Exploring Quantitative Data (Part I)

The following table displays the IQ Scores of 60 fifth-grade students chosen at random from one school.

IQ Test Scores for 60 randomly chosen fifth grade students									
145	139	126	122	125	130	96	110	118	118
101	142	134	124	112	109	134	113	81	113
123	94	100	136	109	131	117	110	127	124
106	124	115	133	116	102	127	117	109	137
117	90	103	114	139	101	122	105	97	89
102	108	110	128	114	112	114	102	82	101

1. In a Lists and Spreadsheet, name a column **iqscores** and enter the data from the table above.

2. Insert a Data & Statistics page by pressing (on) and selecting *Data & Statistics*. On this page, you should see a lot of dots displayed randomly.

3. Now we want to put these dots in a graph of the IQ Scores. Press (tab) until the variable for the horizontal axis is selected. Press . Then select the variable **iqscores**. The data should move into a dotplot.

Describe this graph in your own words.

4. Now by pressing (menu) and selecting *Plot Type*, you will see options for displaying your data. Select *Histogram*. The data will now move into a histogram.

What differences to you notice between the dotplot and the histogram?

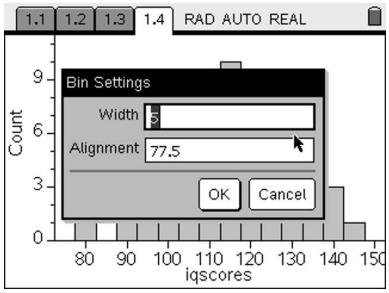
Histograms display data using classes, or *bin-widths*. The range of values for a bin width includes the left value but ***does not*** include the right value. For example, the IQs for the class 78 to 83 would contain all IQs including 78, but would not include the IQs of 83. So the first bar of this histogram has a *bin-width* of 5.
NOTE: For integer data sets, the Nspire may *align* the data so the classes start on the .5 values. Therefore, all of the data values from 77.5 – 82.5 (which include the integer values from 78 to 82), fill this bar, giving it a height of 2.

We now want the bin-widths of our bars to be 10 IQ points.

List the classes (using the range above as a guide) and counts for bin-widths of 10. The first two are modeled below: I started at 80 since the lowest data point is 81.

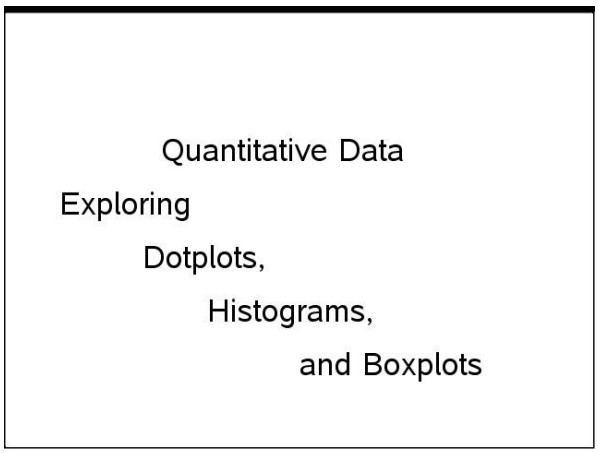
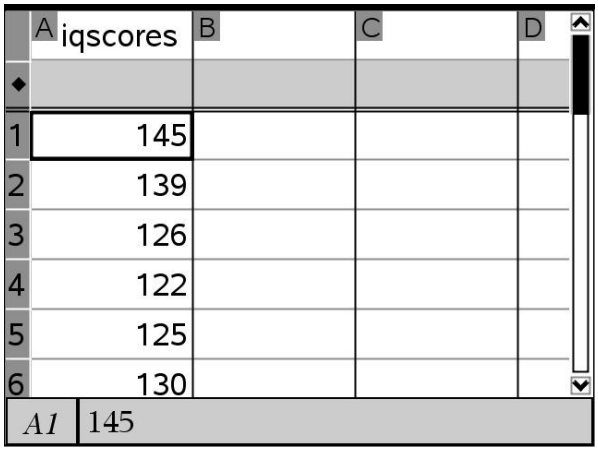
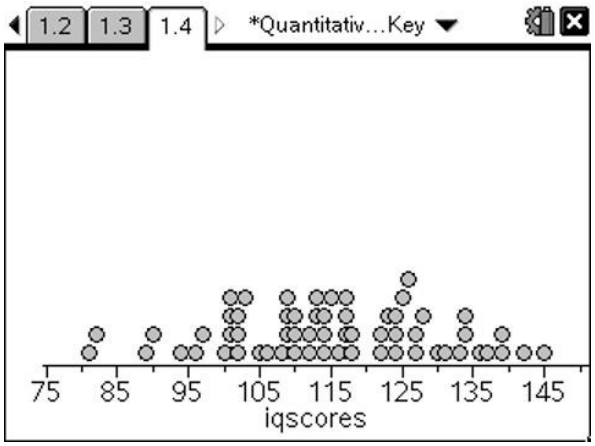
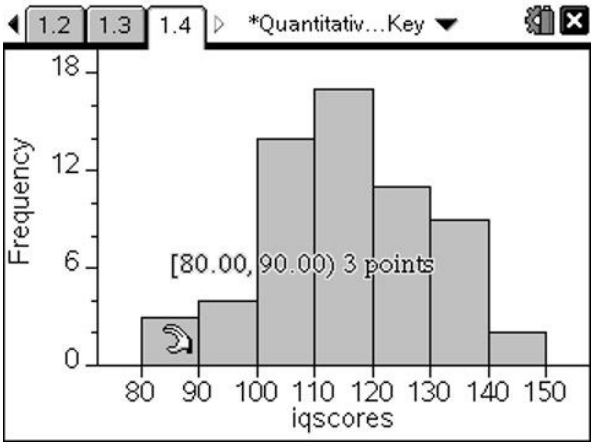
Class	Meaning	Count
80 – 90	80 ≤ IQ < 90	3
90 – 100	90 ≤ IQ < 100	4

5. On the Data & Statistics page (in an empty part of the graph), change the bin-width of the histogram by pressing (ctrl) (menu) and select *Bin Settings*.



Change the Width to 10, (tab) and change the Alignment to 80. Press (enter) and the histogram will have changed. Now; however, you cannot see the heights of all of the bars. To change the Count setting press (ctrl) (menu) and selecting *Zoom*,then *Window Settings*.
Here you can enter a value for YMax (see your class counts above to determine this value) and enter 157.5 for XMax.

Describe your new histogram. What were the major changes? Were they better? Why or why not?

6. Save this document by pressing (doc▾) and selecting *File*, *Save As*. Save this document in the AP Statistics folder as **IQ Scores**. We will be looking at this histogram again.

Here are the screen shots from *nspire*