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|  | 1)  The owner of a fish market has an assistant who has determined that the weights of catfish are normally distributed, with mean of 3.2 pounds and standard deviation of 0.8 pound. If a sample of 16 fish is taken, what would the standard error of the mean weight equal? |  |  |  |  |
| Question 1 answers   |  |  |  | | --- | --- | --- | |  |  | 0.003 | |  |  | 0.050 | |  |  | 0.200 | |  |  | 0.800 | |  |  |  |  |

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| 2) |  | | | |  |
|  | Suppose the ages of students in Statistics 101 follow a skewed-right distribution with a mean of 23 years and a standard deviation of 3 years. If we randomly sampled 100 students, which of the following statements about the sampling distribution of the sample mean age is INCORRECT? |  |  |  |  |
| Question 2 answers   |  |  |  | | --- | --- | --- | |  |  | The mean of the sampling distribution is equal to 23 years. | |  |  | The standard deviation of the sampling distribution is equal to 3 years. | |  |  | The shape of the sampling distribution is approximately normal. | |  |  | The standard error of the sampling distribution is equal to 0.3 years. | |  |  |  |  |

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| 3) |  | | | |  |
|  | Which of the following is TRUEabout the sampling distribution of the sample mean? |  |  |  |  |
| Question 3 answers   |  |  |  | | --- | --- | --- | |  |  | The mean of the sampling distribution is µ. | |  |  | The standard deviation of the sampling distribution is always sigma, . | |  |  | The shape of the sampling distribution is always approximately normal. | |  |  | All of the above are true. | |  |  |  |  |

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| 4) |  | | | |  |
|  | The standard error of the population proportion will become larger |  |  |  |  |
| Question 4 answers   |  |  |  | | --- | --- | --- | |  |  | as population proportion approaches 0. | |  |  | as population proportion approaches 0.50. | |  |  | as population proportion approaches 1.00. | |  |  | as the sample size increases. | |  |  |  |  |

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| 5) |  | | | |  |
|  | Which of the following statements about the sampling distribution of the sample mean is INCORRECT? |  |  |  |  |
| Question 5 answers   |  |  |  | | --- | --- | --- | |  |  | The sampling distribution of the sample mean is approximately normal whenever the sample size is sufficiently large (*n* ¡Ý 30). | |  |  | The sampling distribution of the sample mean is generated by repeatedly taking samples of size *n* and computing the sample means. | |  |  | The mean of the sampling distribution of the sample mean is equal to the population mean µ. | |  |  | The standard deviation of the sampling distribution of the sample mean is equal to the population standard deviation (sigma). | |  |  |  |  |

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| 6) |  | | | |  |
|  | For sample size 1, the sampling distribution of the mean will be normally distributed |  |  |  |  |
| Question 6 answers   |  |  |  | | --- | --- | --- | |  |  | regardless of the shape of the population. | |  |  | only if the shape of the population is symmetrical. | |  |  | only if the population values are positive. | |  |  | only if the population is normally distributed. | |  |  |  |  |

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| 7) |  | | | |  |
|  | A sample that does not provide a good representation of the population from which it was collected is referred to as a(n) \_\_\_\_\_ sample. |  |  |  |  |
| Question 7 answers   |  |  |  | | --- | --- | --- | |  |  | mean | |  |  | biased | |  |  | unbiased | |  |  | sample | |  |  |  |  |

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| 8) |  | | | |  |
|  | If the amount of gasoline purchased per car at a large service station has a population mean of $15 and a population standard deviation of $4 and it is assumed that the amount of gasoline purchased per car is symmetric, there is about a 68% chance that a random sample of 16 cars will have a sample mean between $14 and $16. |  |  |  |  |
| Question 8 answers   |  |  | | --- | --- | |  | True | |  | False | |  |  |  |  |

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| 9) |  | | | |  |
|  | If you were constructing a 99% confidence interval of the population mean based on a sample of *n*=25 where the standard deviation of the sample standard deviation=0.05, the critical value of *t* will be |  |  |  |  |
| Question 9 answers   |  |  |  | | --- | --- | --- | |  |  | 2.7969 | |  |  | 2.7874 | |  |  | 2.4922 | |  |  | 2.4851 | |  |  |  |  |

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| 10) |  | | | |  |
|  | A community college system enrolling many thousands of students is considering a change in their tuition policy. At present the students pay $55 per credit hour. The administrators are considering a flat fee $750 per quarter, regardless of how many credit hours are taken. Before making the change, the administrators would like to know how many credit hours on average, each student takes per quarter. A random sample of 250 students yields a mean of 14.1 credit hours per quarter with a standard deviation of 2.3 credit hours per quarter. Estimate the mean to within 0.1 hours at 95% reliability and assume the sample standard deviation provides a good estimate for the population standard deviation. How large a sample do they need? |  |  |  |  |
| Question 10 answers   |  |  |  | | --- | --- | --- | |  |  | *n* = 2033 | |  |  | *n* = 2355 | |  |  | *n* = 3543 | |  |  | *n* = 4572 | |  |  |  |  |

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| 11) |  | | | |  |
|  | As an aid to the establishment of personnel requirements, the director of a hospital wishes to estimate the mean number of people who are admitted to the emergency room during a 24-hour period. The director randomly selects 64 different 24-hour periods and determines the number of admissions for each. For this sample, the sample mean= 9.8 and the sample variance=25. If the director wishes to estimate the mean number of admissions per 24-hour period to within 1 admission with 99% reliability, what size sample should she choose? |  |  |  |  |
| Question 11 answers   |  |  |  | | --- | --- | --- | |  |  | *n* = 482 | |  |  | *n* = 166 | |  |  | *n* = 154 | |  |  | *n* = 123 | |  |  |  |  |

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| 12) |  | | | |  |
|  | The *t* distribution |  |  |  |  |
| Question 12 answers   |  |  |  | | --- | --- | --- | |  |  | assumes the population is normally distributed. | |  |  | approaches the normal distribution as the sample size increases. | |  |  | has more area in the tails than does the normal distribution. | |  |  | All of the above. | |  |  |  |  |

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| 13) |  | | | |  |
|  | A major department store chain is interested in estimating the average amount its credit card customers spent on their first visit to a new store. Fifteen credit card accounts were randomly sampled and analyzed with the following results: sample mean=$50.50 and sample variance=121. Construct a 95% confidence interval for the average amount its credit card customers spent on their visit to the chain's new store in the mall assuming that the amount spent follows a normal distribution (that is, the sample variance equals the population variance). |  |  |  |  |
| Question 13 answers   |  |  |  | | --- | --- | --- | |  |  | $50.50 ± 1.96\*121 | |  |  | $50.50 ± 1.96\*(sqrt(121)) | |  |  | $50.50 ± 1.96/(sqrt(121)) | |  |  | $50.50 ± 1.96\*(sqrt(121))/(sqrt(15)) | |  |  |  |  |

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| 14) |  | | | |  |
|  | An economist is interested in studying the incomes of consumers in a particular region. The population standard deviation is known to be $1,000. A random sample of 50 individuals resulted in an average income of $15,000. What is the upper end point in a 99% confidence interval for the average income? |  |  |  |  |
| Question 14 answers   |  |  |  | | --- | --- | --- | |  |  | $15,052 | |  |  | $15,141 | |  |  | $15,330 | |  |  | $15,364 | |  |  |  |  |

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| 15) |  | | | |  |
|  | Which of the following is NOT true about the Student's *t* distribution? |  |  |  |  |
| Question 15 answers   |  |  |  | | --- | --- | --- | |  |  | It has more area in the tails and less in the center than does the normal distribution. | |  |  | It is used to construct confidence intervals for the population mean when the population standard deviation is known. | |  |  | It is bell shaped and symmetrical. | |  |  | As the number of degrees of freedom increases, the *t* distribution approaches the normal | |  |  |  |  |

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| 16) |  | | | |  |
|  | 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. The 95% confidence interval for *p* is 0.59 ± 0.07. Interpret this interval. |  |  |  |  |
| Question 16 answers   |  |  |  | | --- | --- | --- | |  |  | We are 95% confident that the true proportion of all students receiving financial aid is between 0.52 and 0.66. | |  |  | 95% of the students get between 52% and 66% of their tuition paid for by financial aid. | |  |  | We are 95% confident that between 52% and 66% of the sampled students receive some sort of financial aid. | |  |  | We are 95% confident that 59% of the students are on some sort of financial aid. | |  |  |  |  |

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| 17) |  | | | |  |
|  | We have created a 95% confidence interval for μ (mu) with the result (10, 15). What decision will we make if we test *H*0: μ = 16 versus *H*1: μ ≠ 16, at α = .05? |  |  |  |  |
| Question 17 answers   |  |  |  | | --- | --- | --- | |  |  | Reject *H*0 | |  |  | Accept *H*0 | |  |  | Fail to reject *H*0 | |  |  | Cannot tell what the decision ought to be from the information given. | |  |  |  |  |

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| 18) |  | | | |  |
|  | For a given level of significance (α), if the sample size *n* is increased, then the probability of a Type II error (β) |  |  |  |  |
| Question 18 answers   |  |  |  | | --- | --- | --- | |  |  | will decrease. | |  |  | will increase. | |  |  | will remain the same. | |  |  | cannot be determined. | |  |  |  |  |

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| 19) |  | | | |  |
|  | The power of a test is measured by its capability of |  |  |  |  |
| Question 19 answers   |  |  |  | | --- | --- | --- | |  |  | rejecting a null hypothesis that is true. | |  |  | not rejecting a null hypothesis that is true. | |  |  | rejecting a null hypothesis that is false. | |  |  | not rejecting a null hypothesis that is false. | |  |  |  |  |

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| 20) |  | | | |  |
|  | Suppose we wish to test the null hypothesis *H*0: μ ≤ 47 versus *H*1: μ > 47. What will result if we conclude that the mean is greater than 47 when its true value really is 52? |  |  |  |  |
| Question 20 answers   |  |  |  | | --- | --- | --- | |  |  | We have made a Type I error. | |  |  | We have made a Type II error. | |  |  | We have made a correct decision | |  |  | None of the above are correct. | |  |  |  |  |

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| 21) |  | | | |  |
|  | If the Type I error, α for a given test is to be decreased, then for a fixed sample size: |  |  |  |  |
| Question 21 answers   |  |  |  | | --- | --- | --- | |  |  | the Type II error (β) will also decrease. | |  |  | the Type II error (β) will increase. | |  |  | the power of the test will increase. | |  |  | a one-tailed test must be utilized. | |  |  |  |  |

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| 22) |  | | | |  |
|  | If an economist wishes to determine whether there is evidence that average family income in a community is greater than $25,000, then she should use: |  |  |  |  |
| Question 22 answers   |  |  |  | | --- | --- | --- | |  |  | either a one-tailed or two-tailed test. | |  |  | a one-tailed test. | |  |  | a two-tailed test. | |  |  | None of the above. | |  |  |  |  |

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| 23) |  | | | |  |
|  | For a given sample size, the probability of committing a Type II error will increase when the probability of committing a Type I error is reduced. |  |  |  |  |
| Question 23 answers   |  |  | | --- | --- | |  | True | |  | False | |  |  |  |  |

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| 24) |  | | | |  |
|  | The value that separates a rejection region from a non-rejection region is called the \_\_\_\_\_\_\_. |  |  |  |  |
| Question 24 answers   |  |  |  | | --- | --- | --- | |  |  | significance level | |  |  | critical value | |  |  | test statistic | |  |  | parameter | |  |  |  |  |

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| 25) |  | | | |  |
|  | 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 she wants to be 99% confident in her decision, what rejection region should she use? |  |  |  |  |
| Question 25 answers   |  |  |  | | --- | --- | --- | |  |  | Reject *H*0 if *t* < -2.34 | |  |  | Reject *H*0 if *t* < -2.55 | |  |  | Reject *H*0 if *t* > 2.34 | |  |  | Reject *H*0 if *t* > 2.55 | |  |  |  |  |



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