

THIRD QUARTER EXAM in **Statistics and Probability**

School Year 2022-2023

Name: _____

Date: _____

Grade & Section: _____

Score: _____

General Directions: Read the following questions thoroughly and choose the correct answer from the given choices. Write legibly the LETTER of your correct answer on the blank provided before each number.

- _____ 1. This refers to an intelligent guess about a population parameter.
A. Decision C. Rejection
B. Hypothesis D. Significance
- _____ 2. It is the starting point of the investigation in hypothesis testing.
A. Alpha Level C. Rejection Region
B. Null Hypothesis D. Alternative Hypothesis
- _____ 3. What type of decision is being committed if someone accepted a false hypothesis?
A. Type I Error C. Correct Decision
B. Type II Error A D. Correct Decision B
- _____ 4. What is the symbol that can be used to denote the probability of committing Correct Decision A?
A. α B. β C. $1 - \alpha$ D. $1 - \beta$
- _____ 5. The calculations in determining rejection region can be graphically represented by using _____.
A. Bar Graph C. Normal Curve
B. Straight Line D. Cartesian Plane
- _____ 6. The max/min probability of committing a type 1 error.
A. P (type II error) = β
B. H_o = parameter = specific value
 H_a = parameter < specific value
C. H_o = parameter = specific value
 H_a = parameter < specific value
D. H_o = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 7. The probability of type II error
A. P (type II error) = β
B. H_o = parameter = specific value
 H_a = parameter < specific value
C. H_o = parameter = specific value
 H_a = parameter < specific value
D. H_o = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 8. It is called the critical Region
A. P (type II error) = β
B. H_o = parameter = specific value
 H_a = parameter < specific value
C. Rejection region
D. H_o = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 9. This is a two-tailed test

- A. P (type II error) = β
 - B. H_0 = parameter = specific value
 H_a = parameter < specific value
 - C. Rejection region
 - D. H_0 = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 10. This is a left-tailed test
- A. P (type II error) = β
 - B. H_0 = parameter = specific value
 H_a = parameter < specific value
 - C. Rejection region
 - D. H_0 = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 11. This is a right-tailed test
- A. P (type II error) = β
 - B. H_0 = parameter = specific value
 H_a = parameter < specific value
 - C. H_0 = parameter = specific value
 H_a = parameter < specific value
 - D. H_0 = parameter = specific value
 H_a = parameter $\neq$ specific value
- _____ 12. Which of the following is NOT a discrete variable?
- A. The number of coins that match when three coins are tossed at once.
 - B. The number of non-defective I-phone
 - C. The weight of box delivered by the grab driver last December
 - D. The number of vehicles owned by Ambrocio family
- _____ 13. Which of the following is NOT a continuous variable?
- A. The number of arrivals at an emergency room between 8am to 8pm
 - B. The temperature of a cup of tea served at a restaurant
 - C. The weight in pounds of a bag of powdered milk as relief good last month
 - D. The average height of "rubber trees" along Rovera Street
- _____ 14. A variable where the information or data can take infinitely many values and can also be obtained by measuring?
- A. Qualitative variable C. Continuous variable
 - B. Quantitative variable D. Discrete Variable
- _____ 15. Which of the following statement describe a continuous variable?
- A. The average distance travelled by a jeep in a week
 - B. The number of students present in a class
 - C. The number of girls wearing eyeglasses
- _____ 16. A variable whose value could be a finite and countable number is a
- A. Continuous variable C. Qualitative
 - B. Discrete variable D. Quantitative
- _____ 17. Which of the following is discrete random variable?
- A. Claire is 165 cm tall C. Claire weighs 68 kilograms
 - B. Claire has 5 pets D. Claire ran 500 meters in two minutes
- _____ 18. Which of the following is NOT a continuous random variable?
- A. The height of the airplane's flight
 - B. The amount of liquid on a container
 - C. The number of COVID 19 cases each day
 - D. The length of time for the check up in the hospital
- _____ 19. You decided to conduct a survey of families with five children. You are interested in counting the number of girls (out of five children) in each family. Is this a random variable?
- A. Maybe C. Yes, it is a random variable.
 - B. Cannot be determined D. No, it is not a random variable.
- _____ 20. If a coin is tossed, what are the possible values of the random variable for the number

of tails?

- A. 0,1,2,3 B. 1,2,3 C. 0,1,2 D. 0,1

_____ 21. Suppose 3 scientific calculators are tested. Let **D** represent the defective scientific calculator and N for the non-defective. How many possible outcomes will occur from the experiment?

- A. 3 B. 4 C. 8 D. 9

_____ 22. You decide to conduct a survey of families with two children. You are interested in counting the number of boys (out of two children) in each family. Is the above experiment "counting the number of boys (out of 2 children) in each family a random variable?

- A. Yes, it is a random variable. C. Maybe
B. No, it is not a random variable. D. It cannot be determined.

_____ 23. Which of the following is NOT a true statement.

- A. Each probability (x) must be between or equal to 0 and 1;
B. that is $0 \leq P(x) \leq 1$.
C. The sum of all the probabilities is 1.
D. Random variables can only have one value.

_____ 24. Which of the following values is not the value of the probability of the random variable?

- A. 1.05 B. 0.5 C. 0.15 D. 0.05

_____ 25. What would be the probability of picking a face card (i.e. a king, queen, or jack)?

- A. $P(\text{Face}) = 4/52 = 1/13$ C. $P(\text{Face}) = 12/52 = 3/13$
B. $P(\text{Face}) = 6/52 = 3/26$ D. $P(\text{Face}) = 8/52 = 2/13$

_____ 26. What is the probability of rolling, on a fair dice "a number greater than 4"?

- A. $P(\text{greater than 4}) = 0$ C. $P(\text{greater than 4}) = P(5 \text{ or } 6) = 2/6 = 1/3$
B. $P(\text{greater than 4}) = 1/2$ D. $P(\text{greater than 4}) = P(1, 2, 3, 4, 5, 6) = 6/6 = 1$

_____ 27. Which of the following is the area under the normal curve?

- A. 0 B. 1 C. 2 D. 3

_____ 28. Which of the following is the curve symmetrical to?

- A. Mean C. Standard deviation
B. Variance D. Area

_____ 29. If the z-value is 0.42, what is the area?

- A. 0.0800 C. 0.1628
B. 0.0279 D. 0.3129

_____ 30. Find the area if the value of $z = -0.13$.

- A. 0.0248 C. 0.1398
B. 0.0517 D. 0.2467

_____ 31. If the area is 0.4977, what is the z-value?

- A. 1.63 C. 2.01
B. 1.97 D. 2.83

_____ 32. Find the area between $z = -1$ and $z = 3$.

- A. 0.8300 C. 0.8400
B. 0.8350 D. 0.8450

_____ 33. Find the area between $z = -1.5$ and $z = -1.3$.

- A. 0.0100 C. 0.0300
B. 0.0200 D. 0.0400

_____ 34. If the area is 0.8351, what are the two values of z.

- A. $z = 0.24$ and $z = 0.31$ C. $z = -0.13$ and $z = -1.3$
B. $z = 1.6$ and $z = 2.1$ D. $z = -2.5$ and $z = 1$

_____ 35. Find the area of the proportion in the probability notation $P(11)$.

- A. 0.1585 C. 0.1587
B. 0.1586 D. 0.1588

_____ 36. Solve for the proportion of the area of the probability notation $P(z > 1)$.

- A. 0.1585 C. 0.1587
B. 0.1586 D. 0.1588

_____ 37. Find the area of the proportion in the probability notation $P(z > -2.5)$.

- A. 0.9937 C. 0.9936
B. 0.9934 D. 0.9938

_____ 38. Given $\mu = 180$ and $\sigma = 15$ in a college entrance examination, find the corresponding z-value of the score by the following students if $X = 150$.

- A. 2 C. 2.5
B. -2 D. -2.5

_____ 39. From the given in number 12, what is the z-value if $X = 200$?

- A. 1.33 C. 1.99
B. 1.66 D. 2.22

_____ 40. What is the value of 70th percentile?

- A. 0.13 C. 0.52
B. 0.23 D. 0.71

_____ 41. What is the value of 82nd percentile?

- A. 0.92 C. 0.53
B. 0.83 D. 0.23

_____ 42. What is another name for normal distribution?

- A. Gaussian distribution C. Bernoulli's distribution
B. Poisson distribution D. Probability distribution

_____ 43. What is the total area in the distribution under the normal curve?

- A. 0 B. 1 C. 2 D. 3

_____ 44. Which of the following is a parameter of normal distribution?

- A. mean C. mean and standard deviation
B. standard deviation D. none of the above

_____ 45. The graph of a normal distribution is symmetrical about the _____.

- A. mean C. mean and standard deviation
B. standard deviation D. none of the above

_____ 46. What percent of the area under a normal curve is within 2 standard deviations?

- A. 68.3% C. 99.7%
B. 95.4% D. 100%

_____ 47. How many standard deviations are there in each inflection point?

- A. 0 B. 1 C. 2 D. 3

_____ 48. Which of the following denotes the standard normal distribution?

- A. A B. X C. Y D. Z

_____ 49. A random variable X has a mean of 12 and a standard deviation of 3.2.
What is the corresponding z-score for $x = 8$?

- A. -1.25 B. -1.50 C. -1.75 D. -2.25

_____ 50. What is the area under the normal curve if the z-score given is 2.14?

- A. 0.9830 C. 0.9838
B. 0.9834 D. 0.9842

_____ 51. What is the z-score if the area under the normal curve is 0.0475?

- A. -1.66 C. 1.66
B. -1.67 D. 1.67

_____ 52. What is the area under the normal curve between the z-scores -1.99 and 1.56?

- A. 0.9173 C. 0.9369
B. 0.9317 D. 0.9639

_____ 53. What is the area of the $P(Z > 2.58)$ using the standard normal curve?

- A. 0.0049 C. 0.9949
B. 0.0051 D. 0.9951

_____ 54. In an achievement test, the mean score of normally distributed values is 70 and the standard deviation is 12. What is the percentage of students who got a score of 85 and above?

- A. 0.1056 C. 0.8925
B. 0.1075 D. 0.8944

_____ 55. What is the value of 70th percentile in a standard normal distribution?

- A. 0.51 B. 0.52 C. 0.61 D. 0.62

_____ 56. What is the area under the normal curve?

- A. 0 B. 1 C. 2 D. 3
- _____ 57. Which of the following is the curve symmetrical to?
 A. Mean C. Standard Deviation
 B. Variance D. Area
- _____ 58. What is the area when the z-score is 0.00?
 A. 0.00 C. 0.10
 B. 0.50 D. 100
- _____ 59. Find the area when the z-score is above 1.92?
 A. 0.0274 C. 0.5129
 B. 0.9726 D. 0.0329
- _____ 60. Which of the following z-score makes the notation a TRUE statement.
 $P(z < Z < 3) = 0.1574$
 A. 0 B. 1 C. 2 D. 3
- _____ 61. It is the process of using sample statistics to draw conclusions about true population parameters.
 A. statistical inference C. sampling
 B. the scientific method D. descriptive statistics
- _____ 62. It is the universe or "totality of items or things" under consideration.
 A. sample C. parameter
 B. population D. statistic
- _____ 63. It is the portion of the universe that has been selected for analysis.
 A. sample C. parameter
 B. frame D. statistic
- _____ 64. It is a summary measure that is computed to describe a characteristic from only a sample of the population.
 A. parameter C. statistic
 B. census D. scientific method
- _____ 65. Which of the following is most likely a parameter as opposed to a statistic?
 A. The average score of the first five learners completing an assignment
 B. The proportion of females registered to vote in a county
 C. The average height of people randomly selected from a database
 D. The proportion of trucks stopped yesterday that were cited for bad brakes
- _____ 66. The numerical population of grade point averages at a college has mean 2.61 and standard deviation 0.5. If a random sample of size 100 is taken from the population, what is the probability that the sample mean will be between 2.51 and 2.71?
 A. 0.9544 C. 0.944
 B. 0.9244 D. 0.9054
- _____ 67. A prototype automotive tire has a design life of 38,500 miles with a standard deviation of 2,500 miles. Five such tires are manufactured and tested. On the assumption that the actual population mean is 38,500 miles and the actual population standard deviation is 2,500 miles, find the probability that the sample mean will be less than 36,000 miles. Assume that the distribution of lifetimes of such tires is normal.
 A. 0.0251 C. 0.0125
 B. 0.0105 D. 0.2510
- _____ 68. The following statements are true about the properties of t-distribution, except
 A. The t-distribution is bell shaped. C. The total area under the curve is 100%.
 B. It is symmetrical about the mean. D. The curve touches or intersects the x-axis.
- _____ 69. A/an _____ of a population parameter is a single value of a statistic.
 A. Interval estimate C. Good estimate
 B. Point estimate D. Accurate estimate
- _____ 70. A/an _____ is defined by two numbers, between which a population parameter is said to lie
 A. Interval estimate C. Good estimate
 B. Point estimate D. Accurate estimate