**Question 1**

Which of the arithmetic mean, median, and mode are resistant measures of central tendency?

Select one:

a. All the three are resistant measures

b. The arithmetic mean and median only.

c. The mode and arithmetic mean only.

d. The median and mode only.

**Question 2**



> qplot(payroll,wins,col=league,shape=division)

Select one:

a. Pie Charts

b. Scatterplot

c. Multiple Plots

d. Group Data by aVariable

**Question 3**

A major videocassette rental chain is considering opening a new store in an area that currently does not have any such stores. The chain will open if there is evidence that more than 5,000 of the 20,000 households in the area are equipped with videocassette recorders (VCRs). It conducts a telephone poll of 300 randomly selected households in the area and finds that 96 have VCRs. The p-value associated with the test statistic in this problem is approximately equal to:

Select one:

a. 0.0051

b. 0.0013

c. 0.0026

d. 0.0100

**Question 4**

A sample of 300 subscribers to a particular magazine is selected from a population frame of 9,000 subscribers. If, upon examining the data, it is determined that no subscriber had been selected in the sample more than once,

Select one:

a. The sample could not have been random.

b. The sample may have been selected without replacement or with replacement.

c. The sample had to have been selected without replacement.

d. The sample had to have been selected with replacement.

**Question 5**

A simple random sample

Select one:

a. is obtained in such a way as to ensure that every member of the population has an equal chance of being selected

b. all of the above

c. usually results in a sample that is representative of the population from which the sample was selected

d. usually requires that a sampling frame be constructed

e. none of the above

**Question 6**

A Type II error is committed when

Select one:

a. We don't reject a null hypothesis that is true.

b. We reject a null hypothesis that is true.

c. We don't reject a null hypothesis that is false.

d. We reject a null hypothesis that is false.

**Question 7**

A university dean is interested in determining the proportion of students who receive some sort of financial aid. Rather than examine the records for all students, the dean randomly selects 200 students and finds that 118 of them are receiving financial aid. If the dean wanted to estimate the proportion of all students receiving financial aid to within 3% with 99% reliability, how many students would need to be sampled?

Select one:

a. n = 1,503

b. n = 1,844

c. n = 1,784

d. n = 1,43

**Question 8**



An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a standard deviation of 40 hours. If a sample of 30 bulbs has an average life of 780 hours, How large a sample is needed if we wish to be 96% conﬁdent that our sample mean will be within 10 hours of the true mean

Select one:

a. 68

b. 55

c. 67

d. None from above

**Question 9**

Assume that a procedure yields a binomial distribution with a trial repeated n times. Use the binomial probability formula to find the probability of x successes given the probability p of success on a single trial. 13) n = 64, x = 3, p = 0.04

Select one:

a. 0.221

b. 0.375

c. 0.091

d. 0.139

**Question 10**

For results based on a small random sample from a bell-shaped distribution, the distribution of the sample mean is

Select one:

a. A uniform distribution.

b. Approximately a normal distribution.

c. Not a bell-shaped distribution.

d. Approximately a standard normal (z-score) distribution.

**Question 11**

If two events are independent, then

Select one:

a. they must be mutually exclusive.

b. None of the above.

c. their intersection must be zero.

d. the sum of their probabilities must be equal to one.

**Question 12**

In a winter of an epidemic flu, 2000 babies were surveyed by a well-known pharmaceutical company to determine if the company's new medicine was effective after two days. Among 120 babies who had the flu and were given the medicine, 29 were cured within two days. Among 280 babies who had the flu but were not given the medicine, 56 were cured within two days. Is there any significant indication that supports the company's claim of the effectiveness of the medicine?

Select one:

a. Reject null hypothesis. There is significant evidence to conclude that the new medicine is more effective.

b. There is no enough information

c. Fail to reject null hypothesis. There is no significant evidence to conclude that the new more effective.

d. There is a 0.5 % chance that the null hypothesis is true. Therefore, we reject the null hypothesis.

**Question 13**

In perfectly symmetrical distributions, which of the following is NOT a correct statement?

Select one:

a. The distance from the smallest observation to Q1 is the same as the distance from Q3 to the largest observation.

b. The distance from the smallest observation to Q2 is the same as the distance from Q2 to the largest observation.

c. The distance from Q1 to Q2 equals to the distance from Q2 to Q3.

d. The distance from Q1 to Q3 is half of the distance from the smallest to the largest observation.

**Question 14**

In the American Heart Association journal Hypertension, researchers report that individuals who practice Transcendental Meditation (TM) lower their blood pressure significantly. If a random sample of 225 male TM practitioners meditate for 8.5 hours per week with a standard deviation of 2.25 hours, does that suggest that, on average, men who use TM meditate more than 8 hours per week? Quote a P-value in your conclusion.

Select one:

a. There is a 0.5 % chance that the null hypothesis is true. Therefore, we reject the null hypothesis.

b. Fail to reject null hypothesis. There is no significant evidence to conclude that the man who use MT, on average, mediate more than 8 horses par week ..

c. Reject null hypothesis, and conclude that the man who use MT, on average,mediate more than 8 horses par week .

d. There is no enough information

**Question 15**

Pick the choice that best completes the following sentence. If a relationship between two variables is called statistically significant, it means the investigators think the variables are

Select one:

a. related in the population represented by the sample.

b. not related in the population represented by the sample.

c. very important.

d. related in the sample due to chance alone.

**Question 16**

Sales prices of baseball cards from the 1960s are known to possess a skewed-right distribution with a mean sale price of $5.25 and a standard deviation of $2.80. Suppose a random sample of 100 cards from the 1960s is selected. Describe the sampling distribution for the sample mean sale price of the selected cards.

Select one:

a. Skewed-right with a mean of $5.25 and a standard error of $2.80

b. Normal with a mean of $5.25 and a standard error of $2.80

c. Normal with a mean of $5.25 and a standard error of $0.28

d. Skewed-right with a mean of $5.25 and a standard error of $0.28

**Question 17**

Spinning a roulette wheel 6 times, keeping track of the occurrences of a winning number of "16".

Select one:

a. Not binomial: the trials are not independent.

b. Not binomial: there are too many trials.

c. Procedure results in a binomial distribution.

d. Not binomial: there are more than two outcomes for each trial.

**Question 18**



Suppose a 95% confidence interval for  µ turns out to be (1,000, 2,100). To make more useful inferences from the data, it is desired to reduce the width of the confidence interval. Which of the following will result in a reduced interval width?

Select one:

a. Increase the population mean.

b. Increase the confidence level.

c. Increase the sample mean

d. Increase the sample size.

**Question 19**

Suppose the US Department of Education is interested in knowing if the proportion of high school seniors planning on attending college is not 60%. They conduct a hypothesis test with Alpha = 0.05 and get a p-value of 0.039. What interpretation should they make?

Select one:

a. They do not reject H0, and believe that the proportion of high school seniors planning to attend college is different than 0.60.

b. They reject H0, and believe that proportion of high school seniors planning to attend college is less than 0.6.

c. They do not reject H0, and believe that the proportion of high school seniors planning to attend college is 0.60.

d. They reject H0, and believe that the proportion of high school seniors planning to attend college is different than 0.60.

e. They reject H0, and believe that the proportion of high school seniors planning to attend college is greater than 0.60.

**Question 20**

Suppose you are testing H0 : p = 0.25 vs. HA : p > 0.25. The resulting p-value is 0.306. What is your conclusion?

Select one:

a. Since the significance level, Alpha, is not given, we cannot conclude anything.

b. Since the p-value, 0.306, is greater than 0.25, we reject and conclude that there is sufficient evidence to say that the true proportion, p &gt; 0.25.

c. Since the p-value, 0.306, is NOT less than 0.25, we fail to reject at the 25% level and conclude that there is sufficient evidence to say that the true proportion, p &gt; 0.25.

d. Since the p-value, 0.25, is NOT less than even 0.10, we fail to reject at the 10% level and conclude that there is insufficient evidence to say that the true proportion, p &gt; 0.306.

e. Since the p-value, 0.306, is NOT less than even 0.10, we fail to reject at the 10% level and conclude that there is insufficient evidence to say that the true proportion, p &gt; 0.25.

**Question 21**

The Central Limit Theorem is important in statistics because

Select one:

a. For a large n, it says the sampling distribution of the sample mean is approximately normal, regardless of the shape of the population.

b. For a large n, it says the population is approximately normal.

c. for any sized sample, it says the sampling distribution of the sample mean is approximately normal

d. For any population, it says the sampling distribution of the sample mean is approximately normal, regardless of the sample size.

**Question 22**

The classification of student class designation (freshman, sophomore, junior, senior) is an example of

Select one:

a. a discrete random variable.

b. a continuous random variable.

c. a categorical random variable.

d. a parameter.

**Question 23**

The Dean of Students mailed a survey to a total of 400 students. The sample included 100 students randomly selected from each of the freshman, sophomore, junior, and senior classes on campus last term. What sampling method was used?

Select one:

a. Stratified sample

b. Cluster sample

c. Simple random sample

d. Systematic sample

**Question 24**

The evening host of a dinner dance reached into a bowl, mixed all the tickets around, and selected the ticket to award the grand door prize. What sampling method was used?

Select one:

a. Systematic sample

b. Simple random sample

c. Cluster sample

d. Stratified sample

**Question 25**

The marketing manager for an automobile manufacturer is interested in determining the proportion of new compact-car owners who would have purchased a passengerside inflatable air bag if it had been available for an additional cost of $300. The manager believes from previous information that the proportion is 0.30. Suppose that a survey of 200 new compact-car owners is selected and 79 indicate that they would have purchased the inflatable air bags. If you were to conduct a test to determine whether there is evidence that the proportion is different from 0.30 and decided not to reject the null hypothesis, what conclusion could you draw?

Select one:

a. There is sufficient evidence that the proportion is 0.30.

b. There is not sufficient evidence that the proportion is not 0.30.

c. There is sufficient evidence that the proportion is 0.35.

d. There is not sufficient evidence that the proportion is 0.35.

**Question 26**

The owner of a local nightclub has recently surveyed a random sample of n = 250 customers of the club. She would now like to determine whether or not the mean age of her customers is over 30. If so, she plans to alter the entertainment to appeal to an older crowd. If not, no entertainment changes will be made. Suppose she found that the sample mean was 30.45 years and the sample standard deviation was 5 years. If she wants to be 99% confident in her decision, what decision should she make?

Select one:

a. There is not sufficient evidence that the mean age of her customers is not over 30.

b. There is sufficient evidence that the mean age of her customers is over 30.

c. There is not sufficient evidence that the mean age of her customers is over 30.

d. There is sufficient evidence that the mean age of her customers is not over 30

**Question 27**



The researcher was attempting to show statistically that the female MBA graduates have a significantly lower mean starting salary than the male MBA graduates. What assumptions were necessary to conduct this hypothesis test?

Select one:

a. The samples were randomly and independently selected.

b. Both populations of salaries (male and female) must have approximate normal distributions.

c. All of the above assumptions were necessary.

d. The population variances are approximately equal.

**Question 28**

The school board wishes to find out if the newly adapted teaching method for K-5 math has resulted in higher average grades. Find a confidence interval for the population parameter or conduct a hypothesis test for a specific null value

Select one:

a. Confidence interval

b. Hypothesis test

c. Estimate

d. Parameter

**Question 29**

When a customer enters a store there are three outcomes that can occur: buy nothing, buy a small amount, or buy a large amount. In this situation, if a customer buys a large amount, he or she cannot also buy a small amount or buy nothing. Thus the events are:

Select one:

a. Dependent events.

b. All inclusive.

c. Independent.

d. Mutually exclusive.

**Question 30**

Which of the following describes the relationship between the Central Limit Theorem and the Rule for Sample Proportions?

Select one:

a. The Central Limit Theorem is a special case of the Rule for Sample Proportions.

b. The Rule for Sample Proportions follows from the Central Limit Theorem by defining each observation in the sample to be either 1 or 0.

c. The Central Limit Theorem is just a restatement of the Rule for Sample Proportions.

d. There is no relationship because the Central Limit Theorem is about means and the Rule for Sample Proportions is about proportions.

**Question 31**

Which of the following is a discrete quantitative variable?

Select one:

a. The number of employees of an insurance company

b. The distance you drove yesterday.

c. The volume of water released from a dam

d. The Dow Jones Industrial average

**Question 32**

Which of the following is NOT sensitive to extreme values?

Select one:

a. The range.

b. The interquartile range.

c. The coefficient of variation

d. The standard deviation.

**Question 33**

Which of the following is true about the sampling distribution of the sample mean?

Select one:

a. The standard deviation of the sampling distribution is always sigma.

b. The shape of the sampling distribution is always approximately normal.

c. None from the Above

d.   The mean of the sampling distribution is always Mu.

**Question 34**

Which of the following is true regarding the sampling distribution of the mean for a large sample size?

Select one:

a. It has the same shape and mean as the population, but has a smaller standard deviation.

b. It has a normal distribution with the same mean as the population but with a smaller standard deviation.

c. It has the same shape, mean, and standard deviation as the population.

d. It has a normal distribution with the same mean and standard deviation as the population.

**Question 35**

Which of the following is/are true?

Select one:

a. As long as the p-value is less than Alph, we can conclude there is statistical significance.

b. All of the above are true.

c. If the p-value is not less than Alph, then the null hypothesis is plausible.

d. The only hypothesis that is provable is the null. That’s why we assume it’s true.

**Question 36**

Which of the following statements about the median is not true?

Select one:

a. It is more affected by extreme values than the arithmetic mean.

b. It is equal to Q2.

c. It is a measure of central tendency.

d. It is equal to the mode in bell-shaped "normal" distributions

**Question 37**

Which of the following would indicate that a dataset is skewed to the right?

Select one:

a. The range is larger than the interquartile range.

b. The interquartile range is larger than the range.

c. The mean is much larger than the median.

d. The mean is much smaller than the median.

**Question 38**

 Which of the following statements is true?  
Select one:

a. For the standard normal distribution, it is impossible to have a z value of 10.8.

b. There are an infinite number of normal distributions.

c. The area under a normal curve is approximately equal to 1.

d. A normal distribution can always be used to accurately approximate a binomial probability value.

**Question 39**

Which one of the following statements is false?

Select one:

a. The sampling distribution of any statistic becomes approximately normal for large sample sizes.

b. The sampling distribution of the sample mean becomes approximately normal for large sample sizes.

c. The standard deviation of the sample mean decreases as the sample size increases.

d. The sampling distribution of the sample mean is exactly normal if the observations are normally distributed.

**Question 40**

Which one of the following variables is not categorical:

Select one:

a. The choice on a test item: true or false.

b. The marital status of a person: single, married, divorced, other.

c. The gender of a person: male or female

d. The age in years of a person.

**Question 41**

Why is the Central Limit Theorem so important to the study of sampling distributions?

Select one:

a. It allows us to disregard the size of the population we are sampling from.

b. It allows us to disregard the size of the sample selected when the population is not normal.

c. It allows us to disregard the shape of the sampling distribution when the size of the population is large.

d. It allows us to disregard the shape of the population when the sample size is large