HW for ML #2 Variability (Day 2)   Name ___Key___

For exercise 1 – 2, determine which two sets of data will overlap more – Sets A and B or Sets A and C.

1.   ✓ Set A has a mean of 12 and a MAD of 5.1

        Set B has a mean of 23 and a MAD of 4.9
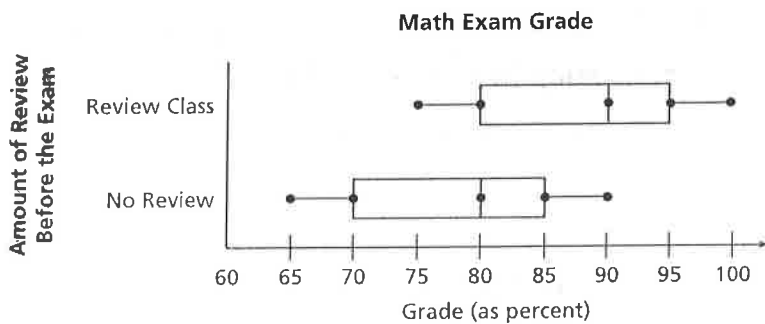
     ✓ Set C has a mean of 10 and a MAD of 4.8

2.   ✓ Set A has a mean of 104 and a MAD of 19.6

     ✓ Set B has a mean of 84 and a MAD of 25

        Set C has a mean of 180 and a MAD of 20.

For exercises 3 – 5, use the information given about class test scores shown in this box plot.

Math Exam Grade

3. What conclusions can you draw from looking at the plot about how effective the math exam review class was? The review was effective because the students taking the review class scored higher than those who did not take the class. The box plots are the same size and shape, with the Review Class shifted right and showing higher scores.

4. What is the difference in the medians between the sets of data?

        90-80 = 10   (10%.)

5. The MAD for both groups of students is 6.2. Compare that value to the difference in medians. What does that tell you about the data? The difference in medians is almost twice the MAD, which shows there is substantial difference between the data sets

For exercise 6 – 11, use the information given about the points that two basketball players scored in each of the games they played in this year.

$4 + 0 + 5 + 2 + 2 + 2 + 1 + 0 + 4 + 4 = 24$

Player A	30	26	21	28	24	28	25	26	30	22	260
Player B	16	18	15	18	22	14	16	23	18	20	

$2 + 0 + 3 + 0 + 4 + 4 + 2 + 5 + 0 + 2 = 22$

6. Find the mean number of points scored for each player. Find the difference in the means.   Player A= 260 ÷10 = 26 pts
   Player B= 180 ÷10 = 18 pts   26-18 = 8 pts.

7. Find and compare the MAD for each player.
   A: 24 ÷ 10 = 2.4
   B: 22 ÷ 10 = 2.2

8. How many times greater is the difference in the means than the MAD for each player?   Δmean = 8
                                                      about 3.5 times
                                                      as great.
                   A: 8÷2.4 = 3.3   B: 8÷2.2 = 3.63

9. Would you expect there to be a lot of overlap in dot plots of the data? Why or why not?   No, the data values show no overlap.

10. Suppose the mean number of points scored for Player B were 25 points, and the variability stays the same. Would you expect there to be a lot of overlap in a dot plot of the data? Why or why not? Yes, the MAD would be more than twice the difference in means, so there should be a lot of overlap.

11. Your mean quiz score is 15 points higher than your friend's mean quiz score, which is 3 times the MAD of both of your scores. Do you think there will be a lot of overlap if you make a double histogram of the data? Explain. No. The difference in means is so much greater than the MADs that there shouldn't be much overlap.