

RETURN THIS EXAM TO DISCUSSION SECTION NUMBER \_\_\_\_\_

STATISTICS 2023      NAME, IN INK \_\_\_\_\_

EXAM ONE      SIGNATURE, IN INK \_\_\_\_\_

SPRING 2000      SS NUMBER, IN INK \_\_\_\_\_

Once this exam is graded and returned to you retain it for grade verification.

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

- \_\_\_\_\_ 1. Relative frequency tells the proportion of the observations that are in a certain category of the variable.
- \_\_\_\_\_ 2. The range of a data set is the number of units that the individual observations typically miss the mean of the data set.
- \_\_\_\_\_ 3. If a data set is assumed to be mound-shaped then approximately 32% of the observations would lie more than one standard deviation from the mean of the data set.
- \_\_\_\_\_ 4. The mean, mode and standard deviation of a data set measure the amount of dispersion in the set.
- \_\_\_\_\_ 5. If the z score for an individual data value is -1.5 then the data value is located one and one-half standard deviations either above or below the mean of the data set.
- \_\_\_\_\_ 6. If the shape of a data set is unknown then maybe none of the data values lie within one standard deviation of the mean.
- \_\_\_\_\_ 7. The sample space of an experiment is the set of the five most likely outcomes of the experiment.
- \_\_\_\_\_ 8. The median of a data set is the 50<sup>th</sup> percentile of the data set and the second quartile of that data set.
- \_\_\_\_\_ 9. The probability of the union of two events is the sum of the marginal probabilities of the two events for any two events, A and B.
- \_\_\_\_\_ 10. Two events, A and B, are known to be independent if the product of their marginal probabilities is equal to the probability of the intersection of the two events.

STATE THE ANSWER. State the answer on the line given.

(3 points each)

\_\_\_\_\_ 11. How many observations are in a data set if a category with 24 observations has a relative frequency of 0.15?

\_\_\_\_\_ 12. If a data set with 75 observations yields a sum of squares equal to 10,154.75 and a sum of 637.5 what is the numerical value of the sample mean? State your answer with one digit past the decimal.

\_\_\_\_\_ 13. If a data set with 75 observations yields a sum of squares equal to 10,154.75 and a sum of 637.5 what is the numerical value of the sample variance?

\_\_\_\_\_ 14. If a data set with a thousand observations has one-hundred 10's, three-hundred fifty 20's, four-hundred 30's, and one-hundred fifty 40's what is the numerical value of the median?

\_\_\_\_\_ 15. The mean tuition cost per semester at a state university is \$1,100 and the standard deviation for tuition cost per semester is \$150. If nothing is known about the shape of the distribution then at most what percent of students pay more than \$1400 tuition per semester?

The height of mature cottonwood trees along the creeks and rivers in eastern Oklahoma has a mound-shaped distribution with a mean of 38 feet and a standard deviation of 4 feet. Use this information to answer the remainder of the questions on this page.

\_\_\_\_\_ 16. Approximately what percent of cottonwood trees in this population are taller than 42 feet?

\_\_\_\_\_ 17. Only about 2.5% of the cottonwood trees in this population are shorter than what height?

\_\_\_\_\_ 18. Almost all of the cottonwood trees in this population would be between what two heights?

STATE THE ANSWER. State the answer on the line given.

(3 points each)

\_\_\_\_\_ 19. The grade distribution of an accounting test has a mean of 62 with a standard deviation of 12. What is the z score associated with the exam grade of 44? State your answer with one digit past the decimal.

\_\_\_\_\_ 20. The grade distribution of an accounting test has a mean of 62 with a standard deviation of 12. What is the value of a student's exam grade if the z score associated with the grade is 2.5?

A random sample of eight blue heron was chosen in Payne and Pawnee Counties of Oklahoma. The standing height was measured on each bird. The heights recorded in inches are stated below. Use this sample of standing heights of blue heron to answer the remainder of the questions on this page.

48.2, 46.1, 50.4, 44.5, 43.6, 47.2, 49.1, 50.9

\_\_\_\_\_ 21. What is the numerical value of the sum of the squares for the above sample?

\_\_\_\_\_ 22. What is the numerical value of the sum for the above sample?

\_\_\_\_\_ 23. What is the numerical value of the mean of the above sample of heights? State your answer with one digit past the decimal.

\_\_\_\_\_ 24. What is a numerical value for the median of the above sample of heights?

\_\_\_\_\_ 25. What is the numerical value of the variance of the above sample of heights? State your answer with two digits past the decimal.

\_\_\_\_\_ 26. What is the numerical value of the standard deviation of the above sample of heights? Round your answer to two digits past the decimal.

STATE THE ANSWER. State the answer on the line given.

(3 points each)

\_\_\_\_\_ 27. Two students, John and Michele, who are both in STAT 2023 usually study together. The probability that John completes his homework is .8 and the probability that Michele completes her homework is .9. If both John and Michele complete the homework 75% of the time, what is the probability that John or Michele completes the homework?

\_\_\_\_\_ 28. You have two friends who enjoy cooking and they often invite you to their home to eat. Suppose they invite you 50% of the time, and when invited, you go over to eat 90% of the time. What is the probability that they invite you and you go over to eat?

Six hundred college students were questioned about whether or not they plan to attend graduate school. What college their major is located in was also recorded. The results are shown in the following table. Use this table to answer the remainder of the questions on this page. Do not reduce fractional answers.

Plan to go to Graduate School		Yes	No	Don't Know
Major in College:	Business	76	136	55
	Arts & Sciences	49	88	126
	Agriculture	22	34	14

\_\_\_\_\_ 29. What is the probability of choosing a student who is planning to go to graduate school?

\_\_\_\_\_ 30. If the one student chosen has a major in the College of Business what is the probability that the student is not planning to go to graduate school?

\_\_\_\_\_ 31. Given that a student who plans to go to graduate school is chosen what is the probability that the student has a major in the College of Arts & Sciences?

\_\_\_\_\_ 32. What is the probability that if one student is chosen that the student does not plan to go to graduate school and has a major in the college of Arts & Sciences?

\_\_\_\_\_ 33. What is the probability that if one student is chosen that the student currently does not know if they want to go to graduate school or has a major in the College of Business?