Prob & Stats	Name(s):	
V is for variation: How far are you from the mean?	Date:	Period:

You may work in pairs, but each person must turn in a complete write up for this activity.

1. Make a dot-plot with box plot of the **Pulse Rate** data.
   Mark the **mean** with a wedge Δ below the number line.

--- Class Discussion: Why are the measurements different? ---

You will now develop a way to quantify how spread out the measurements are by generating a *statistic* – a single number – to describe the spread of the measurements in each group.

We will call this statistic the MAD.

2. Find the absolute value of the difference between each data point and the mean.

3. Make a second dot-plot, this time plot the differences you just calculated.

4. Using this idea of "differences from the mean", calculate a number that gives a "typical" value for this distance. Indicate it graphically on your absolute value plot. Label it MAD.

Questions = Write Up

1. In the exercise above you first calculated the absolute value of the distance between your measurement and the mean when coming up with the MAD. What would happen if you didn't take the absolute value? Try it, if you're not sure.

2. *Standard Deviation* is a statistic, like the MAD, and you can use your calculator's "1-Var Stats" to find it. Do that now using the original data. Write down and compare the S_x and σ_x with your MAD. Discus why they might be different from the MAD.

3. Bob suggested that a good measure of spread is to subtract the minimum value from the maximum value. This gives the full range and shows how spread out the data are. To get a typical distance, divide the range by 2. What are the advantages and disadvantages of this method?

4. If two sets of numbers have the same mean and range but have different MADs, what does this say about the two sets of numbers?

Rubric for **V is for Variation**	Score
Overall appearance	/5
Graphing conventions	/5
Mean & MAD correctly on graphs	/2
Answer to Q1	/5
Answer to Q2	/5
Answer to Q3	/5
Answer to Q4	/5