DISCUSSION SECTION NUMBER_____

STATISTICS 2023 NAME IN PRINT _____

EXAM ONE SIGNATURE_____

SPRING 1997 SS OR OSU ID_____

Retain this exam for grade verification after it is graded and returned to you.

TRUE OR FALSE. Answer with a capital T or F. (3 points each)

_____ 1. If the median of a data set is greater then the mean the data set is left skewed.

_____ 2. If the sum of the data in a data set with 400 observations is 2000 then the mean of the data set is 50.

_____ 3. A pie chart represents the relative frequency of a certain category in a data set with the area of the slice of the pie associated with that category.

_____ 4. A frequency bar chart represents the frequency of a certain category in a data set with the height of the bar associated with that category.

_____ 5. The standard deviation of a data set is the typical difference between individual data values and the mean of the data set; the variance is the same type of measurement in squared units.

_____ 6. If the shape of a data set is unknown there may be no data values within one standard deviation of the mean.

_____ 7. A z-score of -2.5 would be associated with a data values which is two and one-half standard deviations above the mean of the data set.

_____ 8. The probability of the complement of an event is one minus the probability of the event.

_____ 9. Two events which are independent must also be disjoint or mutually exclusive.

FILL IN THE BLANK. (3 points each)

_____ 10. What is the relative frequency of a category in a data set if the slice in a pie chart associated with that category has 72 degrees?

_____ 11. What is the average from a data set with the following observations: 14, 9, 11, 6, 3, 9, 18?

_____ 12. What is the sum of squares from a data set with the following observations: 14, 9, 11, 6, 3, 9, 18?

_____ 13. What is the square of the sum from a data set with the following observations: 14, 9, 11, 6, 3, 9, 18?

_____ 14. In a data set with four-thousand observations the value ten has the frequency of 1,200, the value twenty has the frequency of 600, the value of thirty has the frequency of 1,400 and the value of forty has the frequency 800 what is the value of the median of the sample?

_____ 15. If a data set with twenty observations has a sum equal to 524 and a sum of squares of 14,260.8 what is the value of the sample variance?

_____ 16. If the sample variance of a data set is 49 and the mean of the data set is 124 what is the z-score for a data value of 134.5?

_____ 17. If the z-score associated with a data value is -2.4 and the standard deviation of the data set is 11 with a mean of 53 what is the data value?

_____ 18. If the 84^{th} percentile in a mound-shaped data set is 79 and the standard deviation of the data set is 9 units what would you guess the mean of the data set to be?

FILL IN THE BLANK. (3 points each)

_____ 19. If the mean of a data set is 634 and the standard deviation is 20 but the shape of the data set is unknown at least what percent of the data would be within 40 units of the mean of 634?

_____ 20. If the mean of a data set is 634 and the standard deviation is 20 but the shape of the data set is unknown at most what proportion of the data could be more than 694?

_____ 21. If the mean of a data set is 634 and the standard deviations is 20 but the shape of the data set is unknown at most what percent of the data will be outside of the interval (614, 654)?

_____ 22. If the length of time required to perform a certain task is mound-shaped with an average of 57 minutes and a standard deviation of 4 minutes approximately what percent of the time does the task require more than 61 minutes?

_____ 23. If the length of time required to perform a certain task is mound-shaped with an average of 57 minutes and a standard deviation of 4 minutes approximately what percent of the time does the task require between 45 and 65 minutes to complete?

_____ 24. If the length of time required to perform a certain task is mound-shaped with an average of 57 minutes and a standard deviation of 4 minutes approximately what percent of the time does the task require less than 53 minutes or more than 65 minutes to complete?

_____ 25. What is the average of ten numbers if half of the numbers are equal to 10 and the other half are equal to 100?

_____ 26. What is the sample standard deviation of the following set of observations: 53, 23, 51, 36, 48, 22, 18? Round to two digits past the decimal.

PROBABILITY QUESTIONS **(3 points each)**

_____ 27. If you borrow two computer programs from a friend who claims the probability that one of the programs is infected with a computer virus is 0.03 and the probability that the other is infected with a virus is only 0.004 what is the probability that you are lucky and neither is infected with a virus if the programs and their viruses are independent? State your answer with five digits past the decimal.

_____ 28. Kendal and Amy plan to graduate from OSU next December. The probability that Kendal will graduate in December is 0.85 and the probability that Amy will graduate next December is 0.78. If the probability that Kendal or Amy will graduate is 0.92 what is the probability that they both will graduate in December? State your answer with two digits past the decimal.

Five-Hundred college students were polled about whether they would vote for Al Gore for president of the United States in the year 2000 if he was a candidate. Each student was also questioned about whether or not they cast a vote for Bill Clinton in the 1996 presidential election. The results of the polling information are displayed in the following table. Use this information to answer the remaining questions on this page. Do not reduce the fractions you state as your answers.

		WOULD VOTE FOR AL GORE IN 2000	
		YES	NO
VOTED FOR BILL CLINTON	YES	200	120
	NO	30	150

_____ 29. Based on this polling information what is the probability that a randomly chosen college student voted for Bill Clinton in 1996 and would vote for Al Gore in 2000 if he were a candidate?

_____ 30. Based on this polling information what is the probability that a randomly chosen college student who did not vote for Bill Clinton in 1996 would vote for Al Gore in the year 2000?

_____ 31. If a student had been chosen who stated they would not vote for Al Gore for president in 2000 what is the chance that the student did not vote for Bill Clinton in 1996?

_____ 32. What is the probability from this polling data that a randomly chosen student did not vote for Bill Clinton in 1996 or would not vote for Al Gore in 2000?

_____ 33. Based on this polling data what is the probability that a college student would vote for Al Gore for U.S. President in 2000?