STATISTICS 2023   NAME, PRINT IN INK_____Key_____

EXAM ONE   SIGNATURE IN INK_____

SPRING 2009   CWID IN INK_____

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

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

__F__ 1. The number of points scored in a basketball game is a qualitative variable.

__F__ 2. The mode is not affected by extreme values in the data, but the median is more affected than the mean.

__T__ 3. If nothing is known about the shape of a data set then the interval of values that are within one standard deviation of the mean may contain no values or it may contain all the values in the data set.

__F__ 4. The first quartile in a data set is the 75th percentile with 25% of the data exceeding that value.

__T__ 5. If the z score is -1.84 for an individual data value from a population with mean of 74 and standard deviation of 2 then the individual data value is equal to 70.32.

__T__ 6. The sixteenth percentile of a mound shaped data set is a point that is approximately one standard deviation below the mean.

__F__ 7. Conditional probability is the same as the marginal probability of an event.

The stock values at closing for Helmerich & Payne, Inc. for the five days during the week of January 26-30, 2009 were the following. Use this time series to answer the following questions.
         22.46,   22.40,   24.83,   24.55,   24.98

_23.84_ 8. State the numerical value of the mean of the stock close values for Helmerich & Payne for this week of data. Round your answer to two digits past the decimal.

_1.30_ 9. State the numerical value of the standard deviation of the stock close values for Helmerich & Payne, Inc. for this week of data. State your answer with two digits past the decimal since the units are dollars.

__0.025__ 10. If a segment of a pie chart is an arc of 9 degrees what is the relative frequency for the category of the variable represented by that segment of the pie chart?

__500__ 11. How many observations are in a data set if a category with 20 observations has a relative frequency of 0.04?

__17.5__ 12. Assume from a sample of 278 observations the sufficient statistics are the following values. The sum is 4,865 and the sum of squares is 86,245.5. What is the numerical value of the sample mean? State your answer with one digit past the decimal.

__2__ 13. Assume from a sample of 278 observations the sufficient statistics are the following values. The sum is 4,865 and the sum of squares is 86,245.5. What is the numerical value of the sample standard deviation?

__2__ 14. If a data set with seven thousand values has 2,200 ones, 1,500 twos, 200 threes, and 3,100 fours what is the numerical value of the median?

__25%__ 15. If a data set with unknown shape has a mean of 140 units and a standard deviation of 14 units then at most what percent of the data would be more than 168?

A very low risk stock has a steady rate of return without excess variance. Assume that the yearly percent return on a specific low risk stock has a mound-shaped distribution with a mean of 2.6 percent and a standard deviation of .35 percent. Use this information to answer the remainder of the questions on this page.

__.025 or 2.5%__ 16. Assuming the distribution of return on the stock is as described above what is the approximate percent of yearly returns that are more than 3.3 percent?

__2.25%__ 17. About 0.16 or 16% of the yearly percent returns on this specific low risk stock are less than what percent if the distribution for the returns is as described above?

__0.815 or 81.5%__ 18. If the distribution of yearly percent returns on this specific low risk stock is as described above then approximately what percent of the returns are between 2.25 percent and 3.3 percent?

_____1.5_____ 19. The grade distribution of a certain physics test has a mean of 69 with a standard deviation of 9. What is the z-score associated with the exam grade of 82.5? State your answer with one digit past the decimal.

_____49.2_____ 20. The grade distribution of a certain physics test has a mean of 69 with a standard deviation of 9. What is the value of a student's exam grade if the z-score associated with the grade is -2.2?

A random sample of eight rattlesnakes was chosen in Greer and Jackson Counties of Oklahoma. The length of each snake was measured in inches and is listed below. Use this sample of rattlesnake lengths to answer the remainder of the questions on this page.

45.6, 32.2, 53.8, 29.1, 24.9, 41.7, 35.6, 33.1

_11,579.32_ 21. What is the numerical value of the sum of the squares for the above sample of rattlesnake lengths?

_____296_____ 22. What is the numerical value of the sum for the above sample of rattlesnake lengths?

_____37_____ 23. What is the numerical value of the mean of the above sample of rattlesnake lengths?

_34.35_____ 24. What is a numerical value for the median of the above sample of rattlesnake lengths?

_____89.6_____ 25. What is the numerical value of the variance of the above sample of rattlesnake lengths? Round your answer to one digit past the decimal.

_____9.5_____ 26. What is the numerical value of the standard deviation of the above sample of rattlesnake lengths? Round your answer to one digit past the decimal.

STATE THE ANSWER. State the answer on the line given.   (3 points each)

_.089_ 27. Suppose a library with 15,236 volumes, has 5,453 volumes of non-fiction, 8,425 volumes are fiction, 738 volumes are biographies and the rest are dictionaries. If you randomly pick up one volume from the library, what is the probability that you will get a biography or a dictionary? Round your answer to three digits past the decimal.

_.6876_ 28. Fifty-seven percent of all employees of Oklahoma State University include dependants on their health insurance. Of married employees, seventy-two percent include dependents on their health insurance. If forty-two percent of all OSU employees are married, then what is the percent of OSU employees who are married or include dependants on their health insurance?

A research institute surveyed 300 people between age 20 and 30 in a certain city for their marital status. They obtained the information given in the table below. One of these 300 people is selected at random. **Do not reduce fractional answers. State all of your answers as ratio fractions. Do not state decimal fraction answers.**

	Married		Single	
	Male	Female	Male	Female
Under Age 25	13	24	40	52
Age 25 or above	27	38	72	34

$\dfrac{129}{300}$ 29. What is the probably that the person selected is under age 25?

$\dfrac{65}{102}$ 30. If the person selected is married, what is the probability that the person is above age 25?

$\dfrac{86}{148}$ 31. If the person selected is female, what is the probability that the person is still single?

$\dfrac{13}{300}$ 32. What is the probability that the selected person is a married male and under age 25?

$\dfrac{52}{86}$ 33. Assume the person is selected from all single females, what is the probability that she will be under age 25?