Classroom Activity 1 Math 113 Name : _____
10 pts Intro to Applied Stats

Materials Needed:

Stopwatch, straps.

Instructions:

Divide into teams of three people.

We will be determining the time it takes to complete a four-legged walk of a pre-determined distance. Each team of three should stand side by side and strap their legs together at the ankles. This is similar to a three-legged race except the middle person will have both legs strapped to another person.

Once the legs are strapped together, walk the length of the course and record the time it takes to finish. Then rearrange the order of the group and repeat the process so that each person has a chance to be in the middle once.

You should find two people not in your group to help with this. One of them can be the timer and one can be the recorder. A note for the timer and recorder – do not round the times off to the nearest second, given them with the two decimal places that the stopwatch gives.

1. Record the first names of the persons in each position and the time in seconds that it takes to complete the course.

Heat	Left	Middle	Right	Time
1				
2				
3				

2. Give your results to the instructor, who will combine the data. Use the combined class data to answer the remaining questions.

3. Describe the context of the data.

4. Summarize the time variable. Do this for each heat as well as the combined data.

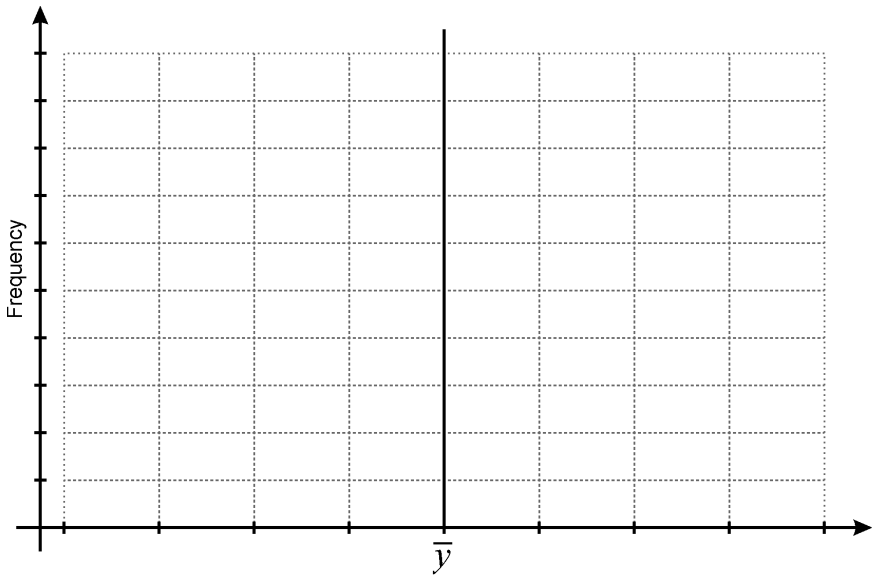
Heat	1	2	3	Combined
Sample Size				
Mean				
Median				
Standard Deviation				

5. Generate a box plot of the time vs the heat number. Answer these questions based on the box plots (not the summary data in #4).

   a. Do the times seem to be getting shorter? How can you tell?

   b. Do the times seem to be getting more consistent? How can you tell?

6. Generate a histogram that displays the region from $\overline{y} - 3s$ to $\overline{y} + 3s$ in six equal intervals of one standard deviation each. Label the boundary values for the histogram along the horizontal axis. The chart has room to go ±4 standard deviations away from the mean, just in case you have some outliers.



a. Find the percent of the total values that lie within 1, 2, and 3 standard deviations of the mean and record them in the table. Compare them with the theoretical values for the empirical rule and Chebyshev's theorem. This empirical rule is only for unimodal, bell-shaped data while Chebyshev's theorem is supposed to apply to any distribution.

% of values	**w/in 1 std. dev.**	**w/in 2 std. devs.**	**w/in 3 std. devs.**
Our sample data			
Empirical Rule	≈ 68%	≈ 95%	≈ 99.7%
Chebyshev	Not Applicable	≥ 75%	≥ 88.9%

b. Do either of the rules hold for our data? If so, which one(s)?