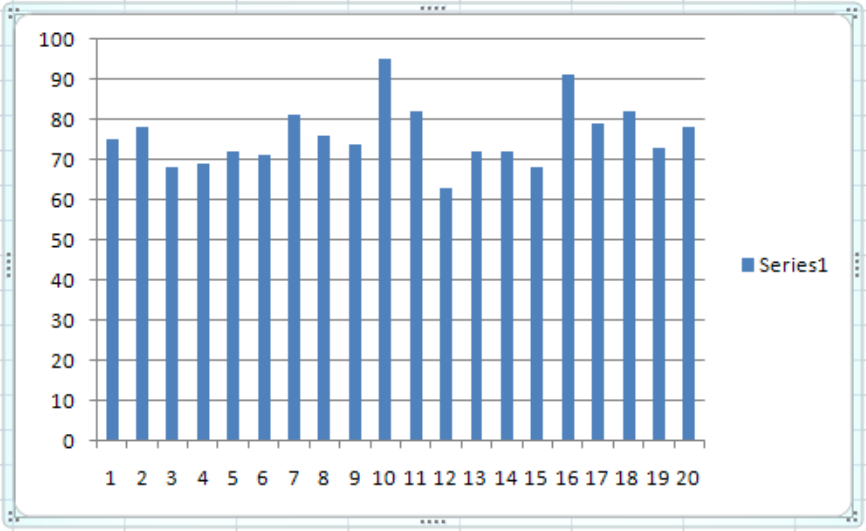
Move Chart | Location

Chart 3

Book1

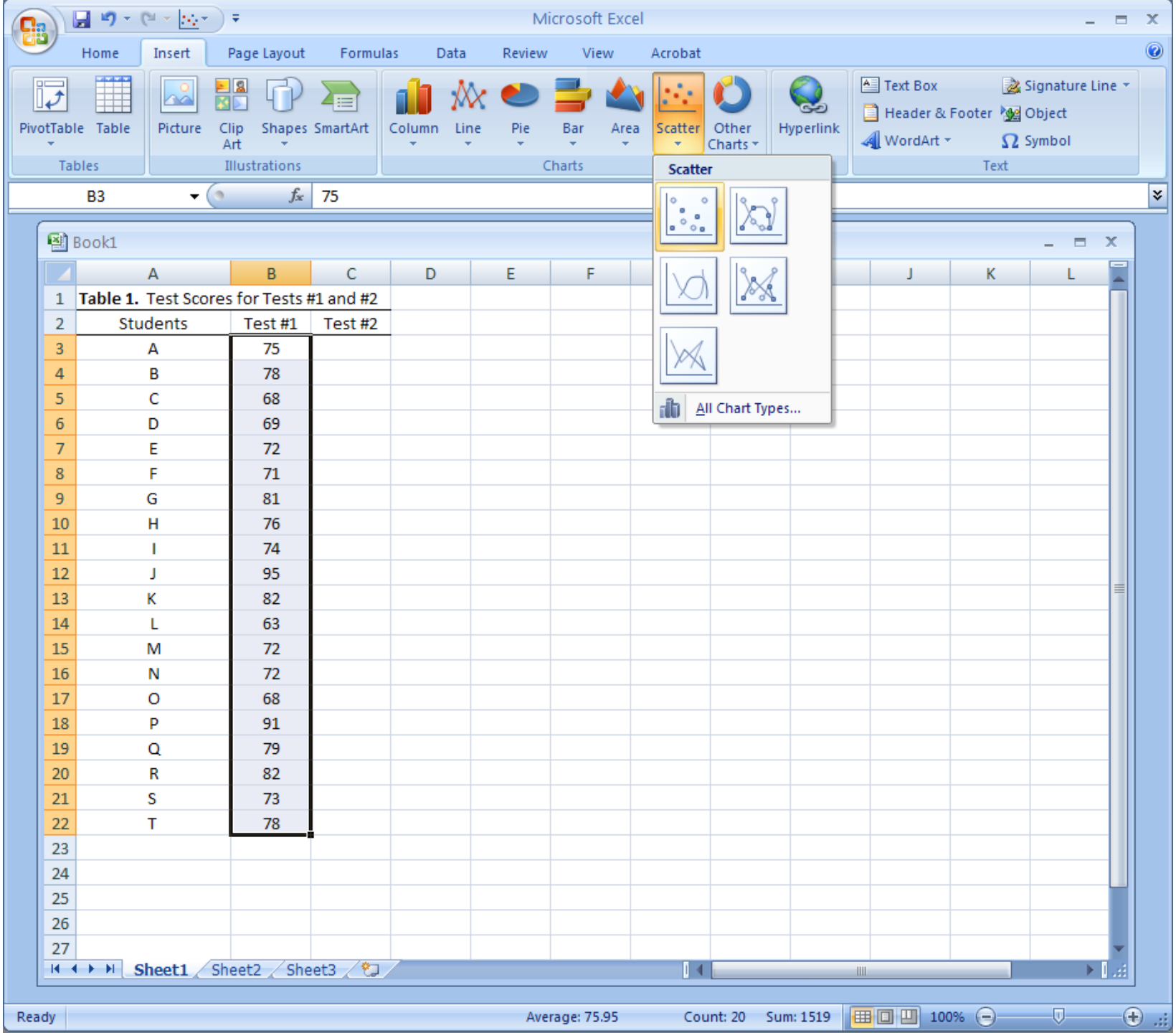
Table 1. Test Scores for Tests #1 and #2

Students	Test #1	Test #2
A	75	
B	78	
C	68	
D	69	
E	72	
F	71	
G	81	
H	76	
I	74	
J	95	
K	82	
L	63	
M	72	
N	72	
O	68	
P	91	
Q	79	
R	82	
S	73	
T	78	



Sheet1 | Sheet2 | Sheet3

Ready | Average: 75.95 | Count: 20 | Sum: 1519 | 100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
PivotTable
Table
Tables
Picture
Clip Art
Shapes
SmartArt
Illustrations
Column
Line
Pie
Bar
Area
Scatter
Other Charts
Charts
Hyperlink
Text Box
Header & Footer
WordArt
Signature Line
Object
Symbol
Text
Scatter
All Chart Types...
B3
75
Book1
Table 1. Test Scores for Tests #1 and #2
Students
Test #1
Test #2
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
Sheet1
Sheet2
Sheet3
Ready
Average: 75.95
Count: 20
Sum: 1519
100%

Microsoft Excel

Chart Tools

Home | Insert | Page Layout | Formulas | Data | Review | View | Acrobat | Design | Layout | Format

Change Chart Type | Save As Template | Type

Switch Row/Column | Select Data | Data

Chart Layouts

Chart Styles

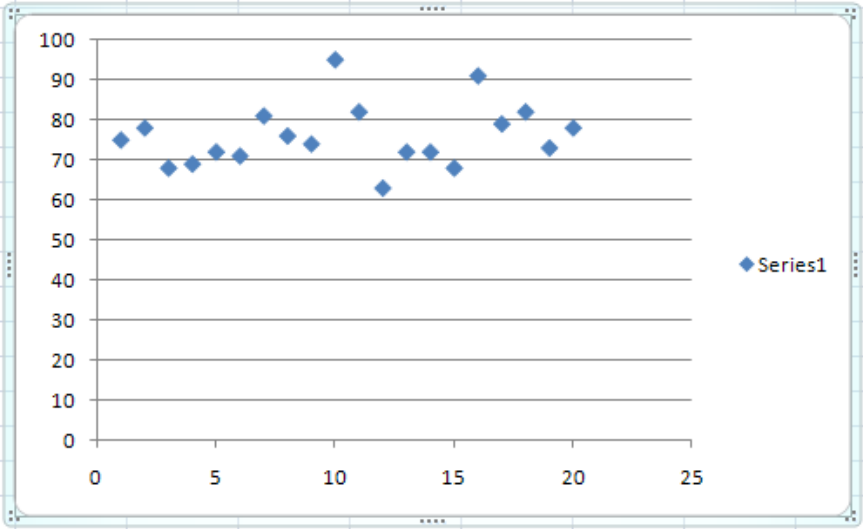
Move Chart | Location

Chart 4

Book1

Table 1. Test Scores for Tests #1 and #2

Students	Test #1	Test #2
A	75	
B	78	
C	68	
D	69	
E	72	
F	71	
G	81	
H	76	
I	74	
J	95	
K	82	
L	63	
M	72	
N	72	
O	68	
P	91	
Q	79	
R	82	
S	73	
T	78	

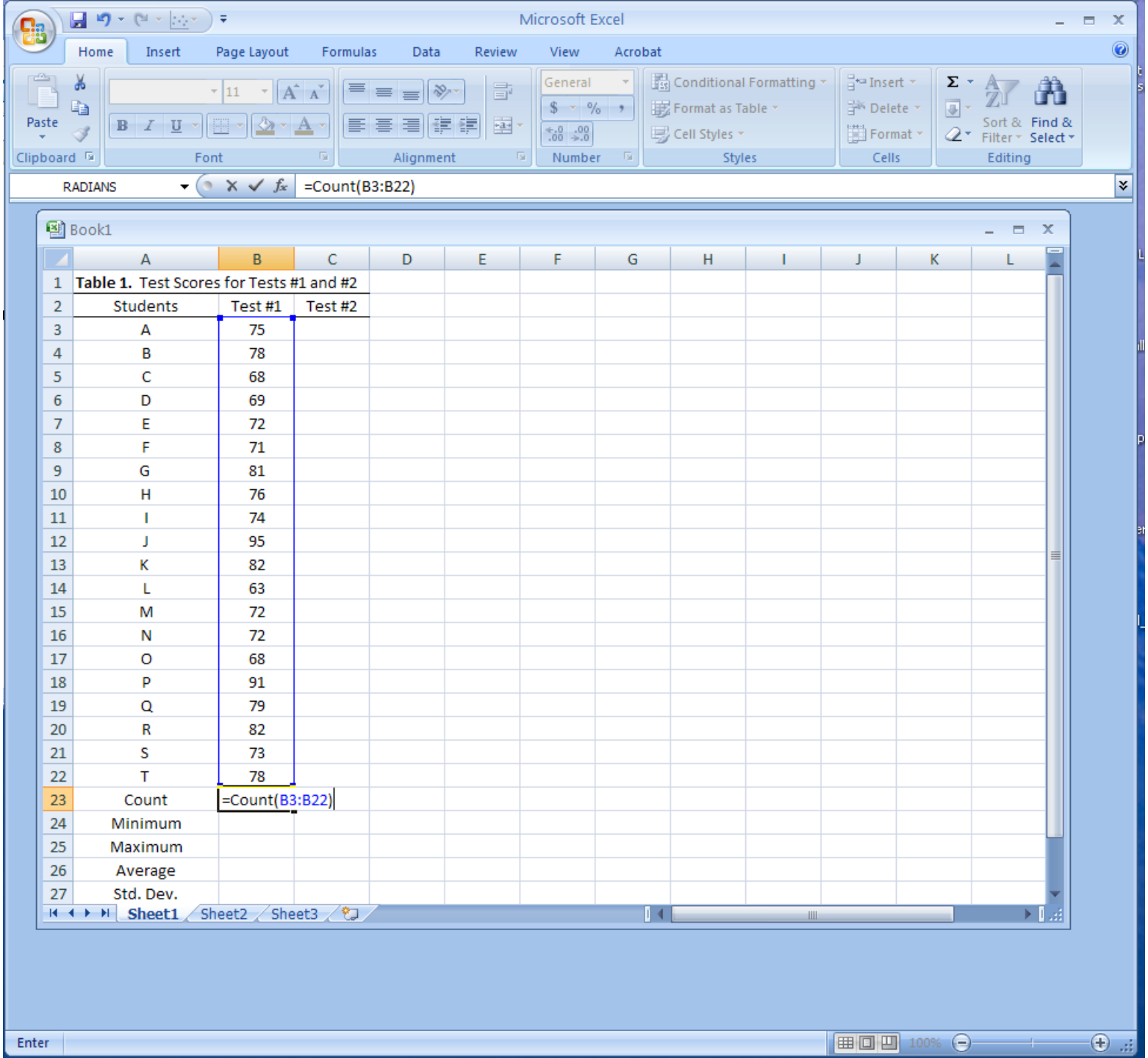


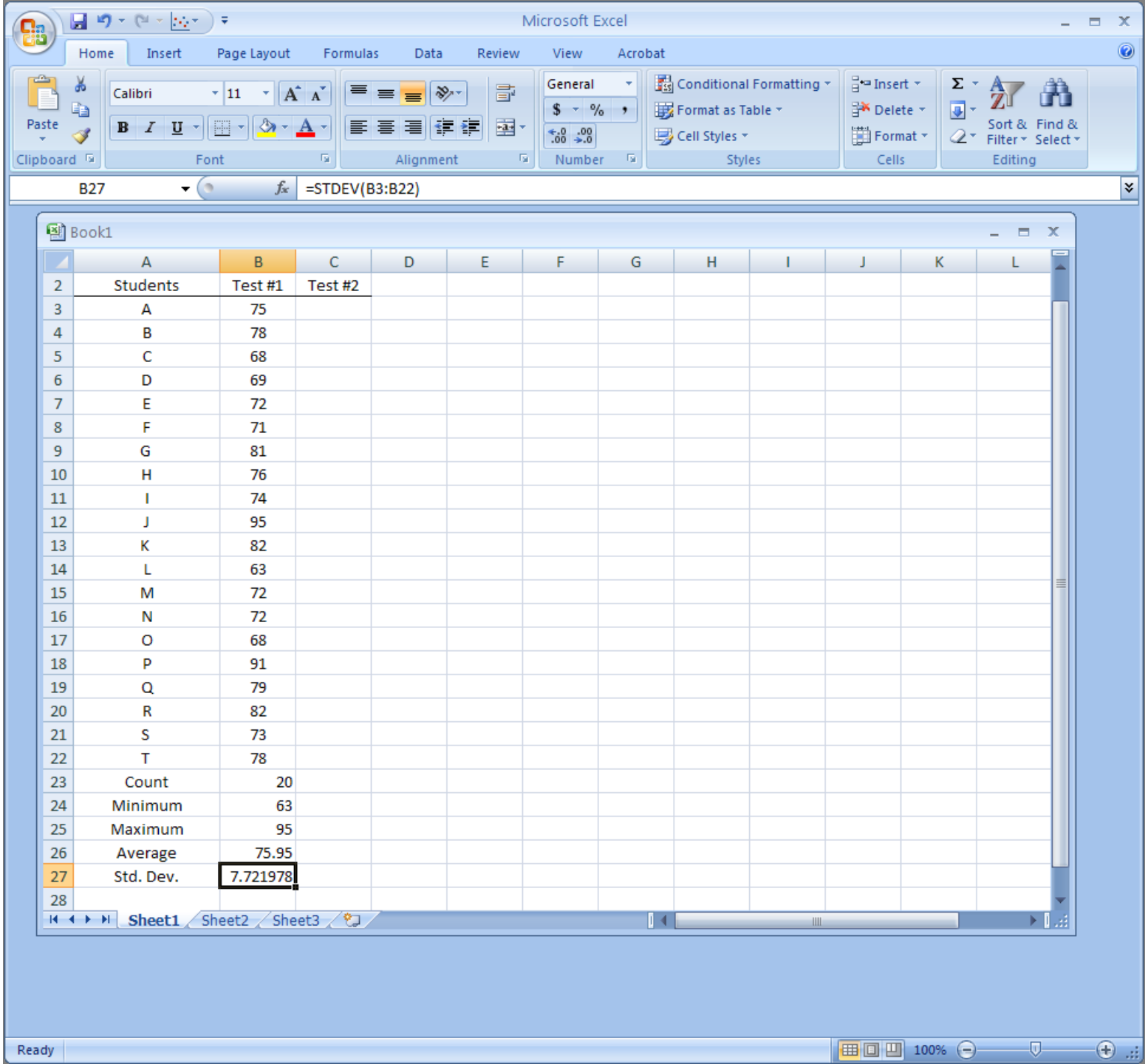
Sheet1 | Sheet2 | Sheet3

Ready

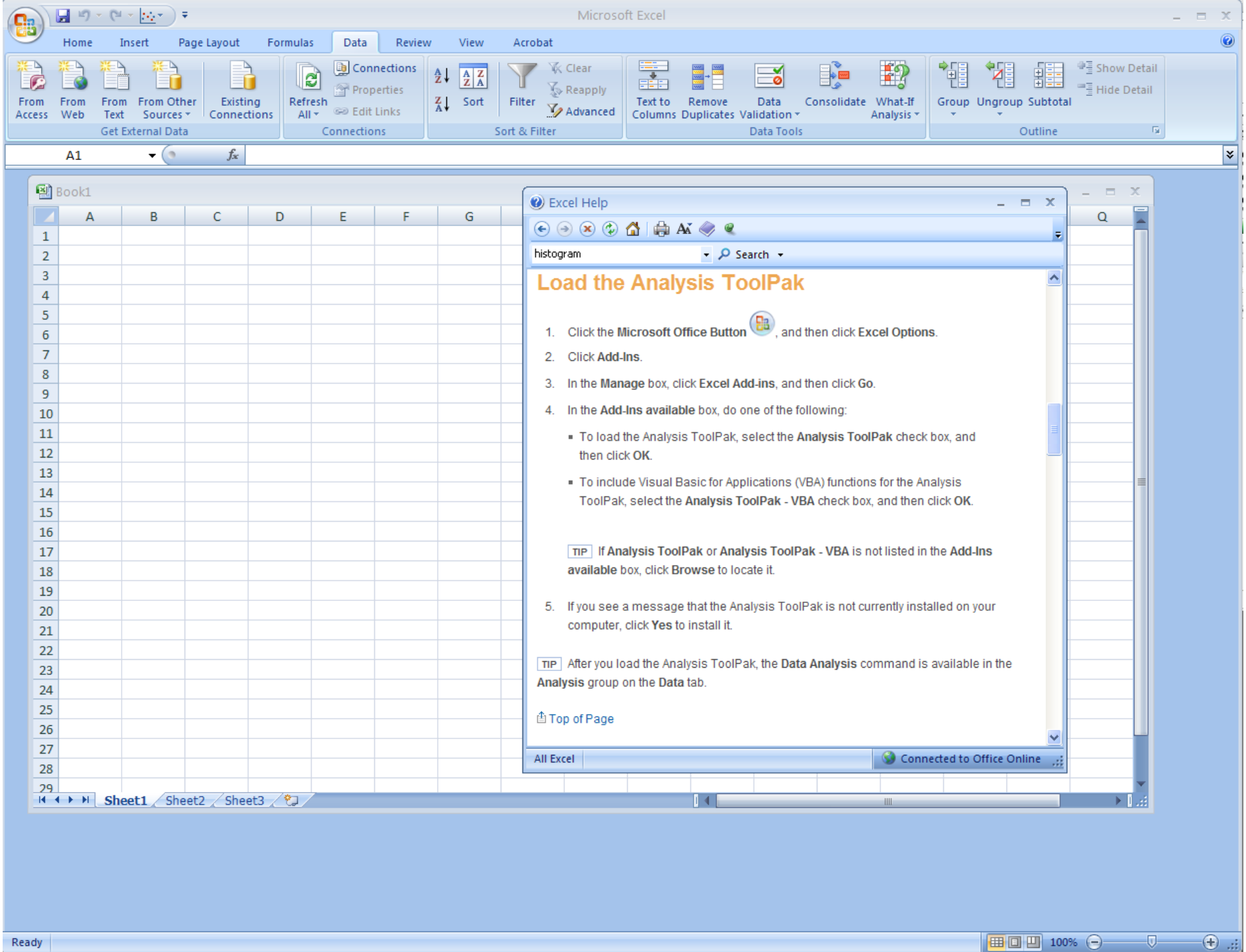
Average: 75.95 Count: 20 Sum: 1519

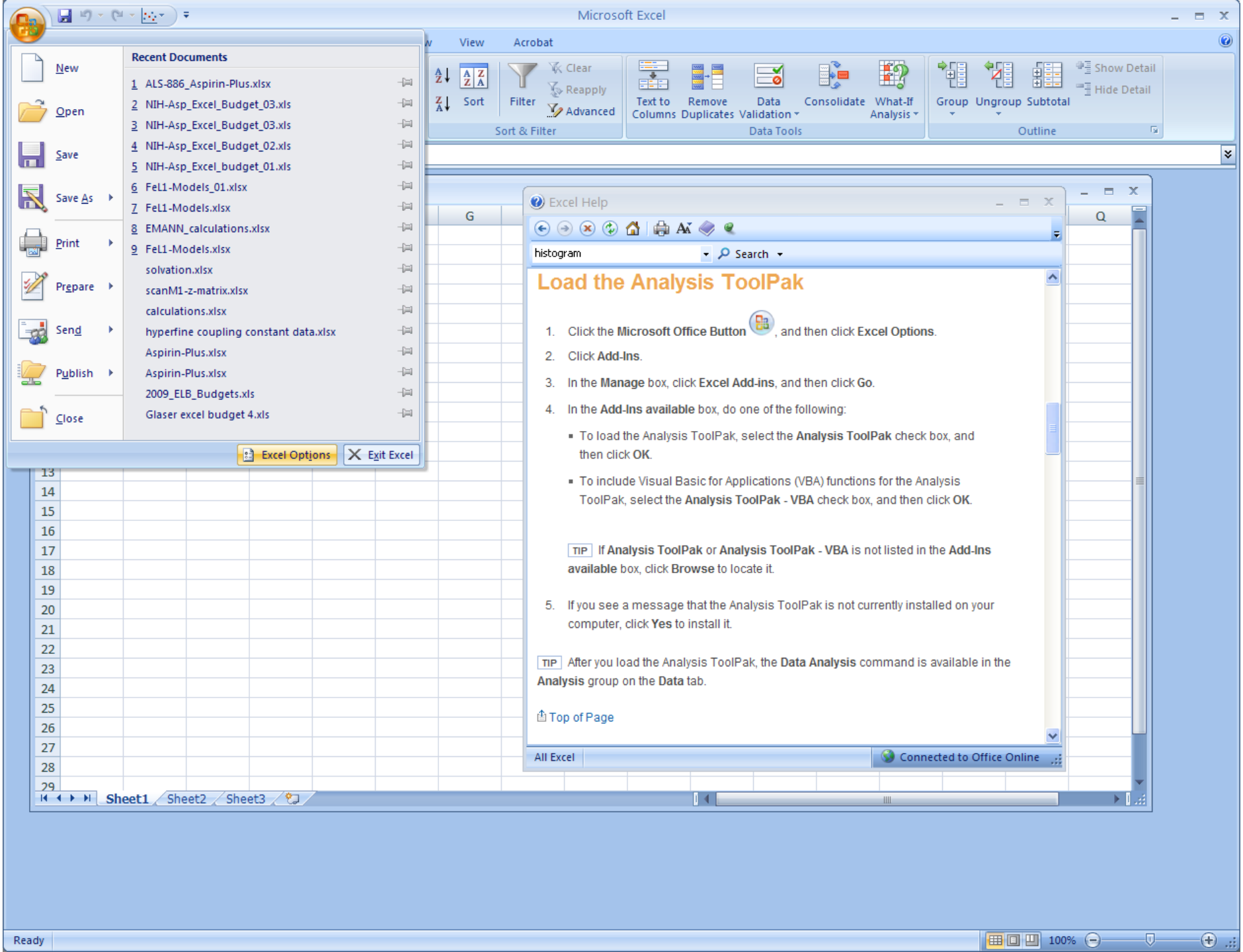
100%

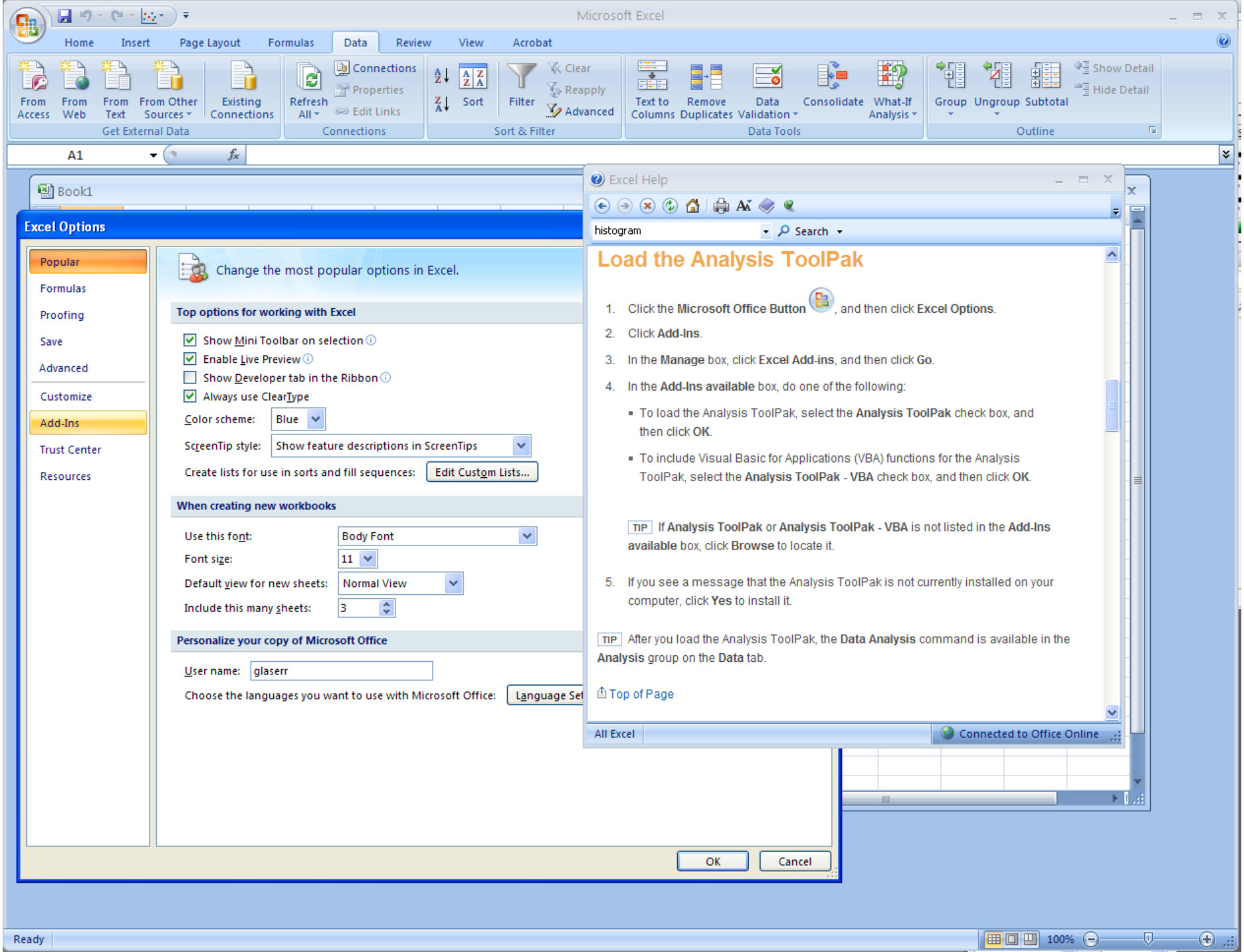

Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
RADIANS
=Count(B3:B22)
Book1
Table 1. Test Scores for Tests #1 and #2
Students
Test #1
Test #2
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
Count
=Count(B3:B22)
Minimum
Maximum
Average
Std. Dev.
Sheet1
Sheet2
Sheet3
Enter

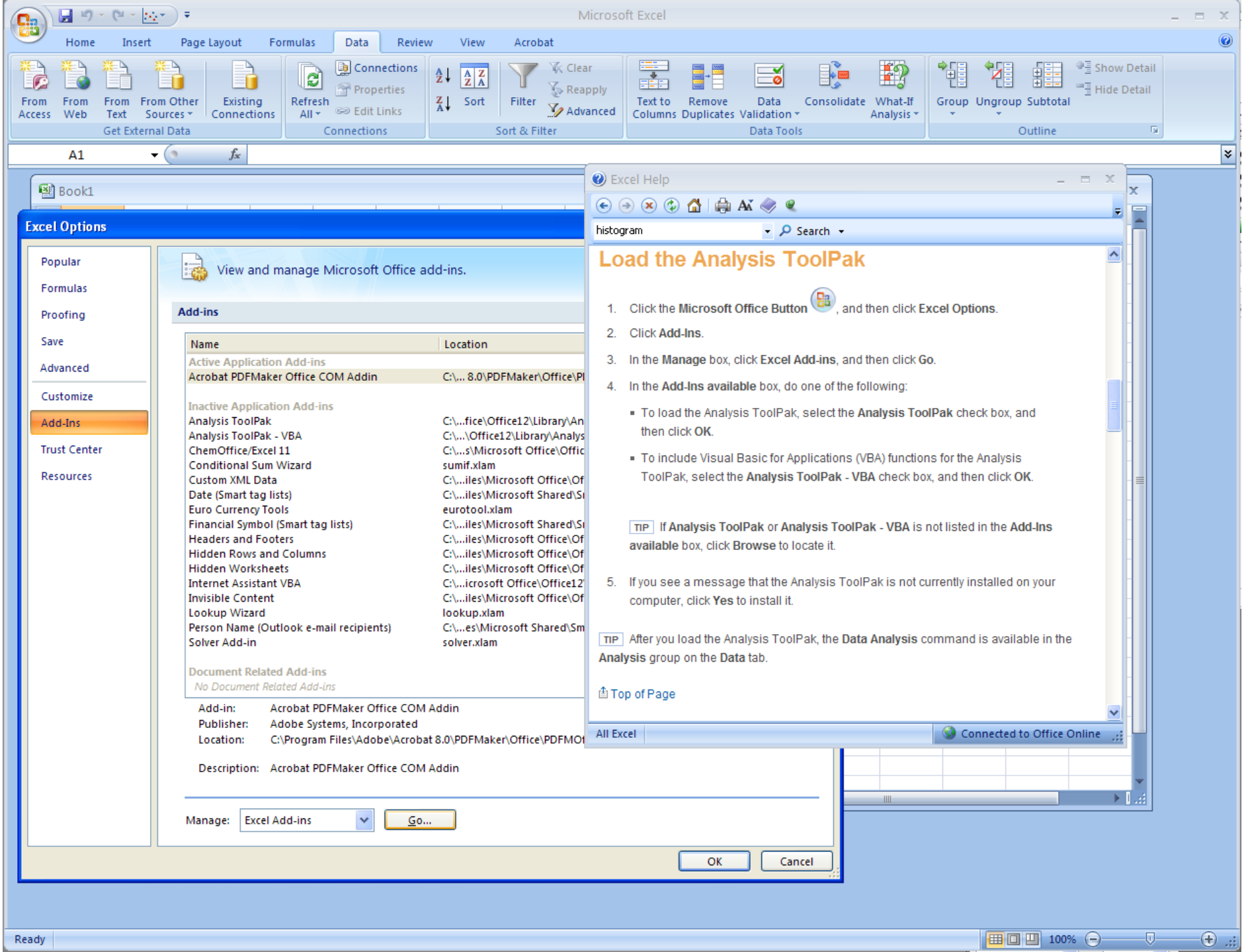


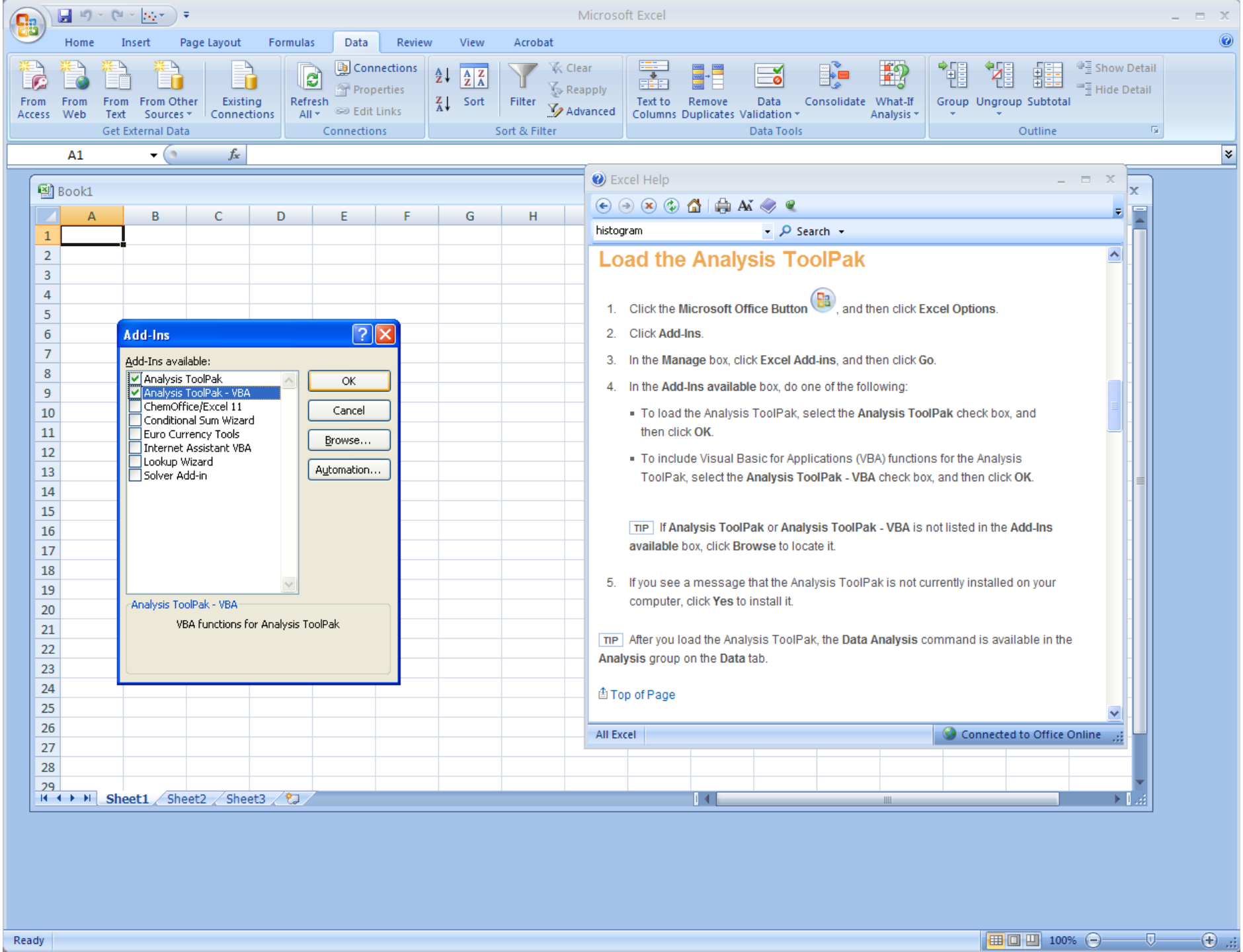
	A	B	C
2	Students	Test #1	Test #2
3	A	75	
4	B	78	
5	C	68	
6	D	69	
7	E	72	
8	F	71	
9	G	81	
10	H	76	
11	I	74	
12	J	95	
13	K	82	
14	L	63	
15	M	72	
16	N	72	
17	O	68	
18	P	91	
19	Q	79	
20	R	82	
21	S	73	
22	T	78	
23	Count	20	
24	Minimum	63	
25	Maximum	95	
26	Average	75.95	
27	Std. Dev.	7.721978	
28			

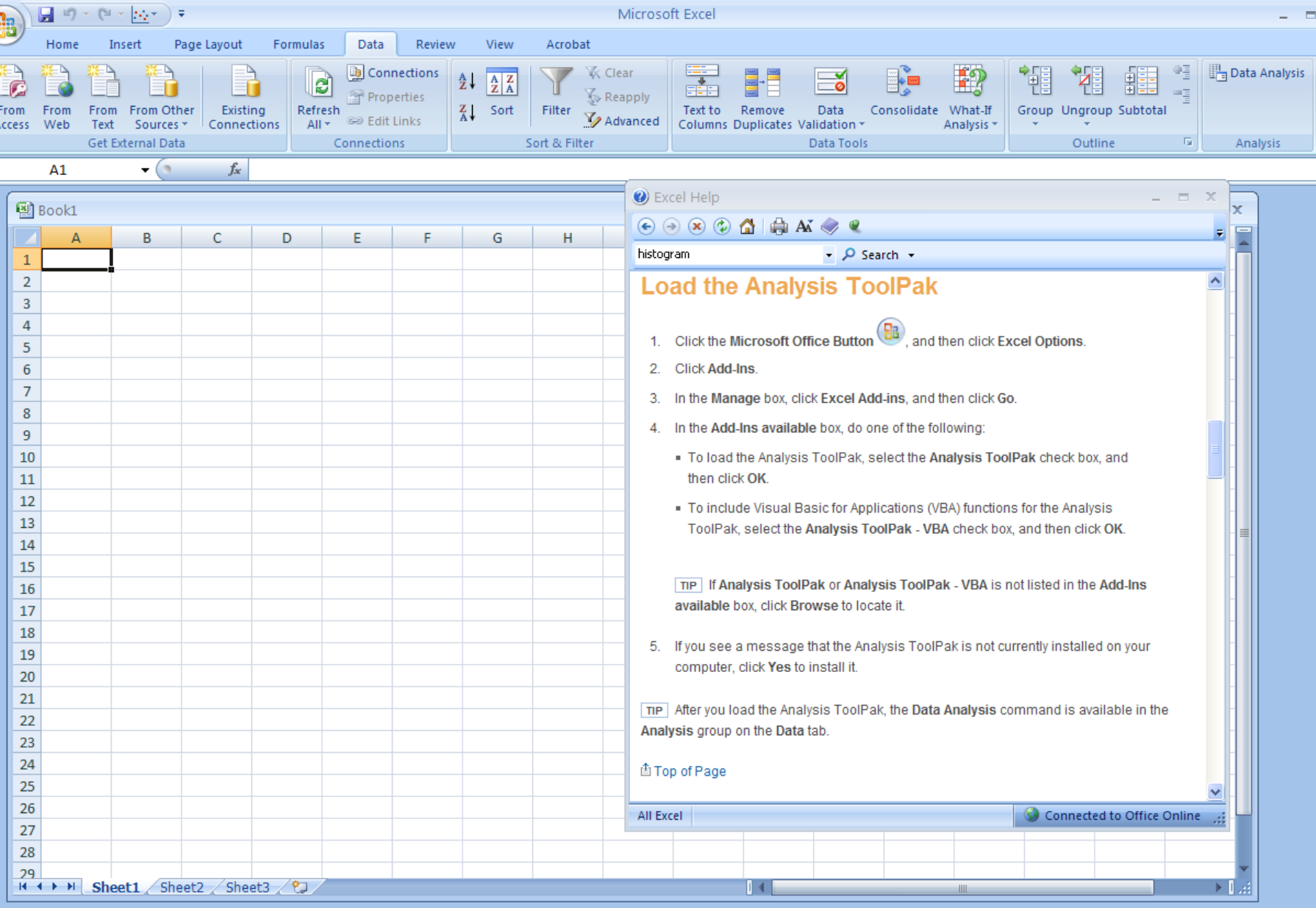

Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Show Detail
Hide Detail
Outline
A1
Book1
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button , and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
▪ To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
▪ To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Sheet1
Sheet2
Sheet3
Ready
100%

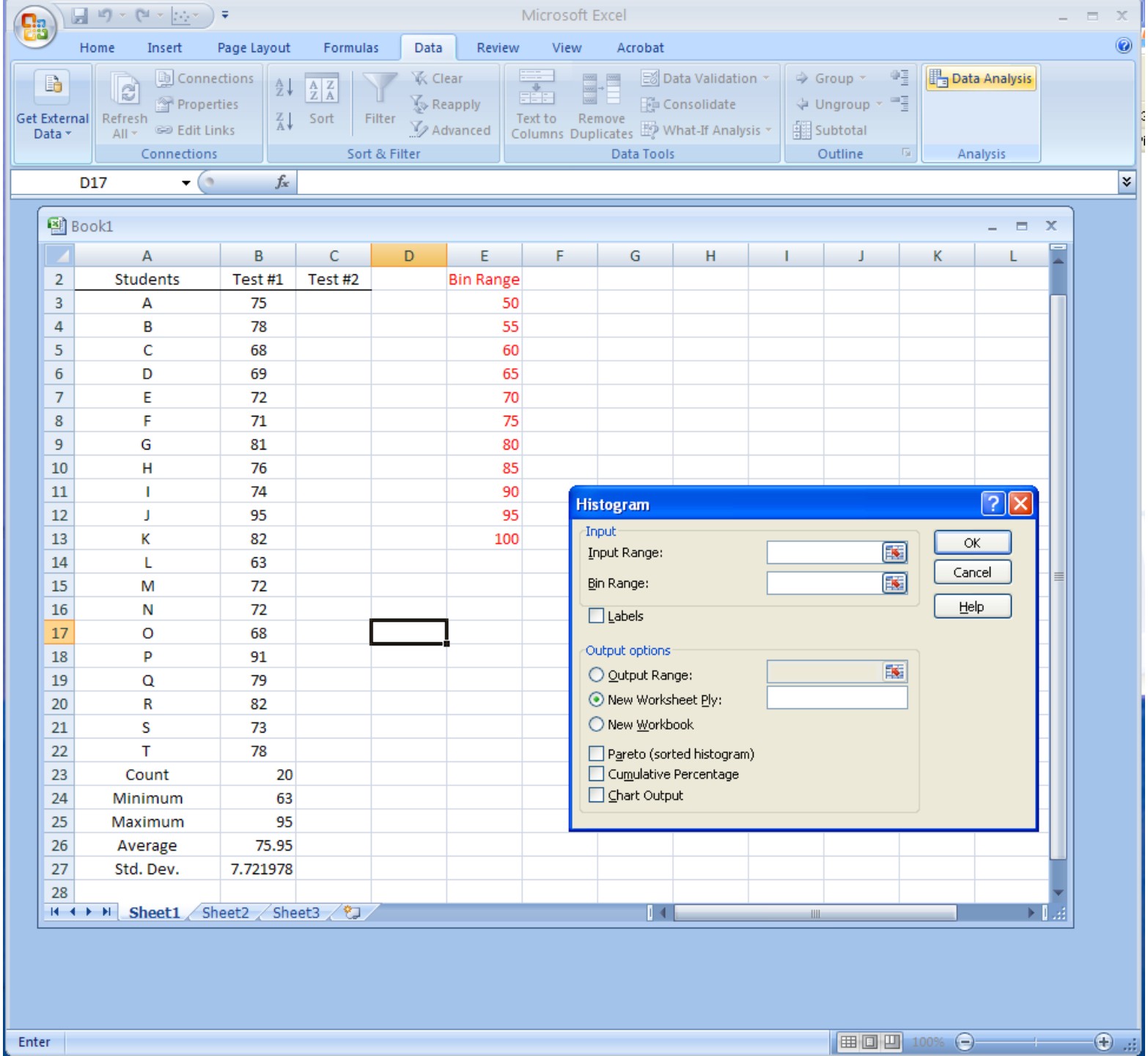

Microsoft Excel
View
Acrobat
New
Open
Save
Save As
Print
Prepare
Send
Publish
Close
Recent Documents
1 ALS-886_Aspirin-Plus.xlsx
2 NIH-Asp_Excel_Budget_03.xls
3 NIH-Asp_Excel_Budget_03.xlsx
4 NIH-Asp_Excel_Budget_02.xlsx
5 NIH-Asp_Excel_budget_01.xlsx
6 FeL1-Models_01.xlsx
7 FeL1-Models.xlsx
8 EMANN_calculations.xlsx
9 FeL1-Models.xlsx
solvation.xlsx
scanM1-z-matrix.xlsx
calculations.xlsx
hyperfine coupling constant data.xlsx
Aspirin-Plus.xlsx
Aspirin-Plus.xlsx
2009_ELB_Budgets.xls
Glaser excel budget 4.xls
Excel Options
Exit Excel
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Show Detail
Hide Detail
Outline
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button, and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
▪ To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
▪ To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Sheet1
Sheet2
Sheet3
Ready
100%

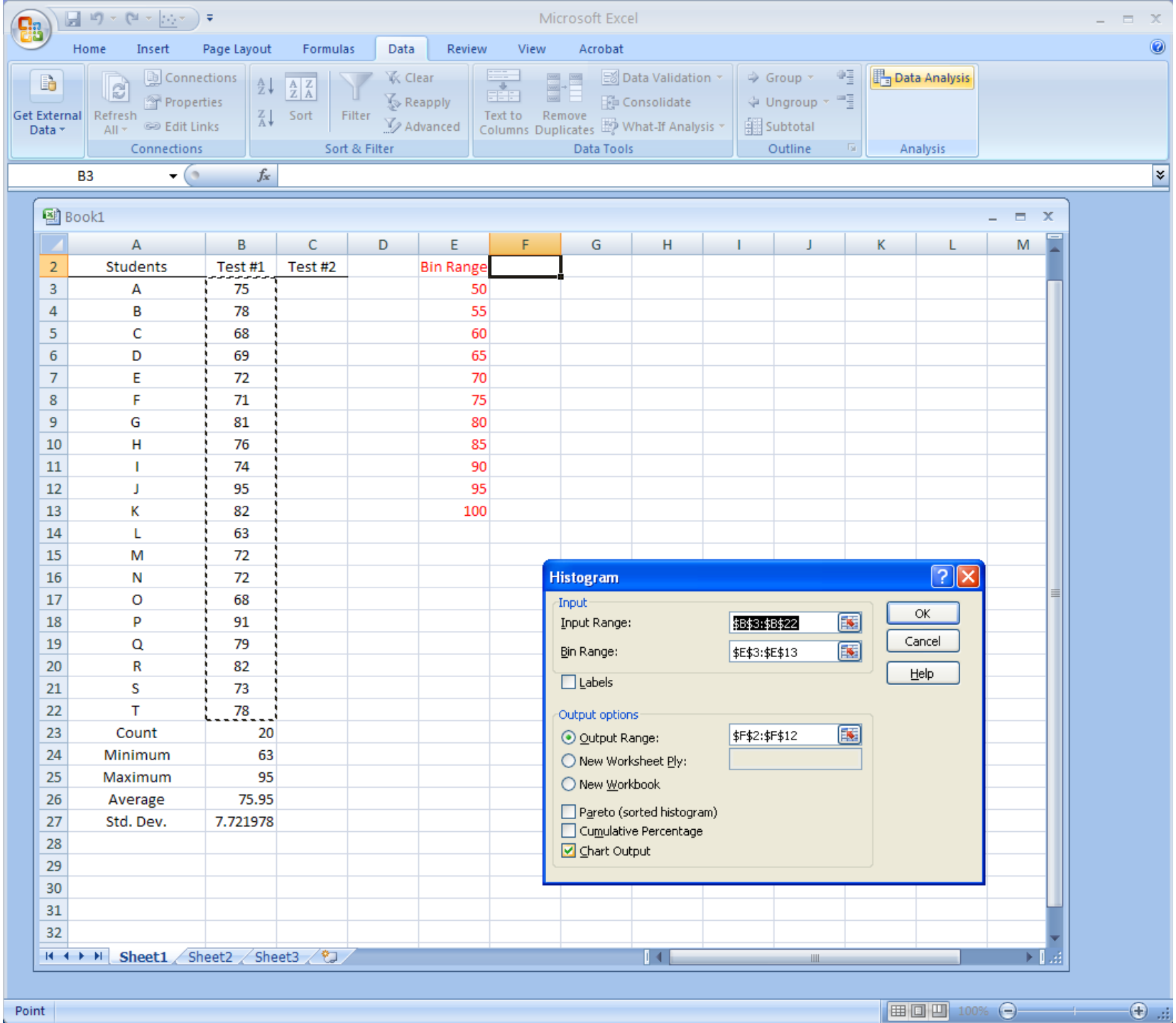

Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Show Detail
Hide Detail
Outline
A1
Book1
Excel Options
Popular
Formulas
Proofing
Save
Advanced
Customize
Add-Ins
Trust Center
Resources
Change the most popular options in Excel.
Top options for working with Excel
Show Mini Toolbar on selection
Enable Live Preview
Show Developer tab in the Ribbon
Always use ClearType
Color scheme:
Blue
ScreenTip style:
Show feature descriptions in ScreenTips
Create lists for use in sorts and fill sequences:
Edit Custom Lists...
When creating new workbooks
Use this font:
Body Font
Font size:
11
Default view for new sheets:
Normal View
Include this many sheets:
3
Personalize your copy of Microsoft Office
User name:
glaserr
Choose the languages you want to use with Microsoft Office:
Language Set
OK
Cancel
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button , and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
- To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
- To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Ready
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Show Detail
Hide Detail
Outline
A1
Book1
Excel Options
Popular
Formulas
Proofing
Save
Advanced
Customize
Add-Ins
Trust Center
Resources
View and manage Microsoft Office add-ins.
Add-ins
Name
Location
Active Application Add-ins
Acrobat PDFMaker Office COM Addin
C:\... 8.0\PDFMaker\Office\PI
Inactive Application Add-ins
Analysis ToolPak
C:\...fice\Office12\Library\An
Analysis ToolPak - VBA
C:\...\Office12\Library\Analys
ChemOffice/Excel 11
C:\...s\Microsoft Office\Offic
Conditional Sum Wizard
sumif.xlam
Custom XML Data
C:\...iles\Microsoft Office\Of
Date (Smart tag lists)
C:\...iles\Microsoft Shared\S
Euro Currency Tools
eurotool.xlam
Financial Symbol (Smart tag lists)
C:\...iles\Microsoft Shared\S
Headers and Footers
C:\...iles\Microsoft Office\Of
Hidden Rows and Columns
C:\...iles\Microsoft Office\Of
Hidden Worksheets
C:\...iles\Microsoft Office\Of
Internet Assistant VBA
C:\...icrosoft Office\Office12
Invisible Content
C:\...iles\Microsoft Office\Of
Lookup Wizard
lookup.xlam
Person Name (Outlook e-mail recipients)
C:\...es\Microsoft Shared\Sm
Solver Add-in
solver.xlam
Document Related Add-ins
No Document Related Add-ins
Add-in: Acrobat PDFMaker Office COM Addin
Publisher: Adobe Systems, Incorporated
Location: C:\Program Files\Adobe\Acrobat 8.0\PDFMaker\Office\PDFMO
Description: Acrobat PDFMaker Office COM Addin
Manage: Excel Add-ins
Go...
OK
Cancel
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button, and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
▪ To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
▪ To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Ready
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Show Detail
Hide Detail
Outline
A1
Book1
Add-Ins
Add-Ins available:
Analysis ToolPak
Analysis ToolPak - VBA
ChemOffice/Excel 11
Conditional Sum Wizard
Euro Currency Tools
Internet Assistant VBA
Lookup Wizard
Solver Add-in
OK
Cancel
Browse...
Automation...
Analysis ToolPak - VBA
VBA functions for Analysis ToolPak
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button , and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
▪ To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
▪ To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Sheet1
Sheet2
Sheet3
Ready
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
From Access
From Web
From Text
From Other Sources
Existing Connections
Get External Data
Refresh All
Connections
Properties
Edit Links
Connections
Sort
Filter
Clear
Reapply
Advanced
Sort & Filter
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Data Tools
Group
Ungroup
Subtotal
Outline
Data Analysis
Analysis
A1
Book1
Sheet1
Sheet2
Sheet3
Excel Help
histogram
Search
Load the Analysis ToolPak
1. Click the Microsoft Office Button , and then click Excel Options.
2. Click Add-Ins.
3. In the Manage box, click Excel Add-ins, and then click Go.
4. In the Add-Ins available box, do one of the following:
▪ To load the Analysis ToolPak, select the Analysis ToolPak check box, and then click OK.
▪ To include Visual Basic for Applications (VBA) functions for the Analysis ToolPak, select the Analysis ToolPak - VBA check box, and then click OK.
TIP If Analysis ToolPak or Analysis ToolPak - VBA is not listed in the Add-Ins available box, click Browse to locate it.
5. If you see a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.
TIP After you load the Analysis ToolPak, the Data Analysis command is available in the Analysis group on the Data tab.
Top of Page
All Excel
Connected to Office Online
Ready
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
Get External Data
Refresh All
Connections
Properties
Edit Links
Sort
Filter
Clear
Reapply
Advanced
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Group
Ungroup
Subtotal
Data Analysis
Connections
Sort & Filter
Data Tools
Outline
Analysis
D17
Book1
Students
Test #1
Test #2
Bin Range
A 75 50
B 78 55
C 68 60
D 69 65
E 72 70
F 71 75
G 81 80
H 76 85
I 74 90
J 95 95
K 82 100
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
Count 20
Minimum 63
Maximum 95
Average 75.95
Std. Dev. 7.721978
Sheet1
Sheet2
Sheet3
Histogram
Input
Input Range:
Bin Range:
Labels
OK
Cancel
Help
Output options
Output Range:
New Worksheet Ply:
New Workbook
Pareto (sorted histogram)
Cumulative Percentage
Chart Output
Enter
100%


Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
Acrobat
Get External Data
Refresh All
Connections
Properties
Edit Links
Sort
Filter
Clear
Reapply
Advanced
Text to Columns
Remove Duplicates
Data Validation
Consolidate
What-If Analysis
Group
Ungroup
Subtotal
Data Analysis
Connections
Sort & Filter
Data Tools
Outline
Analysis
B3
Book1
Students
Test #1
Test #2
Bin Range
A 75
B 78
C 68
D 69
E 72
F 71
G 81
H 76
I 74
J 95
K 82
L 63
M 72
N 72
O 68
P 91
Q 79
R 82
S 73
T 78
50
55
60
65
70
75
80
85
90
95
100
Count 20
Minimum 63
Maximum 95
Average 75.95
Std. Dev. 7.721978
Histogram
Input
Input Range: $B$3:$B$22
Bin Range: $E$3:$E$13
Labels
OK
Cancel
Help
Output options
Output Range: $F$2:$F$12
New Worksheet Ply:
New Workbook
Pareto (sorted histogram)
Cumulative Percentage
Chart Output
Sheet1
Sheet2
Sheet3
Point

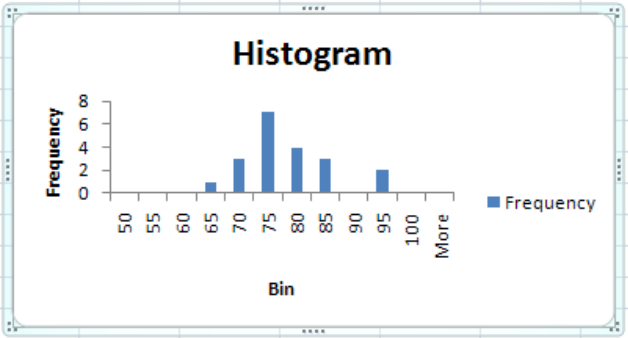
Microsoft Excel — Chart Tools

Home | Insert | Page Layout | Formulas | Data | Review | View | Acrobat | Design | Layout | Format

Chart 7

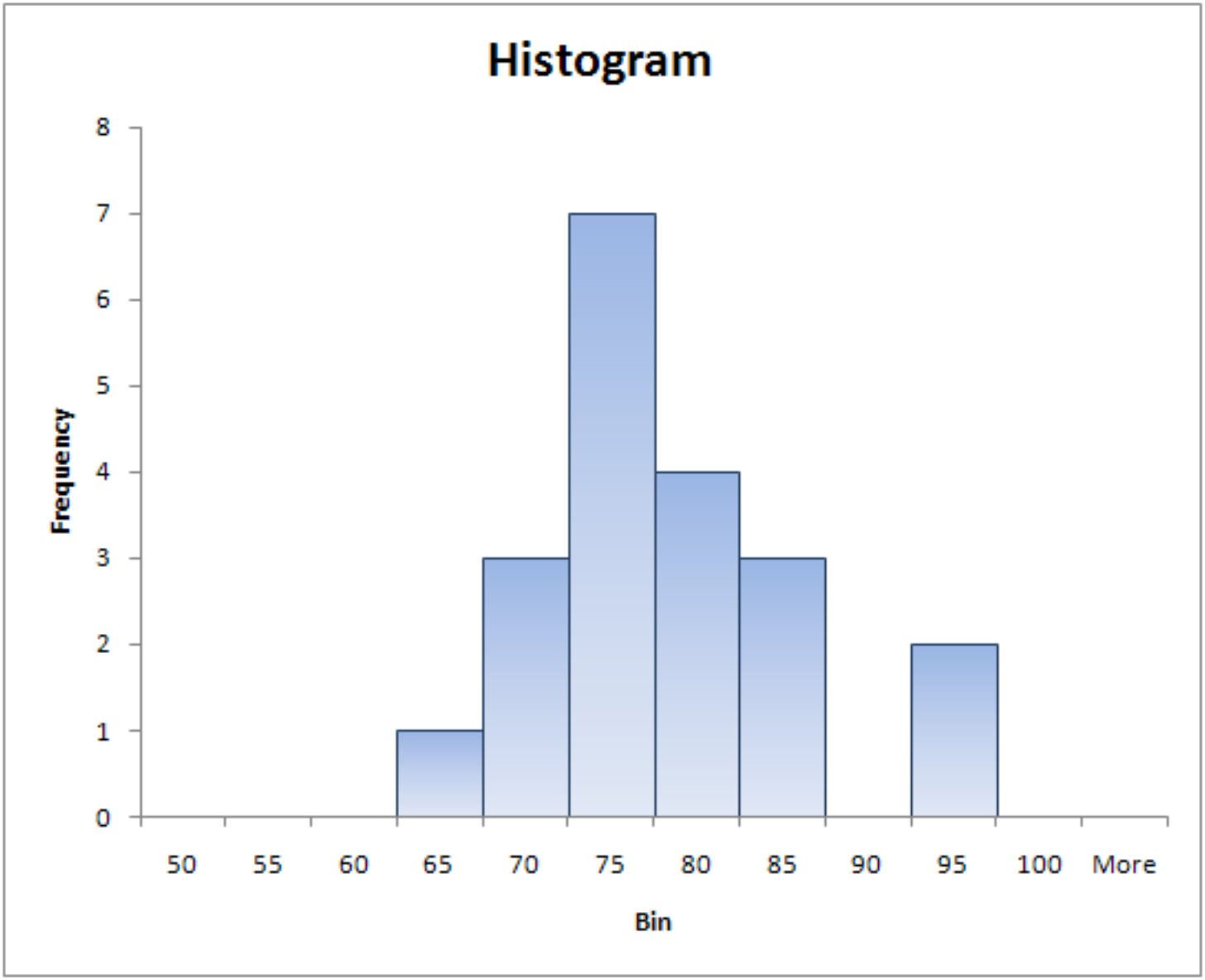
Book1

	A	B	C	D	E	F	G	H	I	J	K	L	M
2	Students	Test #1	Test #2		Bin Range	*Bin*	*Frequency*						
3	A	75			50	50	0						
4	B	78			55	55	0						
5	C	68			60	60	0						
6	D	69			65	65	1						
7	E	72			70	70	3						
8	F	71			75	75	7						
9	G	81			80	80	4						
10	H	76			85	85	3						
11	I	74			90	90	0						
12	J	95			95	95	2						
13	K	82			100	100	0						
14	L	63				More	0						
15	M	72											
16	N	72											
17	O	68											
18	P	91											
19	Q	79											
20	R	82											
21	S	73											
22	T	78											
23	Count	20											
24	Minimum	63											
25	Maximum	95											
26	Average	75.95											
27	Std. Dev.	7.721978											
28													
29													
30													
31													
32													



Sheet1 | Sheet2 | Sheet3

Ready — Average: 36.73913043 Count: 26 Sum: 845 100%


Histogram
Frequency
0
1
2
3
4
5
6
7
8
50
55
60
65
70
75
80
85
90
95
100
More
Bin