Introduction to Histograms

Student Activity

Name _____

Class _____

In these activities you will interpret and describe the distribution of data in a histogram. After completing the activities, discuss and/or present your findings to the rest of the class.

Activity 1 [Page 2.2]

1. Explain what a bin is and how to interpret the height of a bar associated with the bin.

2. Describe the difference in the shape of the two histograms if

   a. the bin width on the top histogram is 7.

   b. the bin width on the top histogram is as large as possible.

   c. Add three students with 35 pairs of shoes and six students with 45 pairs of shoes. Select a bin width of 10. Describe the distribution.

3. Move back to page 1.3 and add points for five students each having 40 pairs of shoes and for two students each having 35 pairs of shoes.

   a. Find a bin width that seems to give a good picture of the data.

   b. Explain why 40 is the tallest bar for bin widths of 1 but is not the tallest bar for bin widths of 5 and 10.

c. Describe how to use the histogram to determine the number of students who reported how many pairs of shoes they own.

d. The two students who had five pairs of shoes each bought 5 new pairs of shoes. Drag the points to update the distribution to account for the changes in the number of pairs of shoes for these students. Predict which bin will have the highest bar for bin width 5? Bin width 10? Explain your reasoning, and then check using the TNS activity.

Activity 2 [Page 3.2]

1. Work with a partner to create two reasonable distributions for the number of pairs of shoes owned by the students in a class, either by moving or adding points, 1) a distribution with little variability in the number of pairs of shoes owned by most of the class and 2) a distribution where there is a lot of variability in the number of pairs of shoes owned by the class.

    Choose a bin width that seems best for your distribution. Describe your distribution (shape, center and spread). Explain why you think one of your distributions has very little variability and the other has a lot of variability.

2. Decide which of the following are always true, which are sometimes true, and which are never true. Give a reason for your answer.

   a. If the bin widths are greater than 1 in a histogram, it is not possible to compute the mean exactly.

   b. The median will be in the tallest bar.

   c. You can determine the median from a histogram when the bin widths are greater than 1.

   d. If all the bars are the same height, there is no variability in the data.