Unit 2, Assignment 2: Variability
Please fill in the answers using RED text ☺

1. Which is the preferred descriptive measure of variability? _____

2. All distributions can be defined by which 3 things?

1. _____   2. _____ 3._____

3. If a professor returned an exam to you and your exam only had a deviation score of -15, what would you know about your X-score (your exam score)?
_____
_____
_____
_____

4. If a professor returned an exam to you and your exam had a deviation score of 8, and the professor told you that the class mean was 70, you would know that your exam score was:

       Answer:_____

5. Make up 3 sets of data, each of which has 6 scores so that one set has very high variability, one has very low, and one has zero variability:

       High variability_____

       Low variability_____

       Zero variability_____

6. What does the measure of standard deviation tell you about a set of data?
_____
_____
_____
_____

7. What is the statistical notation for the following?

        Population variance: _____

        Population standard deviation: _____

        Sample standard deviation: _____

        Sum of the squared deviations: _____

8. Calculate SS (by hand) for the following set of population data (you do not have to show your work):

        Data set: 10, 4, 8, 5, 8   Answer: _____

9. Calculate the population variance (by hand) for the data set in question 8 (you do not have to show your work):

                             Answer:_____

10. Calculate the population standard deviation for the data set in question 8 (you do not have to show your work):

                             Answer:_____

11. A population has a mean of 100 and a variance of 4. What is its standard deviation (no math is necessary to answer this question)?

        Answer:_____

12. A sample has a standard deviation of 7. What is its variance (no math is necessary to answer this question)?

        Answer:_____

13. Calculate SS (by hand) for the following set of sample data: 1, 6, 10, 9, 4 (no need to show work)

        Answer:_____

14. Calculate the sample standard deviation for the data set in question 13 (no need to show work)

        Answer:_____

15. What is the variance for the sample data in question 13? (no need to show work)

      Answer:_____

16. If a sample has a standard deviation of 3.2, what is its variance? (no need to show work)

      Answer:_____

17. If a sample has a variance of 2.2, what is its standard deviation?

      Answer:_____

18. A study examines the relationship between hours of sleep and the level of relaxation one feels in the afternoon in a SAMPLE of women. One group was allowed to sleep between 5 and 6 hours and the other group was allowed to sleep between 7 and 8 hours.

Here are the data for both groups:

5-6 hours of sleep	7-8 hours of sleep
4, 1, 5, 10, 5, 10	3, 2, 9, 15, 1, 12

Calculate the following by hand (no need to show work):

      Calculate the mean for the 5-6 hour group. Answer_____

      Calculate the mean for the 7-8 hour group. Answer:_____

      Calculate the standard deviation for the 5-6 hour group. Answer: _____

      Calculate the standard deviation for the 7-8 hour group. Answer:_____

19. These data are teacher first year salaries across a number of states. Enter these data on SPSS (you should enter the data WITHOUT the $ signs and remember to enter the data into ONE column on SPSS, despite the fact that I have given you the data in two columns). Calculate a mean, a standard deviation, and generate a histogram for these data:

$57,000	$28,350
$31,350	$30,000
$40,200	$27,750
$36,000	$30,750
$21,450	$35,100
$19,200	$34,800
$21,900	$27,300
$23,550	$60,000
$45,000	$40,800
$35,100	$45,000
$32,100	$103,750
$23,250	$42,300
$36,000	$26,250
$35,100	$38,850
$21,900	$21,750
$23,250	$24,000
$27,900	$16,950
$29,250	$21,150
$24,000	$92,000
$30,750	$81,250
$30,300	

Based on your SPSS results, what is the mean? _____

Based on your SPSS results, what is the standard deviation?_____

What is the best measure of central tendency to describe these data? _____ Why did you choose that answer? _____

_____
_____
_____

Cut and paste the histogram from SPSS here:

20.

Females	Males
9	8
9	10
10	11
13	12
8	11
16	9

Above are SAMPLE data for standardized intelligence scores for men and women.

What is the mean for women? _____

What is the mean for men? _____

What is the standard deviation for women? _____

What is the standard deviation for men? _____

Based on the means and standard deviations, how would you describe the differences in intelligence scores between men and women?

_____
_____
_____
_____
_____
_____

TRUE / FALSE

_____ 21. The range and the standard deviation are both measures of distance.

_____ 22. If the highest score in a distribution is $X = 16$ and the lowest is $X = 4$, then the range is 12 or 13 points.

_____ 23. The range is usually considered to be a relatively crude measure of variability.

_____ 24. For a population of scores, the sum of the deviation scores is equal to N.

_____ 25. For a population, a deviation score is computed as $X - \mu$

_____ 26. A positive deviation always indicates a score that is less than the mean.

_____ 27. For a population of $N = 4$ scores with $\Sigma X = 1$ and $\Sigma X^2 = 30$, $SS = 5$.

_____ 28. To calculate the variance for a population, SS is divided by N.

_____ 29. A population with $SS = 90$ and a variance of 9 has $N = 10$- scores.

_____ 30. If the population variance is 5, then the population standard deviation is $\sigma = 25$.

_____ 31. If the population variance is 4, then the standard deviation will be $\sigma = 16$.

_____ 32. If the scores in a population range from a low of $X = 5$ to a high of $X -= 14$, then the population standard deviation must be less than 10 points.

_____ 33. A sample of $n = 6$ scores has SS = 30 and $s^2 = 6$. If the 6 scores were a population, the value of SS would still be 30, but the variance would be $\sigma^2 = 5$.

_____ 34. A sample with a variance of 25 has a standard deviation equal to 5 points.

_____ 35. To calculate the variance for a sample, SS is divided by $n - 1$.