

Winstats Instruction Sheet

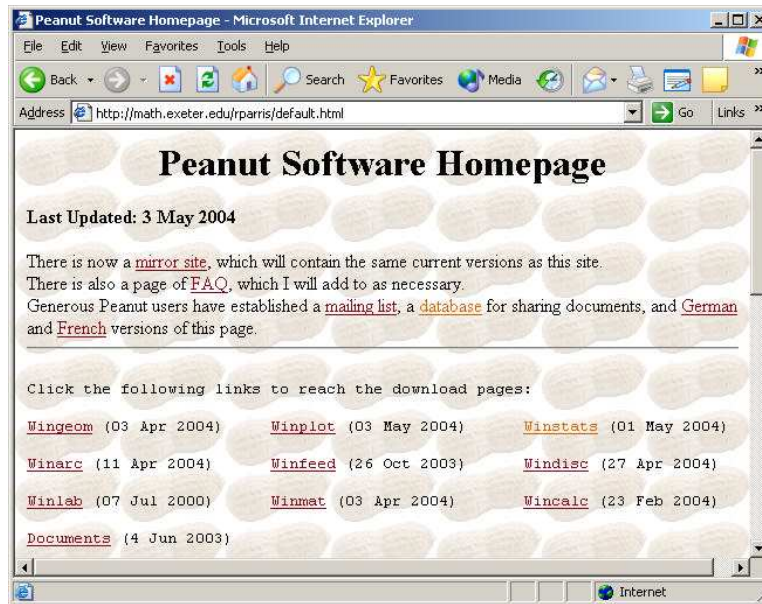
I. Installing Winstats on your Computer

A. Go to the Peanut Software homepage. Either go directly to

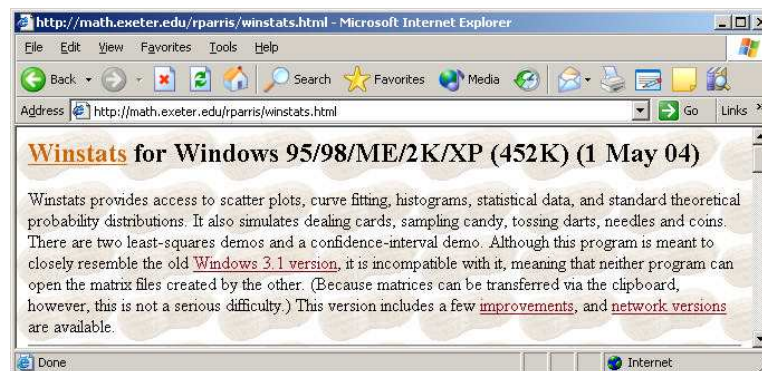
<http://math.exeter.edu/rparris/default.html>

or Google “Peanut Software.”

B. Click Winstats.



C. Click Winstats on the next page.



D. Save the file.

E. Locate the file you just saved.

F. Unzip the file `ws32z.exe`. By default, the unzipped file was placed in the folder `C:\Peanut` on my computer. The unzipped file will be associated with the icon



G. Delete `ws32z.exe`. You do not need it.

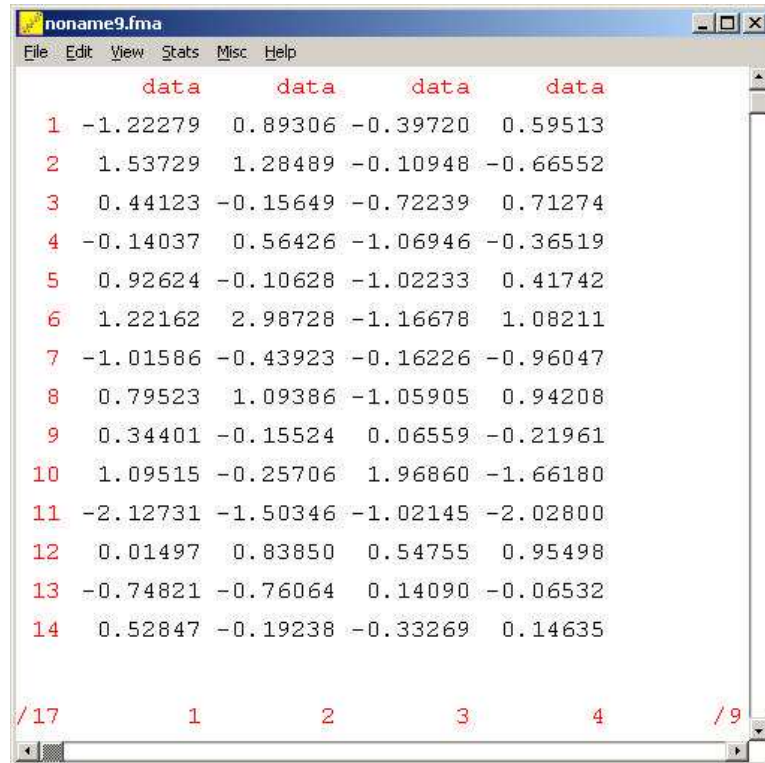
II. Getting Started with Winstats

A. Opening Winstats

1. Double click on the Winstats icon.



2. Select “Window → 1-var data. . .” This will cause Winstats to create some random data entries. The amount of data created is also randomized. If you cannot see all of the data, this will be indicated at the bottom of the screen. In the example below, there are 17 rows and 9 columns of data. You can use the scroll bars to view the rest of the data.



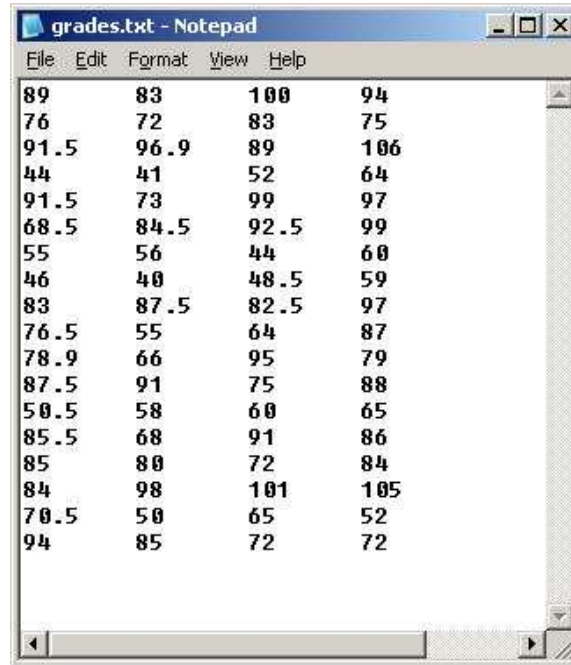
B. Entering Data

Typically, students will need to input their own data into the program. Suppose we wish to analyze the grades shown below.

NAME	Exam 1	Exam 2	Exam3	Exam 4
Andy	89	83	100	94
Barney	76	72	83	75
Bee	91.5	96.9	89	106
Floyd	44	41	52	64
Opie	91.5	73	99	97
Helen	68.5	84.5	92.5	99
Thelma Lou	55	56	44	60
Ernest T.	46	40	48.5	59
Clara	83	87.5	82.5	97
Goober	76.5	55	64	87
Gomer	78.9	66	95	79
Otis	87.5	91	75	88
Jud	50.5	58	60	65
Howard	85.5	68	91	86
Charlene	85	80	72	84
Chelsea	84	98	101	105
Briscoe	70.5	50	65	52
Ellie	94	85	72	72

There are at least two ways to do this.

1. Enter the data by hand — I think this is the most tedious way to do this, so I don't suggest it.
 - a. Change the dimensions of the data. Go to **Edit** → **Dimensions...** Enter 18 as the number of rows and 4 as the number of columns since there are 18 students and 4 test scores for each student. As of May 2004, you cannot enter text data into Winstats, therefore you should not include a column for the names.
 - b. Change each piece of data, by clicking on the appropriate data item, changing the data accordingly, and pressing **Enter**.
2. Import the data from a text file.
 - a. Save the data in a text file. (You can use Notepad, WordPad, or a similar text editor. I have had more luck with Notepad than with WordPad because Notepad is more basic than Word Pad.) You should not include a column for the names. As of May 2004, you cannot enter text data into Winstats. If you try to include text in this file, it is likely that Winstats will try to treat some of it as column headers and the rest will be ignored. I think it is best to leave all text out of the file. I tried to include the column labels "Exam 1," "Exam 2," "Exam 3," and "Exam 4," in the text file but Winstats interpreted 1, 2, 3, and 4 as data items. Consequently I think it is best to include only data in your text file. My text file is shown below. I will include this file with the documentation.

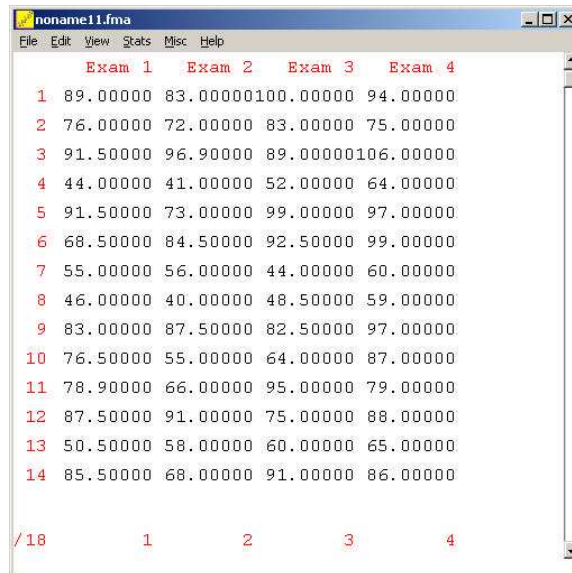


b. Go to File → Text in. . . Double click on the text file containing your data.

C. Changing Column Headings

1. Make sure you can see row 1 of the data.
2. Click on the appropriate column label.
3. Enter the new label,
4. Press Enter.

After you do this, your Winstats window should look like the one shown below.



D. Changing the Data Format

At the moment, all of my data is displayed with five decimal places, but I only need to see one decimal place with this data. To change this:

1. Go to **Edit** → **Format**.
2. Change the number of decimal places from 5 to 1.
3. Click **ok**.

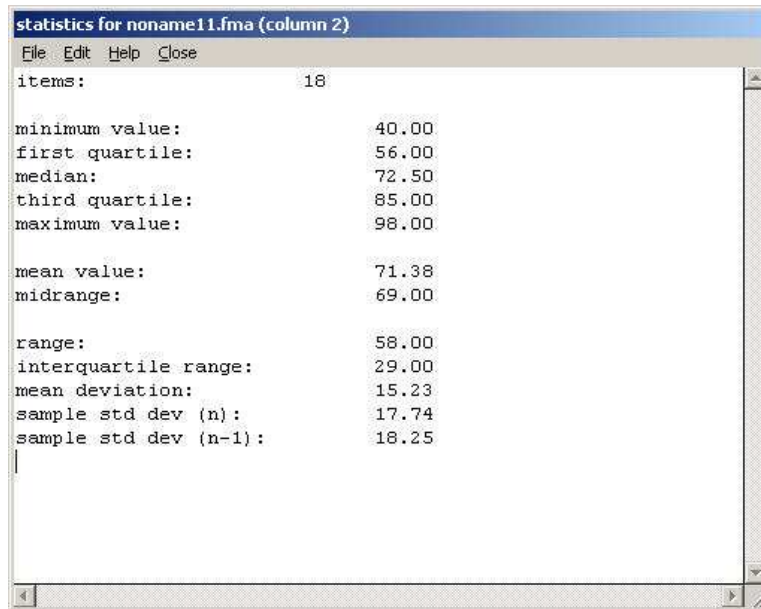
III. Using Winstats to Calculate One-variable Statistics

- A. To see the the one-variable statistics for all of the data go to **Stats** → **Overall**.
. . You should see the following screen.

Statistic	Value
items:	72
minimum value:	40.00
first quartile:	64.00
median:	79.50
third quartile:	90.00
maximum value:	106.00
mean value:	76.34
midrange:	73.00
range:	66.00
interquartile range:	26.00
mean deviation:	14.73
sample std dev (n):	17.33
sample std dev (n-1):	17.45

Notice that these statistics include all 72 test scores. It is unlikely that these are the statistics you desire since each column represents a different exam.

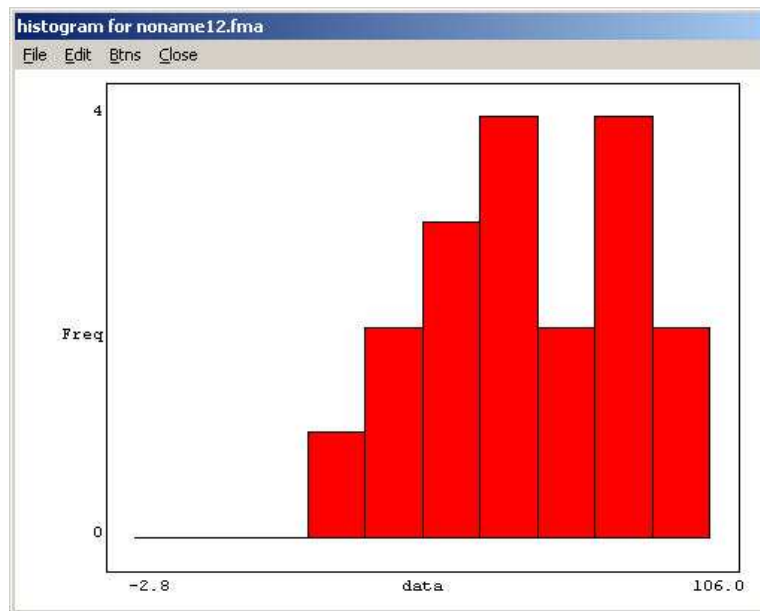
- B. To see the one-variable statistics for a single column of the data go to **View** → **Only column 1**. . . Suppose we want to examine the scores for Exam 2, then we will need to enter 2 and click **ok**. Notice that the scores in column 2 are now red. These are the scores under consideration. Once again, go to **Stats** → **Overall**. . . You should now be viewing the statistics for Exam 2.



IV. Using Winstats to Draw Graphs

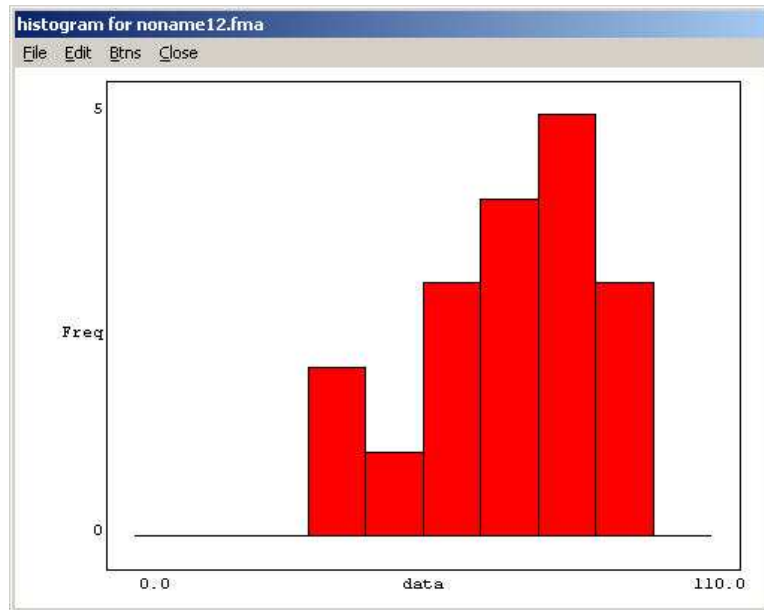
A. Histograms

1. Go to **Stats** → **Histogram** → **Histogram**. . . You should see a histogram that is similar to the one shown below. It may differ slightly, depending on the interval used.

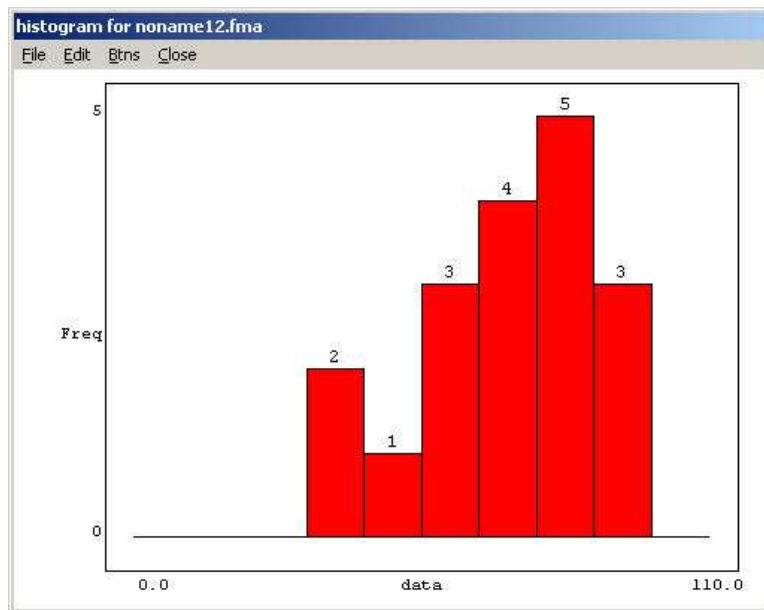


2. Before drawing the histogram, Winstats will determine an interval that contains all of the data. This interval may or may not be appropriate for the data. For example, the interval in the histogram above contains negative scores. Clearly this is not appropriate. Let's change the interval so that it

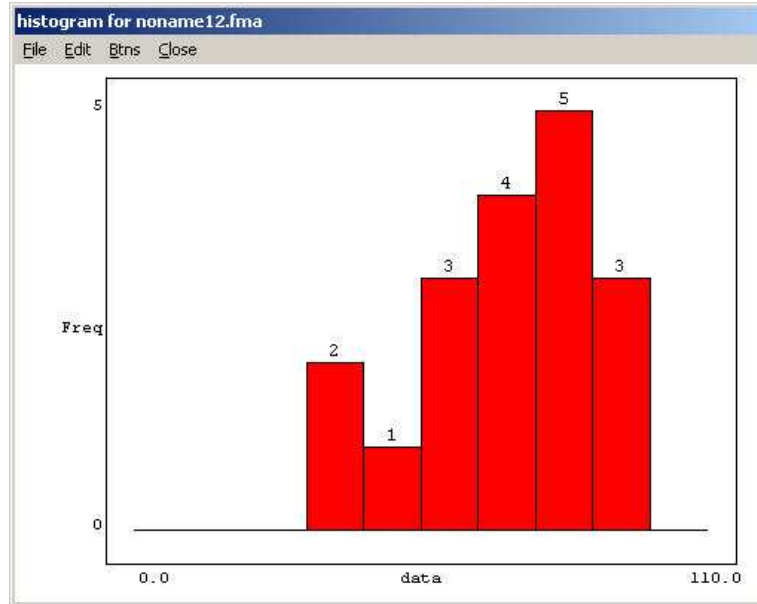
ranges from 0 to 110. To do this, go to **Stats** → **Histogram** → **Interval**.
. . . Change the low to 0 and the high to 110. Click ok. (See the histogram below.)



3. To see the heights of the bars, go to **Edit** within the Histogram window. Then go to **Bar labels** → **Top** → **Frequency**. (See the histogram below.)



4. To see the labels on the x -axis go to **Edit** within the Histogram window. Then go to **Bar labels** → **Bottom** → **Division**. (See the histogram below.)



B. Other Graphs

You can obtain stem and leaf plots and box and whiskers plots in a similar manner.

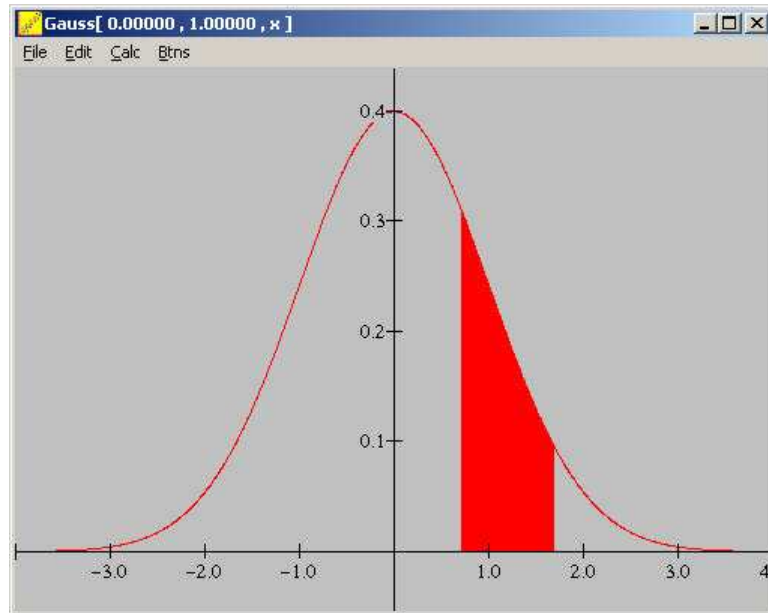
V. Including Graphs in Other Documents

To include a graph in another document go to **File** → **Copy to clipboard**. You can then paste the graph into another document, such as a Word document. If you use \LaTeX , you could paste the graph into a document and convert it to an acceptable picture format such as an `.eps` file.

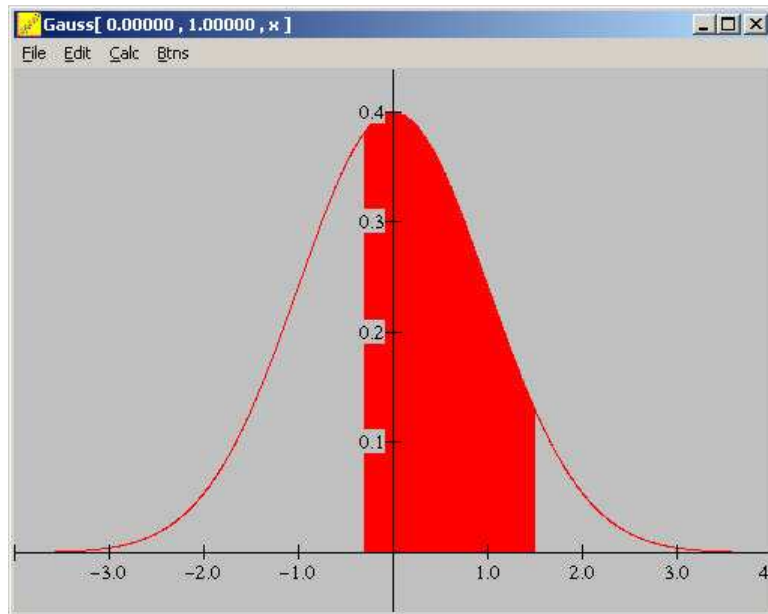
VI. Calculating Probabilities with Winstats

A. The Normal Distribution

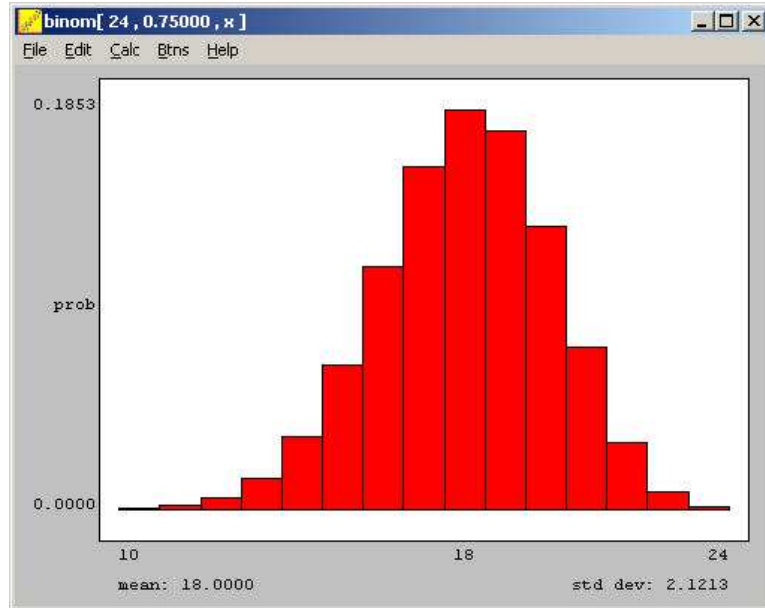
1. Go to the main Winstats window. Choose **Window** → **Probability** → **Normal...**
You should see a normal distribution like the one below.



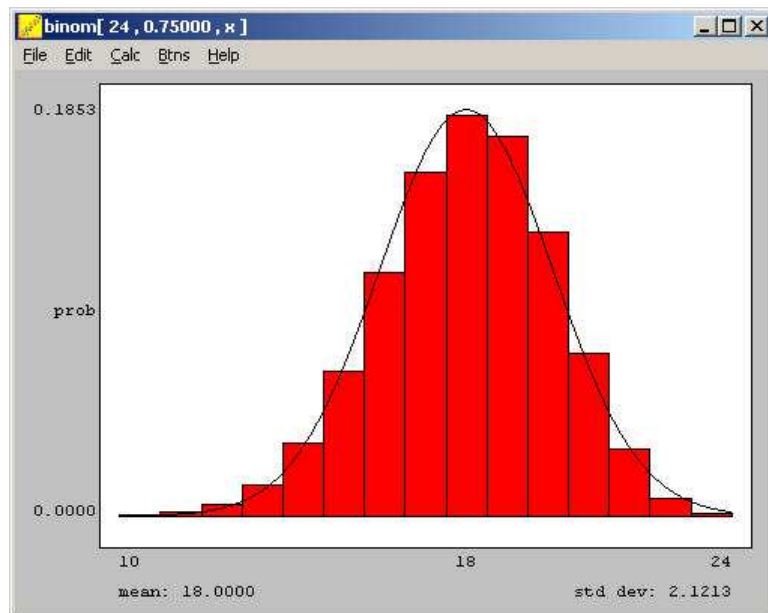
2. To calculate the probability $P(-.3 \leq x \leq 1.5)$, go to **Calc** → **Probabilities**. Enter $-.3$ for “low x” and 1.5 for “high x.” Click probability. You should see that $P(-.3 \leq x \leq 1.5) \approx .55110$. Also, the area under the normal curve from $x = -.3$ to $x = 1.5$ should now be shaded.



3. You can change the parameters of the distribution by going to **Edit** → **Parameters...**
- B. The Binomial Distribution
1. Go to the main Winstats window. Choose **Window** → **Probability** → **Binomial...** You should see a binomial distribution like the one below.



- To see a normal distribution with the same mean and standard deviation go to **Edit** → **Normal overlay**. The area under the normal curve and the area of the histogram will be equal.



- You can change the probability of success and the number of trials by going to **Edit** → **Parameters...** Experiment with these parameters. As the number of trials increases, the histogram more closely approximates the normal curve.
 - You can calculate binomial probabilities by going to **Calc** → **Interval...**
- C. Other Distributions

Winstats contains several other distributions. Experiment with some of these

distributions.

VII. Simulations and Demos

Winstats contains several Simulations and a few Demos. Go to the main Winstats window. Choose `Window` → `Simulations` or `Window` → `Demos` to try some of these programs. For the most part, they are pretty easy to understand. The various help menus tend to be pretty terse, but tend to be very helpful.