Monday, November 13, 2017
7:04 PM

Statistics Honors **MP1 Quarterly Major Assessment Review Day 2**

Name: KEY **Date** _____ **Period** _____

1. If I ask you to **describe** a distribution, what four things must you tell me?

S (shape), O (outliers), C (center), S (spread)

2. What is the best **measure of spread** when you have symmetric data? standard deviation

3. What is the best **measure of spread** when you have skewed data? IQR or Range

4. When you have data is **symmetric**, what can you tell me about the mean, median, and mode?

They are the same = middle of graph

5. If I my class average on a test is 75/100 and I give everybody an extra 5 points, what will happen to the **mean**? Explain.

The mean will increase by 5% points. New mean = 80%.

6. If I my class average on a test is 75/100 and I give everybody an extra 5 points, what will happen to the **standard deviation**? Explain

The standard deviation stays the same, adding a constant does not affect the spread.

7. What is an **advantage** of a stemplot compared to histogram?

Stem plots show all of the individual data values.

8. Looking at the histogram below, what **percent of women** over age 40 earned a best actress award?

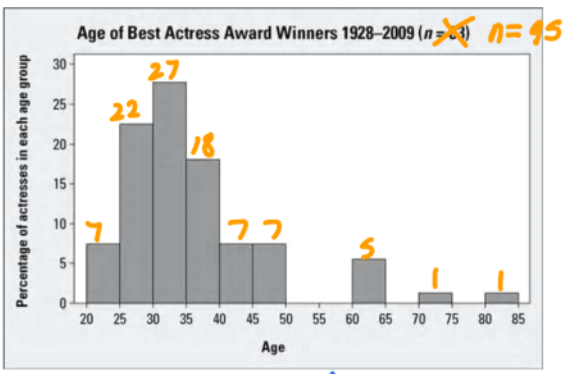
values close to 22 %

$7+7+5+1+1 = 21$

$\frac{21}{95} = \frac{n}{100}$

$2100 = 95n$

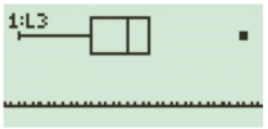
$n = 22$



[40,45)

9. Here are the amounts of fat in the 9 McDonald's fish and chicken sandwiches, in order:

4 12 16 19 19 20 22 22 35



Which value(s) are considered ***outliers***? 35

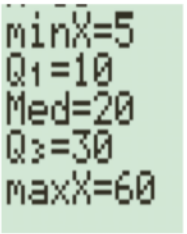
10. The *stemplot* below the time it takes for 15 workers to commute to work in North Carolina.

Time Travels to Work in North Carolina

0	5
1	000025
2	005
3	00
4	00
5	
6	0

Key: 2|5 is a NC worker who travels 25 minutes to work.

a) Find the **five-number summary**:



b) Calculate the **IQR**, show all work & formulas.

$IQR = Q_3 - Q_1$

$IQR = 30 - 10$

$IQR = 20$

c) Determine if there are any ***outliers***, show all work & formulas.

$< Q_1 - 1.5\,IQR$ $\quad$ $> Q_3 + 1.5\,IQR$

$< 10 - 1.5(20)$ $\quad$ $> 30 + 1.5(20)$

< -20 $\quad$ > 60

NO outliers

11. The **68-95-99.7 rule** is also known as Empirical Rule.

12. Decide whether each statement is **true** or **false** about Normal density curves.

a) They are not symmetric False

b) The mean, median, and mode are equal True

c) 100% percent of the area under the curve is within 3 standard deviations of the mean False

13. Decide whether each statement is **true** or **false**.

a) The ***third quartile*** of a distribution can be equal to the ***median***. True

b) The ***mean*** of a distribution is always greater than the ***median***. False

c) The ***range*** of a distribution is typically smaller than the ***interquartile range***. False

Key Terms to Know!

14. A normal density curve is a bell-shaped curve. A density curve is scaled so that the area under the curve is 1. The center line of the normal density curve is at the mean μ. The change of curvature in the bell-shaped curve occurs at μ – σ and μ + σ .

15. A normal distribution is described by a normal density curve. Any particular normal distribution is completely specified by its mean μ and standard deviation σ .

16. The Empirical Rule or 68-95-99.7 gives the approximate percentage of data that fall within one standard deviation (68%), two standard deviations (95%), and three standard deviations (99.7%) of the mean. This rule should be applied only when the data are approximately normal.

17. An observation x from a normal distribution with mean μ and standard deviation σ can be transformed into a standardized value called z-score as follows:

$$z = \frac{x - \mu}{\sigma}$$

18. A standard normal curve curve is a normal distribution with mean μ = 0 and standard deviation σ = 1.