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Intro to Statistics – Ms. Klimczuk

Creating Boxplots

**Students in a college statistics class responded to a survey designed by their teacher. One of the survey questions was “How much sleep did you get last night?” Here is the data (in hours).**

**9 6 8 6 8 8 6 6.5 6 7 9 4 3 4 16**

**5 6 11 6 3 6 6 10 7 8 4.5 9 7 7 2**

**Let’s make a boxplot of this data.**

Step 1: Draw a single horizontal axis spanning the extent of the data. Draw short vertical lines at the lower and upper quartiles and at the median. Then connect them with horizontal lines to form a box.

Step 2: To construct the boxplot, you need to make “fences” around the MAIN part of the data.

Upper fence = Q3 + 1.5(IQR)

Lower fence = Q1 – 1.5(IQR)

The fences are just for the construction and are not a part of the display. Just make dashed lines for the fences.

Step 3: Use the fences to draw your “whiskers”. Draw lines from the ends of the box up and down to the most extreme data values within the fences.

Step 4: The outliers of your boxplot are any values that are outside of the fences. Make a circle to display your outliers. If there are any “far outliers” (outliers more than 3 IQRs from the quartiles), mark them with a star.

**Questions:**

1. What does the boxplot highlight in the distribution of data?
2. If the median of your boxplot is not centered, what can you say about the data?
3. If the whisker stretches out more on the left, what can you say about the data?
4. If the whisker stretches out more on the right, what can you say about the data?
5. Make a histogram of this data. How does it compare to the boxplot?

\*Now, let’s graph both of these on our graphing calculators.

\*Now, I will show you a quick way you can make a “guess” for a histogram when you see a boxplot.