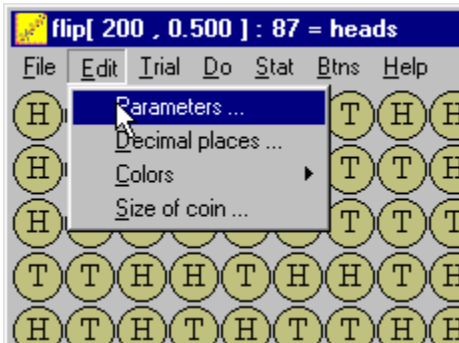
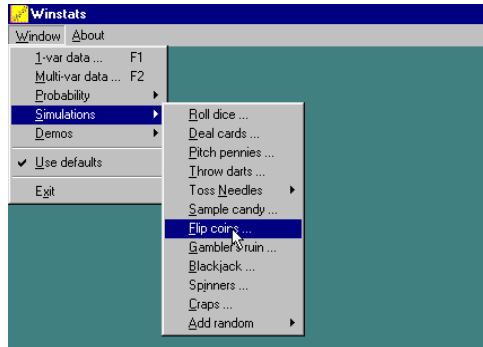
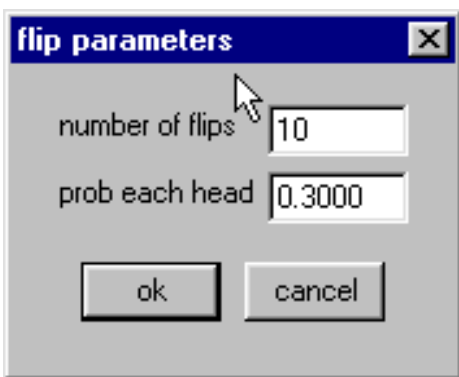


Using Simulations in Winstats

Open the program and follow the instructions below



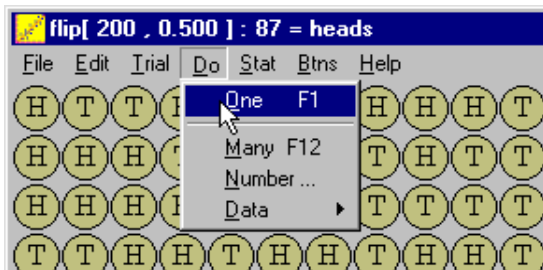
The program shows 200 coins by default.
Let's change this.



Enter the desired values.

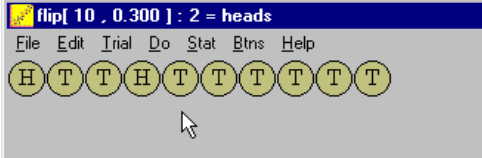
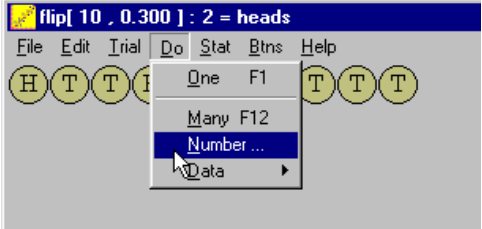
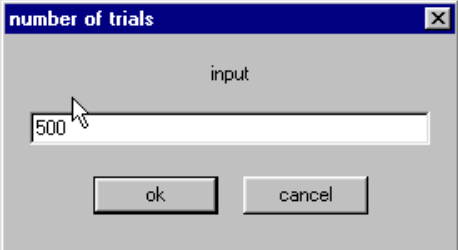
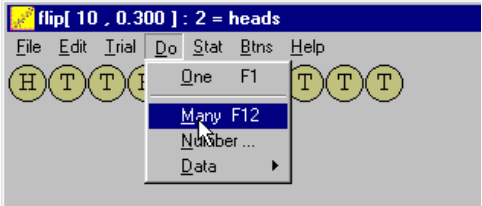
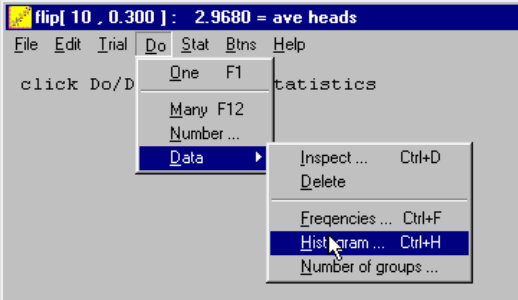
This will change the # of coins and the
probability of each one turning up heads

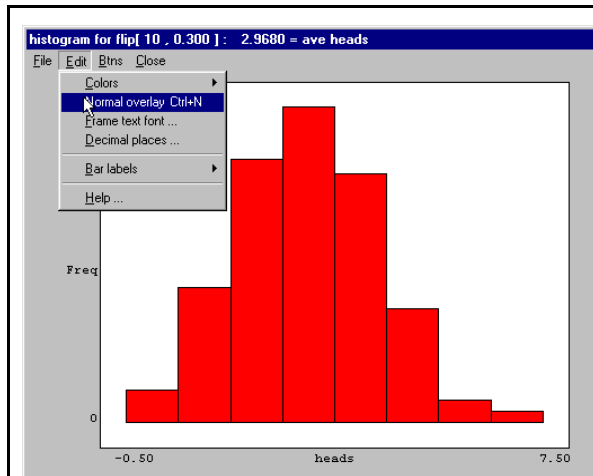
Click OK when ready.



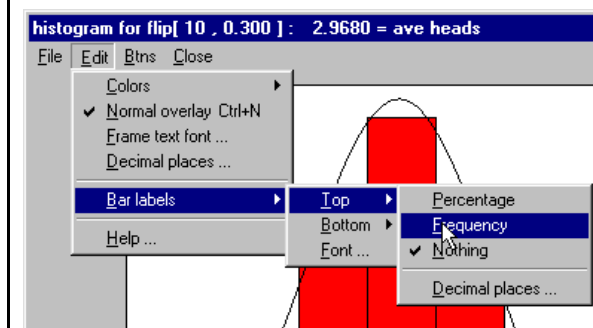
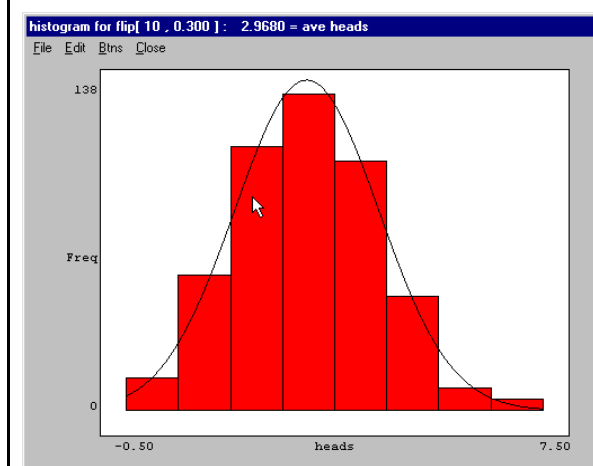
This will flip your coins one time.

NOTE: The number of coins displayed will
not change until you have done a trial with
the new setting.

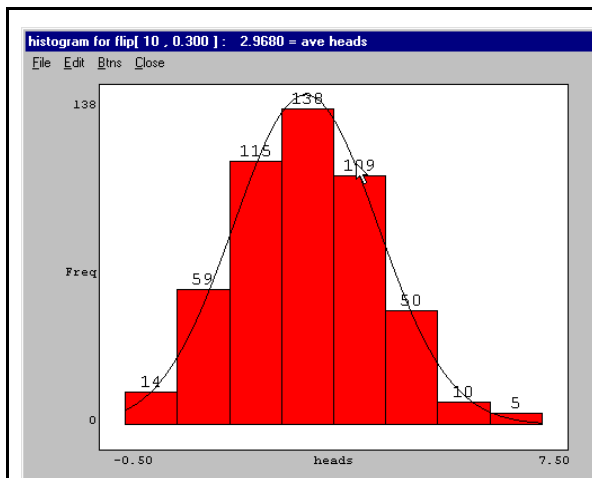
	<p>The result of one trial.</p>
	<p>You can set up multiple trials and later do some analysis.</p>
	<p>Enter the desired number of trials and click OK.</p>
	<p>The number of trials set in the previous screen will now be performed.</p>
	<p>You will NOT see the results of individual trials. Instead, the data can be viewed in various forms, such as a histogram or in the form of frequencies of each outcome.</p>



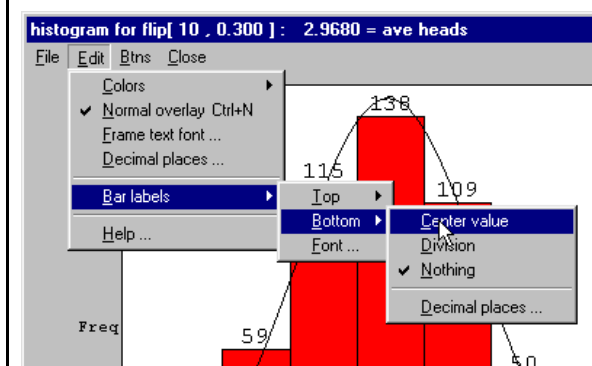
Overlay the data distribution displayed as a histogram with a normal (bell-shaped) curve.



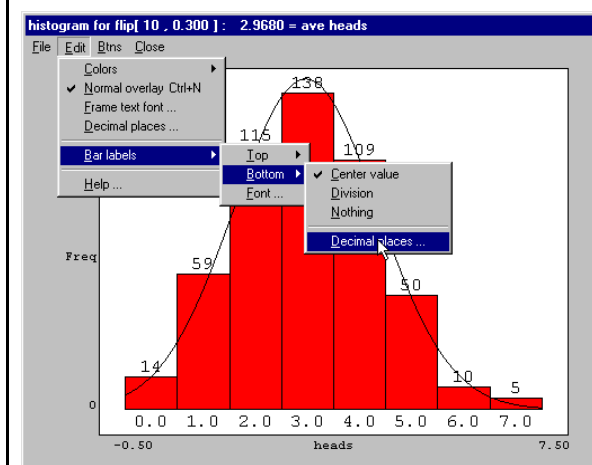
Change the displays on the top bar labels to show either frequencies, percentages, or nothing.



Frequency displayed on the top bar labels.



Change the bottom bar labels to show classes (division), center value (preferred in this context since we are showing the numbers of heads), or nothing.



The center values are shown for each bar, but we do not need any decimal places since the scale is for the # of heads that showed up on each trial. Let's change this:

input

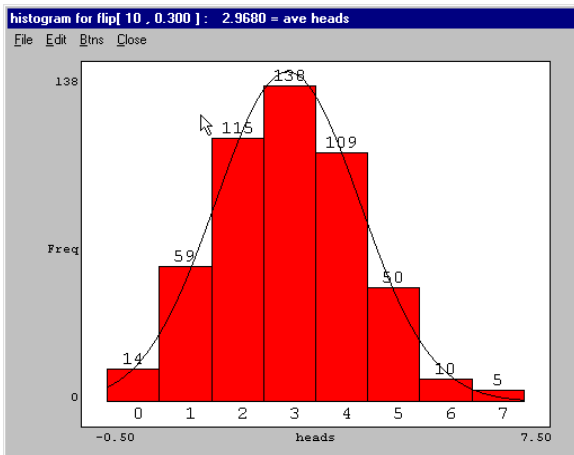
decimal places [0..4]

0

ok

cancel

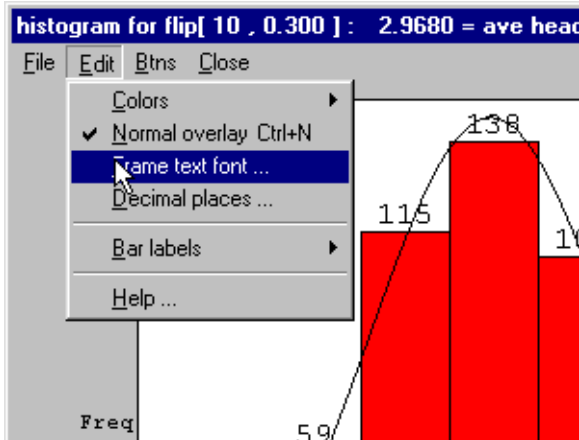
Set to 0 as shown.



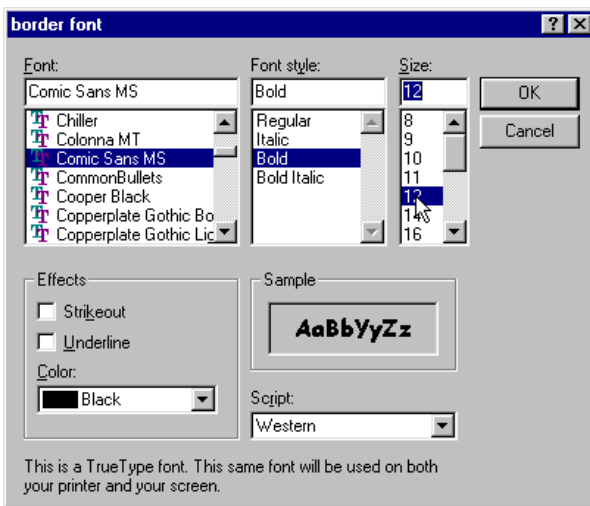
The horizontal scale is now displayed as desired.

If using this with students, you might want to discuss the clustering around the expected outcome. In the example shown, the probability of heads on each coin was set to 0.3. Therefore, on any particular toss of 10 coins we would expect 3 to turn up heads; of course, experimentally this does not always happen, but we would expect most results to be close to this with some variation. Here, we also find experimentally that 3 heads were obtained 138 times out of 500 trials, so the experimental probability of heads is

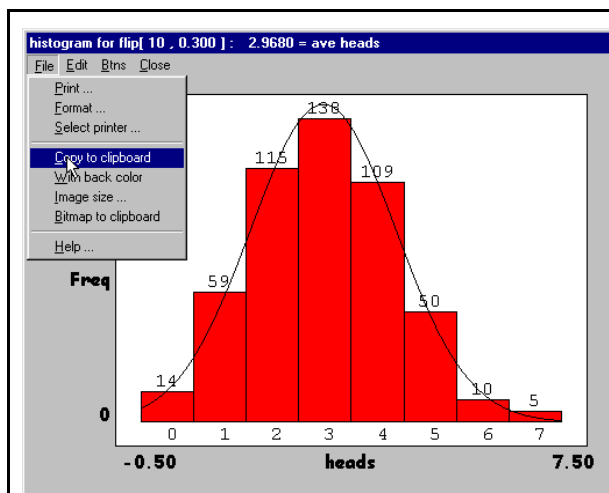
$$\frac{138}{500} = 0.276, \text{ which is pretty close to } 0.3.$$



Let's also change the text font in the frame so that it is a little bigger and perhaps more readable

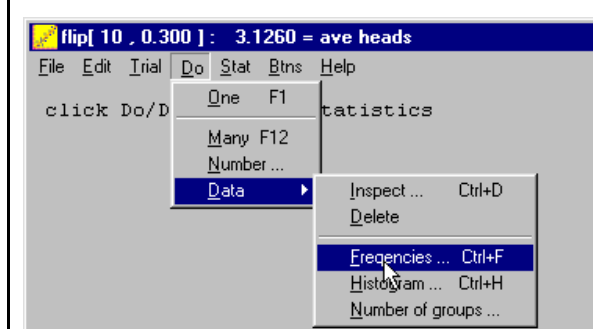


Choose the font, the style and the font size. Comic Sans is a font preferred by some special needs teachers since it is the only one that uses **a**'s and **g**'s that are the same as those you would write.



Notice the labels in the frame now are different than before.

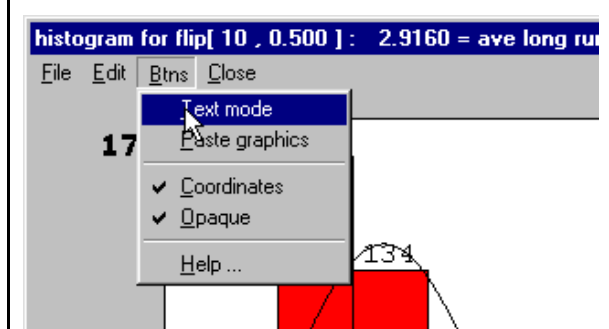
The diagram can now be copied and pasted into a word processor such as Word™ or WordPerfect™. Choose from Copy to Clipboard (usually best), With Back Color, and Bitmap to Clipboard. (use if the first choice does not work. This will dramatically increase the file size of your document, however)



If you close the histogram screen, you can also see the frequency of each outcome:

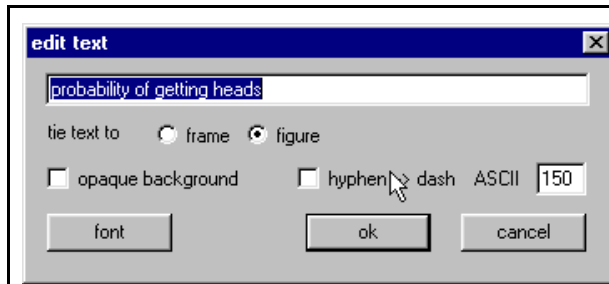
Outcome	Frequency
0	14
1	59
2	94
3	134
4	115
5	56
6	22
7	6

sample mean = 3.126
sample st dev = 1.470



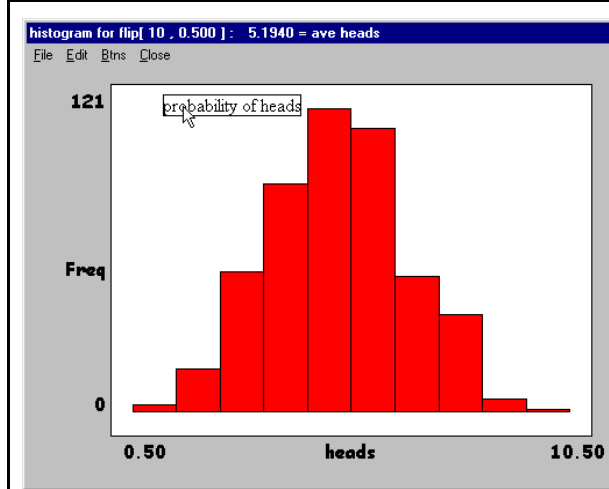
If you go back to your histogram (I accidentally created a new set of data before going back to my histogram to get this screen shot), you can add your own text.

Select **Text Mode** as shown and then **Right Click** anywhere on the histogram.



Type some text into the line and consider whether you want to change any other settings, such as tying the text to the frame or figure and changing the font.

Click OK



Once the text is displayed, you can then **Left Click** on it (holding down the mouse button) and drag the text to any desired position on the diagram.