

*Arrange yourselves into groups of 3.*

There might be a group of more or less than 3 depending on attendance today!!

**Have out HW #4**

# HW #4 Answer Key

1) The scores shown below were received by three math teams on a standardized examination. Each coach reported a team "average" of 93.

Team 1: 90, 91, 92, 93, 99    med = 92, No mode, mean = 93  
 Team 2: 92, 93, 80, 93, 81    80, 81, 92, 93, 93    med = 92, mode = 93, mean = 87.8 ★  
 Team 3: 60, 80, 93, 95, 100    med = 93, No mode, mean = 85.6 ★

State which measure of central tendency was used by each coach.

Which of the 3 math teams do you think did consistently better on the exam? EXPLAIN. (Find the MAD for each data set as support for your answer)

|    | 1  |   |
|----|----|---|
| 90 | -3 | 3 |
| 91 | -2 | 2 |
| 92 | -1 | 1 |
| 93 | 0  | 0 |
| 99 | 6  | 6 |

avg(MAD) = 2.4

|    | 2    |     |
|----|------|-----|
| 92 | 4.2  | 4.2 |
| 93 | 5.2  | 5.2 |
| 80 | -7.8 | 7.8 |
| 93 | 5.2  | 5.2 |
| 81 | -6.8 | 6.8 |

avg(MAD) = 5.84

|     | 3     |      |
|-----|-------|------|
| 60  | -25.6 | 25.6 |
| 80  | -5.6  | 5.6  |
| 93  | 7.4   | 7.4  |
| 95  | 9.4   | 9.4  |
| 100 | 14.4  | 14.4 |

avg(MAD) = 12.48

Team 1 was more consistent since its MAD was smallest.

2) The following data represent the duration (in days) of U.S. Space Shuttle voyages for the years 1992-1994. Find the mean, median, mode, range, first quartile, third quartile, IQR, and MAD. Determine if the data set contains outliers.

~~8, 8, 8, 14, 8, 8, 10, 8, 8, 8, 7, 8, 10, 17, 11, 8, 14, 11~~  
 3, 6, 7, 8, 8, 8, 8, 8, 9, 9, 9, 10, 10, 11, 11, 14, 14, 17

med = 9  
 Q<sub>1</sub> = 8  
 Q<sub>3</sub> = 11  
 IQR = 11 - 8 = 3  
 range = 17 - 3 = 14  
 mode = 8  
 mean = 9.4

MAD = 2.31

$10 - 9.4 = 0.6$

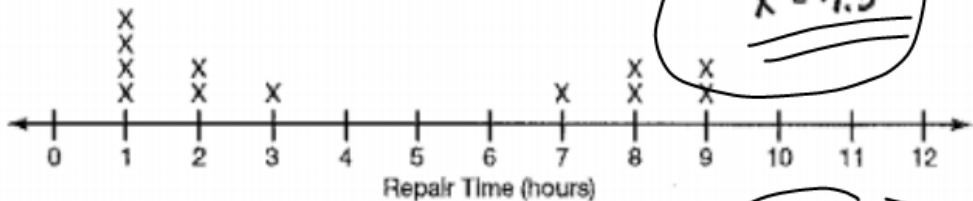
IQR \* 1.5 = 4.5  
 \* L.F. = 8 - 4.5 = 3.5  
 \* U.F. = 11 + 4.5 = 15.5  
 outliers = 3, 17

| x  | $x - \bar{x}$ | $ x - \bar{x} $ |
|----|---------------|-----------------|
| 3  | -6.4          | 6.4             |
| 6  | -3.4          | 3.4             |
| 7  | -2.4          | 2.4             |
| 8  | -1.4          | 1.4             |
| 8  | -1.4          | 1.4             |
| 8  | -1.4          | 1.4             |
| 8  | -1.4          | 1.4             |
| 8  | -1.4          | 1.4             |
| 8  | -1.4          | 1.4             |
| 9  | -.4           | .4              |
| 9  | -.4           | .4              |
| 9  | -.4           | .4              |
| 10 | .6            | .6              |
| 10 | .6            | .6              |
| 11 | 1.6           | 1.6             |
| 11 | 1.6           | 1.6             |
| 14 | 4.6           | 4.6             |
| 14 | 4.6           | 4.6             |
| 17 | 7.6           | 7.6             |

MAD (avg) = 2.31

3) Dannette and Alphonso work for a computer repair company. They must include the time it takes to complete each repair in their repair log book. The dot plots below show the number of hours each of their last 12 repairs took.

Dannette's Repair Times



$\bar{x} = 4.3$

Alphonso's Repair Times



$\bar{x} = 5.1\bar{6}$

a. Determine the MAD for each data set. What does that mean for Dannette's and Alphonso's repair times?

|   |      |     |
|---|------|-----|
| 1 | -3.3 | 3.3 |
| 1 |      | 3.3 |
| 1 |      | 3.3 |
| 1 |      | 3.3 |
| 2 | -2.3 | 2.3 |
| 2 |      | 2.3 |
| 3 | -1.3 | 1.3 |
| 7 | 2.7  | 2.7 |
| 8 | 3.7  | 3.7 |
| 8 |      | 3.7 |
| 9 | 4.7  | 4.7 |
| 9 |      | 4.7 |

MAD = 3.22

|    |       |      |
|----|-------|------|
| 3  | -2.16 | 2.16 |
| 4  | -1.16 | 1.16 |
| 4  |       |      |
| 4  |       |      |
| 5  |       |      |
| 5  |       |      |
| 5  |       |      |
| 6  | .83   | .83  |
| 6  |       | .83  |
| 11 | 5.83  | 5.83 |

MAD = 1.24

Alphonso was more consistent w/ his repair times than Dannette

b. Alphonso argues that his average repair time does not accurately reflect how fast he is. Does he have any outliers in his data that would support his case?

med = 5

Q1 = 4

Q3 = 5.5

IQR = 1.5

IQR x 1.5 = 2.25

L.F. = 4 - 2.25 = 1.75

U.F. = 5.5 + 2.25 = 7.75

11 is an outlier

4. For the following side-by-side stem and leaf plot, determine the MAD for each data set. Which data set is more spread out?

| leaf       |   |   |   | stem |   | leaf       |   |   |   |   |
|------------|---|---|---|------|---|------------|---|---|---|---|
| Data Set 1 |   |   |   |      |   | Data Set 2 |   |   |   |   |
| 9          | 9 | 9 | 8 | 8    | 8 | 3          | 7 | 9 |   |   |
|            | 8 | 6 | 5 | 2    | 4 | 0          | 3 | 4 | 5 | 8 |
|            |   | 5 | 1 | 5    | 2 | 5          | 5 | 6 | 6 |   |
|            |   |   | 0 | 6    | 1 | 2          |   |   |   |   |

$$\bar{x} = 44.5$$

Key: 4|0 = 40

$$\bar{x} = 49.5$$

Data Set 2 is more spread out.

|    | Set 1 |      | Set 2 |
|----|-------|------|-------|
| 38 | -6.5  | 6.5  | 37    |
| 38 | ↓     | ↓    | 39    |
| 38 | ↓     | ↓    | 40    |
| 39 | -5.5  | 5.5  | 43    |
| 39 | ↓     | ↓    | 44    |
| 39 | ↓     | ↓    | 45    |
| 42 | -2.5  | 2.5  | 48    |
| 45 | .5    | .5   | 52    |
| 46 | 1.5   | 1.5  | 55    |
| 48 | 3.5   | 3.5  | 55    |
| 51 | 6.5   | 6.5  | 56    |
| 55 | 10.5  | 10.5 | 56    |
| 60 | 15.5  | 15.5 | 61    |
|    |       |      | 62    |

$$\text{MAD} = 5.88$$

|    | Set 2 |      | Set 2 |
|----|-------|------|-------|
| 37 | -12.5 | 12.5 | 37    |
| 39 | -10.5 | 10.5 | 39    |
| 40 | -9.5  | 9.5  | 40    |
| 43 | -6.5  | 6.5  | 43    |
| 44 | -5.5  | 5.5  | 44    |
| 45 | -4.5  | 4.5  | 45    |
| 48 | -1.5  | 1.5  | 48    |
| 52 | 2.5   | 2.5  | 52    |
| 55 | 5.5   | 5.5  | 55    |
| 55 | 5.5   | 5.5  | 55    |
| 56 | 6.5   | 6.5  | 56    |
| 56 | 6.5   | 6.5  | 56    |
| 61 | 11.5  | 11.5 | 61    |
| 62 | 12.5  | 12.5 | 62    |

$$\text{MAD} = 7.21$$

# TASK!!

## If the Shoe Fits

Answer all questions in the task.

Create a poster displaying your work and all answers to the questions in the task.

There are scissors, glue sticks, colored pencils and rulers in the front of the room for your use during this task.