UNIT ACTIVITY:
MEAN, MEDIAN AND DISTRIBUTION SHAPE

This activity will provide an opportunity to practice computing the mean and the median. In addition, the activity will emphasize the relevance of a distribution's shape to the relationship between the mean and median. You will need to access Stemplots from the Interactive Tools menu.

1. Work in Quiz mode. Set the number of observations to 10 and the maximum to 100. Assume that the Stemplots tool is generating 10 hypothetical test scores.

a. Make a copy of the stemplot. Based only on the shape of the stemplot, which do you think is larger, the mean or the median? Justify your choice.

b. Calculate the mean and median. Show your calculations. Submit your answers to make sure they are correct. (If not, revise your answers and re-submit.) Now that you have done the calculations, was your answer to (a) correct?

2. Repeat question 1 with a new sample of 10 test scores.

3. Use the Stemplots tool to generate 17 final exam scores. The final exam is worth 150 points; so, set the Maximum Observation Value to 150.

a. Make a copy of the stemplot.

b. Based only on the shape of the stemplot, which do you think is larger, the mean or the median? Justify your choice.

c. Calculate the mean and median. Use the Stemplots tool to check that your calculations are correct. Was your answer to (b) correct?

4. Repeat question 3 with a new sample of 17 final exam scores.

5. Below are 70 exam scores from a very difficult exam given to a large class.

```
64  78  67  35  74  73  69  66  36  69
74  38  72  79  36  46  77  69  39  38
63  32  36  80  35  35  36  39  35  35
67  73  58  43  64  64  69  69  69  37
50  63  36  39  74  36  35  60  62  65
69  69  35  34  49  67  65  61  33  36
36  37  36  36  65  69  40  72  69  66
```

a. Work in calculation mode. Enter the exam scores into the Stemplots tool. Use the interactive tool to make the stemplot. Describe the shape of the plot.

b. Determine the median, mean, and mode(s) for the exam scores.

c. Based on the plot, which gives a better description of the location of these data, the median, mean, or mode(s)? Explain.

6. Below are 30 exam scores from a statistics exam.

```
90  76  78  76  75  74  85  74  65  78
75  60  75  76  75  78  70  75  65  85
72  74  70  76  72  80  80  72  78  74
```

a. Work in calculation mode. Enter the exam scores into the Stemplots tool. Use the interactive tool to make the stemplot. Describe the shape of the plot.

b. Determine the median, mean, and mode(s) for the exam scores.

c. Based on the plot, which gives a better description of the location of these data, the median, mean, or mode(s)? Explain.