

The following data represents recovery time for 16 patients (arranged in a table to help you out)

count	Days (X)	$X - \bar{X}$	$(X - \bar{X})^2$	Z Score
#1	2	-4	16	-1.27
#2	3	-3	9	-0.96
#3	4	-2	4	-0.64
#4	4	-2	4	-0.64
#5	5	-1	1	-0.32
#6	5	-1	1	-0.32
#7	5	-1	1	-0.32
#8	5	-1	1	-0.32
#9	5	-1	1	-0.32
#10	6	0	0	0.00
#11	6	0	0	0.00
#12	7	1	1	0.32
#13	7	1	1	0.32
#14	8	2	4	0.64
#15	8	2	4	0.64
#16	16	10	100	3.18
Totals	96		148	

1. Calculate the sample mean and median

$$\bar{X} = 96/16 = 6 \quad \text{Median } 5$$

2. Use the table to calculate the variance and standard deviation.

$$s^2 = 148/(16-1) = 9.867 \quad s = 3.141$$

3. Use the range of the data to see if the standard deviation makes sense. (Range should be between 3 and 6 standard deviations)

$$\text{Range}/s = 4.5, \text{ so the answer makes sense}$$

4. Using the empirical rule between what two numbers should you expect to see 68% of the data? 95% of the data? 99.7% of the data?

Within 1s	Within 2s	Within 3s
2.86	-0.28	-3.42
9.14	12.28	15.42

5. Calculate the Z-score for each observation. Do you think any of these data are outliers?

See above – 16 seems to be an outlier more than 3 standard deviations above the mean.

Math 10 Group Work – Percentiles and Outliers

6. Use the recovery time data from the standard deviation group work to answer the following questions.

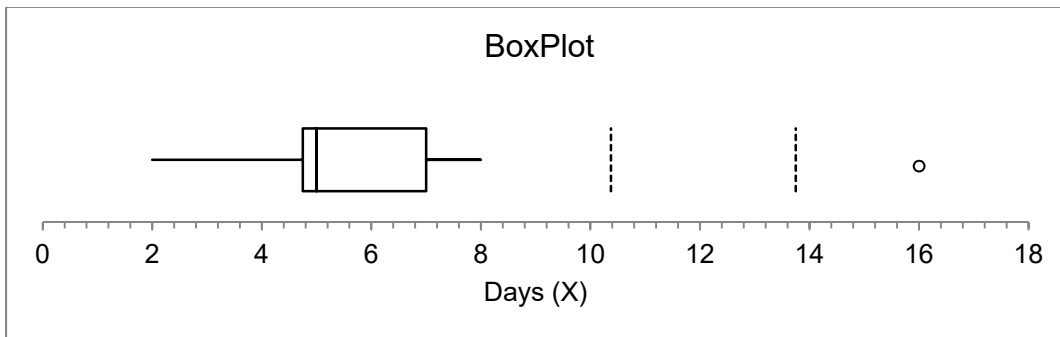
- a. Determine the Median and 1st and 3rd quartiles of the data.

Q1=4.5 med = 5 Q3=7

- b. Calculate and explain the Interquartile Range.

IQR = $7 - 4.5 = 2.5$. The range of the middle 50% of the data

- c. Construct a box plot of the data and describe the skewness.



Strange graph. Skewed left when outlier is excluded, but outlier skews data to the right.

- d. Using the rule that possible outliers are more than 1.5 IQRs from the edge of the box, identify any possible outliers.

16 is a probable outlier