**Boxplots, Outliers, and IQR Notes**

1. Listed below are the quality rating values for regular peanut butter:

11, 23, 23, 26, 29, 31, 31, 33, 34, 34, 35, 40, 40, 43, 45, 46, 49, 54, 54, 60, 76, 83, 83

1. Find the five number summary for the data.

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Minimum 1st Quartile Median 3rd Quartile Maximum

1. Construct a box plot showing the distribution of quality ratings for regular peanut butter.

0 10 20 30 40 50 60 70 80 90 100

1. What is the IQR?
2. Do you think there are any outliers? Explain your thoughts.
3. Use the steps below to find the outliers, if any.

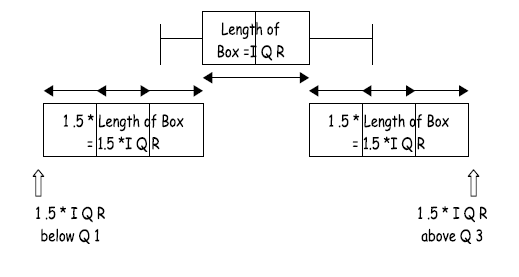
**Steps for Finding Outliers (1.5 IQR Rule)**

1. Calculate the IQR \_\_\_\_\_\_\_\_
2. Multiply the IQR by 1.5 \_\_\_\_\_\_\_\_
3. Add this value to Q3. \_\_\_\_\_\_\_\_

(Any value above is considered an outlier)

1. Subtract the Value from Q1. \_\_\_\_\_\_\_\_

(Any value below is considered and outlier)



**Interpreting Measures of Spread**

* **Range:** Max – Min; spread of the entire data set – sensitive to outliers
* **IQR:** Q3 – Q1; spread of the middle 50% of the data – not sensitive to outliers
* **Standard Deviation:** the typical amount that a data value will vary from the mean – sensitive to outliers

How do you decide whether to use the mean and standard deviation or the median and IQR to summarize the data numerically?