STATISTICS 2023   NAME, PRINT IN INK_____

EXAM ONE   SIGNATURE, IN INK_____

Spring 2017   CWID, 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. Pie charts and bar charts both use area to represent relative frequency for categories of a qualitative variable.

_____ 2. The mean, the 50th percentile, and the 2nd quartile of the data set are always the same value for any data set.

_____ 3. The median is the balance point of the data with half the data below and half the data above.

_____ 4. If a sample of 50 observations results in a mean of 45 and a standard deviation of 12 then a data value of 62 has a z score of positive one.

_____ 5. If a data set is mound-shaped with a mean of 2100 and a standard deviation of 25 then about 68% of the data is between 2050 and 2150.

_____ 6. If a data set has an unknown shape, then there may be no data within one standard deviation of the mean.

_____ 7. The probability of an event is a number between 0 and 1, inclusive of the values 0 and 1, which represents the likelihood of the event.

STATE THE ANSWER. State the answer on the line given.   **(3 points each)**
For the remaining questions on this page consider the following data. The changes in percent of a particular stock for eight trading days were the following:

-1.6,   2.8,   -3.1,   0.8,   1.5,   -1.8,   -2.2,   0.4

_____ 8. What is the numerical value of the mean of the sample of daily changes for the stock?

_____ 9. What is the numerical value of the sum of squares for the sample of daily changes for the stock?

_____10. What is the numerical value of the sample variance for the sample of daily changes for the stock? Round your answer to two digits past the decimal.

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

_____ 11. If there are 2300 observations in a data set how many observations are in a certain category that has relative frequency of 0.07?

_____ 12. If a data set with 634 observations has a mean of 14, what is the sum of the data?

_____ 13. If the position of the median in a data set is 27.5, how many observations are in the data set?

_____ 14. If a data set has a sample standard deviation of 49, what is the numerical value of the sample variance?

_____ 15. If a data set with unknown shape has a mean of 410 units and a standard deviation of 18 units, then at least what percent of the data would fall into the interval (374, 446)?

The annual spending of a single student at OSU has a mound-shaped distribution with a mean of $16,050 and a standard deviation of $460. Use this information to answer the remainder of the questions on this page.

_____ 16. Approximately what percent of single students have annual spending between $15,130 and $16,510?

_____ 17. About 0.16 or 16% of the single students have annual spending less than how many dollars?

_____ 18. What approximate percent of the single students have annual spending more than $16,970?

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

_____ 19. Suppose a sample is drawn from a distribution with mean 75 and standard deviation 15. What is the z-score corresponding to an individual value of 72? State your answer with one digit past the decimal.

_____ 20. Suppose a sample is drawn from a distribution with mean 75 and standard deviation 15. What is the individual value corresponding to the z-score of 1.24? State your answer with one digit past the decimal.

Answer question 21-26 with the following data
Many audio podcasts that are available on the internet are mpeg level 3 files, called mp3. The file size is approximately 1MB for each 2 minutes of talk audio. Listed below are eight randomly chosen individual podcasts and the associated file size in megabits.

Podcast	file size in MB
The Classic Tales Podcast	22.8MB
NPR Hourly News Summary	2.6MB
BBC Global News	9.2MB
Future Tense Tech News	3.4MB
Travel with Rick Steves	28.5MB
Washington Week PBS	14.6MB
Science Talk	12.9MB
The New Yorker	8.6MB

_____ 21. What is the numerical value of the mean for the above file sizes? Round your answer to one digit past the decimal.

_____ 22. What is the numerical value of the median for the above files sizes?

_____ 23. What percent of the file sizes above are more than 10MB?

_____ 24. What is the sum of the squares for the above file sizes?

_____ 25. What is the square of the sum for the above file sizes?

_____ 26. What is the standard deviation of the above file sizes? Round your answer to two digits past the decimal.

_____ 27. Thirty-five percent of the employees of a company are managers; forty percent of the employees have MBA degrees. Of the employees with MBA degrees sixty percent of them are managers. What is the probability that a randomly chosen employee has an MBA degree or is a manager? State your answer with two digits past the decimal.

_____ 28. Sixty-three percent of all new movies are produced in both HD-DVD and Blu-ray formats. Ninety percent of all new movies are produced in Blu-ray format. Assuming that a movie is produced in Blu-ray format, what is the probability that it is also produced in HD-DVD format? State your answer with one digit past the decimal.

Snow-boarding is a popular winter sport for many Americans. In a survey at a major state university 400 students were questioned whether they were interested in a snow-boarding trip during winter break. The sex and marital status of each student in the survey was recorded. The data appear below. Do not reduce fractional answers. State all of your answers as ratio fractions. Do not state decimal fraction answers.

	Interested in the Trip		Not Interested in the Trip	
	Male	**Female**	**Male**	**Female**
Single	72	73	25	50
Married	78	47	20	35

_____ 29. What is the probability that a randomly selected person is interested in the trip?

_____ 30. Assume a person is randomly selected from all single males, what is the probability that he will be interested in the trip?

_____ 31. What is the probability that a randomly selected person is a married male and interested in the trip?

_____ 32. If a married person is selected, what is the probability that the person is male?

_____ 33. What is the probability of randomly selecting a person who is female or is not interested in the trip?