

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

- 1) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a heart. 1) _____
 A) $\frac{17}{52}$ B) $\frac{7}{52}$ C) $\frac{3}{13}$ D) $\frac{4}{13}$

Answer: D

- 2) The events A and B are mutually exclusive. If $P(A) = 0.7$ and $P(B) = 0.2$, what is $P(A \text{ or } B)$? 2) _____
 A) 0.5 B) 0.9 C) 0.14 D) 0

Answer: B

- 3) A coin is tossed. Find the probability that the result is heads. 3) _____
 A) 1 B) 0.5 C) 0.1 D) 0.9

Answer: B

- 4) Suppose you are using $\alpha = 0.01$ to test the claim that $\mu = 950$ using a P-value. You are given the sample statistics $n = 35$, $\bar{x} = 920$, and $s = 82$. Find the P-value. 4) _____
 A) 0.0308 B) 0.3169 C) 0.0077 D) 0.0154

Answer: A

- 5) Grade points are assigned as follows: A = 4, B = 3, C = 2, D = 1, and F = 0. Grades are weighted according to credit hours. If a student receives an A in a four-unit class, a D in a two-unit class, a B in a three-unit class and a C in a three-unit class, what is the student's grade point average? 5) _____
 A) 1.75 B) 3.00 C) 2.50 D) 2.75

Answer: D

- 6) The top 14 speeds, in miles per hour, for Pro-Stock drag racing over the past two decades are listed below. Find the median speed. 6) _____

181.1 202.2 190.1 201.4 191.3 201.4 192.2
 201.2 193.2 201.2 194.5 199.2 196.0 196.2

- A) 201.2 B) 196.1 C) 195.8 D) 196.7

Answer: B

- 7) The top 14 speeds, in miles per hour, for Pro-Stock drag racing over the past two decades are listed below. Find the mean speed. 7) _____

181.1 202.2 190.1 201.4 191.3 201.4 192.2
 201.2 193.2 201.2 194.5 199.2 196.0 196.2

- A) 210.9 B) 195.8 C) 201.2 D) 196.1

Answer: B

8) Calculate the correlation coefficient, r , for the data below. 8) _____

x	-10	-8	-1	-4	-6	-7	-5	-3	-2	-9
y	4	-13	1	-10	-9	-6	-2	-12	-1	0

- A) -0.549 B) -0.132 C) -0.581 D) -0.104

Answer: D

9) Given $H_0: \mu \geq 18$ and $P = 0.085$. Do you reject or fail to reject H_0 at the 0.05 level of significance? 9) _____

- A) not sufficient information to decide
 B) fail to reject H_0
 C) reject H_0

Answer: B

10) The data below are the final exam scores of 10 randomly selected statistics students and the number of hours they studied for the exam. What is the best predicted value for y given $x = 2$? Assume that the variables x and y have a significant correlation. 10) _____

Hours, x	3	5	2	8	2	4	4	5	6	3
Scores, y	65	80	60	88	66	78	85	90	90	71

- A) 67 B) 64 C) 65 D) 66

Answer: D

11) The mean age of bus drivers in Chicago is 53.4 years. If a hypothesis test is performed, how should you interpret a decision that rejects the null hypothesis? 11) _____

- A) There is not sufficient evidence to support the claim $\mu = 53.4$.
 B) There is sufficient evidence to reject the claim $\mu = 53.4$.
 C) There is sufficient evidence to support the claim $\mu = 53.4$.
 D) There is not sufficient evidence to reject the claim $\mu = 53.4$.

Answer: B

12) Find the equation of the regression line for the given data. 12) _____

x	-5	-3	4	1	-1	-2	0	2	3	-4
y	11	6	-6	-1	3	4	1	-4	-5	8

- A) $\hat{y} = -1.885x + 0.758$ B) $\hat{y} = 1.885x - 0.758$
 C) $\hat{y} = -0.758x - 1.885$ D) $\hat{y} = 0.758x + 1.885$

Answer: A

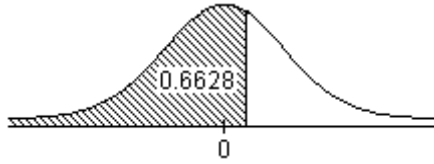
13) The lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. If 64 women are randomly selected, find the probability that they have a mean pregnancy between 266 days and 268 days. 13) _____

- A) 0.5517 B) 0.3577 C) 0.2881 D) 0.7881

Answer: B

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 14) Find the z-score that corresponds to the given area under the standard normal curve. 14) _____



Answer: $z = 0.42$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 15) If one card is drawn from a standard deck of 52 playing cards, what is the probability of drawing a red card? 15) _____
A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{1}{52}$ D) $\frac{1}{13}$

Answer: B

- 16) Find the standardized test statistic t for a sample with $n = 10$, $\bar{x} = 13.3$, $s = 1.3$, and $\alpha = 0.05$ if $H_0: \mu \geq 14.2$. Round your answer to three decimal places. 16) _____
A) -2.617 B) -3.010 C) -3.186 D) -2.189

Answer: D

- 17) Find the area of the indicated region under the standard normal curve. 17) _____



- A) 0.0968 B) 0.0823 C) 0.9032 D) 0.9177
Answer: C

- 18) A sample of candies have weights that vary from 2.35 grams to 4.75 grams. Use this information to find the upper and lower limits of the first class if you wish to construct a frequency distribution with 12 classes. 18) _____
A) 2.35-2.65 B) 2.35-2.55 C) 2.35-2.54 D) 2.35-2.75

Answer: B

- 19) Assume that the heights of men are normally distributed. A random sample of 16 men have a mean height of 67.5 inches and a standard deviation of 1.4 inches. Construct a 99% confidence interval for the population standard deviation, σ . 19) _____
A) (0.8, 2.1) B) (1.0, 2.6) C) (0.9, 2.5) D) (1.0, 2.4)

Answer: C

20) In a survey of 2480 golfers, 15% said they were left-handed. The survey's margin of error was 3%. Construct a confidence interval for the proportion of left-handed golfers. 20) _____
 A) (0.12, 0.15) B) (0.12, 0.18) C) (0.11, 0.19) D) (0.18, 0.21)
 Answer: B

21) For the stem-and-leaf plot below, what is the maximum and what is the minimum entry? 21) _____
 Key : 11 | 7 = 11.7

11		3 7
12		4 6 6 7 8 9
13		0 1 1 2 3 6 6 7 8 8
14		3 4 6 6 8 9 9 9
15		0 1 1 2 3 7 7 8 9
16		2 2 5 7 8 8 9 9
17		1 7

- A) max: 177; min: 113 B) max: 17.7; min: 11.3
 C) max: 17.7; min: 11.7 D) max: 17.1; min: 11.3

Answer: B

22) Determine the sampling error if the grade point averages for 10 randomly selected students from a class of 125 students has a mean of $\bar{x} = 2.9$. Assume the grade point average of the 125 students has a mean of $\mu = 3.2$. 22) _____

- A) 2.75 B) 3.05 C) 0.3 D) -0.3

Answer: C

23) Construct a 95% confidence interval for the population mean, μ . Assume the population has a normal distribution. A sample of 25 randomly selected students has a mean test score of 81.5 with a standard deviation of 10.2. 23) _____

- A) (87.12, 98.32) B) (56.12, 78.34) C) (77.29, 85.71) D) (66.35, 69.89)

Answer: C

24) State whether the variable is discrete or continuous. The age of the oldest student in a statistics class. 24) _____

- A) discrete B) continuous

Answer: B

25) In a recent survey, 80% of the community favored building a police substation in their neighborhood. If 15 citizens are chosen, what is the mean number favoring the substation? 25) _____

- A) 12 B) 15 C) 8 D) 10

Answer: A

26) In order to fairly set flat rates for auto mechanics, a shop foreman needs to estimate the average time it takes to replace a fuel pump in a car. How large a sample must he select if he wants to be 99% confident that the true average time is within 15 minutes of the sample average? Assume the standard deviation of all times is 30 minutes. 26) _____

- A) 27 B) 26 C) 6 D) 5

Answer: A

- 27) Compute the standardized test statistic, χ^2 to test the claim $\sigma^2 \neq 47.6$ if $n = 10$, $s^2 = 52.5$, and $\alpha = 0.01$. 27) _____
- A) 9.926 B) 12.008 C) 3.276 D) 4.919

Answer: A

- 28) A statistics professor finds that when he schedules an office hour at the 10:30 a.m. time slot, an average of three students arrive. Use the Poisson distribution to find the probability that in a randomly selected office hour in the 10:30 a.m. time slot exactly four students will arrive. 28) _____
- A) 0.1328 B) 0.0618 C) 0.0489 D) 0.1680

Answer: D

- 29) The table lists the smoking habits of a group of college students. 29) _____

Sex	Non-smoker	Regular Smoker	Heavy Smoker	Total
Man	135	39	5	179
Woman	187	21	11	219
Total	322	60	16	398

If a student is chosen at random, find the probability of getting someone who is a regular or heavy smoker. Round your answer to three decimal places.

- A) 0.191 B) 0.218 C) 0.126 D) 0.658

Answer: A

- 30) For the standard normal curve, find the z-score that corresponds to the 30th percentile. 30) _____
- A) -0.47 B) -0.98 C) -0.12 D) -0.53

Answer: D

- 31) The random variable x represents the number of cars per household in a town of 1000 households. Find the probability of randomly selecting a household that has less than two cars. 31) _____

Cars	Households
0	125
1	428
2	256
3	108
4	83

- A) 0.428 B) 0.809 C) 0.553 D) 0.125

Answer: C

- 32) A tourist in Ireland wants to visit six different cities. How many different routes are possible? 32) _____
- A) 720 B) 36 C) 120 D) 46,656

Answer: A

- 33) Construct a 90% confidence interval for the population mean, μ . Assume the population has a normal distribution. A sample of 15 randomly selected students has a grade point average of 2.86 with a standard deviation of 0.78. 33) _____
- A) (2.28, 3.66) B) (2.41, 3.42) C) (2.37, 3.56) D) (2.51, 3.21)

Answer: D

- 34) Determine the critical value, z_0 , to test the claim about the population proportion $p < 0.850$ given $n = 60$ and $\hat{p} = 0.656$. Use $\alpha = 0.05$. 34) _____
 A) -2.575 B) -1.96 C) -1.645 D) -2.33
 Answer: C
- 35) A test consists of 70 multiple choice questions, each with five possible answers, only one of which is correct. Find the mean and the standard deviation of the number of correct answers. 35) _____
 A) mean: 35; standard deviation: 3.35 B) mean: 35; standard deviation: 5.92
 C) mean: 14; standard deviation: 3.35 D) mean: 14; standard deviation: 3.74
 Answer: C
- 36) Adult IQ scores have a bell-shaped distribution with a mean of 100 and a standard deviation of 15. Use the Empirical Rule to find the percentage of adults with scores between 70 and 130. 36) _____
 A) 99.7% B) 68% C) 100% D) 95%
 Answer: D
- 37) A random sample of 40 students has a test score with $\bar{x} = 81.5$ and $s = 10.2$. Construct the confidence interval for the population mean, μ if $c = 0.90$. 37) _____
 A) (71.8, 93.5) B) (78.8, 84.2) C) (66.3, 89.1) D) (51.8, 92.3)
 Answer: B
- 38) Assume that the heights of men are normally distributed with a mean of 69.1 inches and a standard deviation of 2.8 inches. If 64 men are randomly selected, find the probability that they have a mean height greater than 70.1 inches. 38) _____
 A) 0.9005 B) 0.8188 C) 9.9671 D) 0.0021
 Answer: D
- 39) Classify the events as dependent or independent. Events A and B where $P(A) = 0.9$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.36$ 39) _____
 A) dependent B) independent
 Answer: B
- 40) Find the sample standard deviation. 40) _____
 15 42 53 7 9 12 14 28 47
 A) 17.8 B) 29.1 C) 15.8 D) 16.6
 Answer: A
- 41) A test consists of 970 true or false questions. If the student guesses on each question, what is the standard deviation of the number of correct answers? 41) _____
 A) 15.57 B) 22.02 C) 0 D) 2
 Answer: A
- 42) Decide if the events A and B are mutually exclusive or not mutually exclusive. A person is selected at random. 42) _____
 A: Their birthday is in the fall.
 B: Their birthday is in October.
 A) not mutually exclusive B) mutually exclusive
 Answer: A

43) Find the standard error of estimate, s_e , for the data below, given that $\hat{y} = -0.206x + 2.097$. 43) _____

x	-5	-3	4	1	-1	-2	0	2	3	-4
y	11	-6	8	-3	-2	1	5	-5	6	7

- A) 8.214 B) 3.203 C) 5.918 D) 6.306

Answer: D

44) The weights (in pounds) of 30 preschool children are listed below. Find Q_1 . 44) _____

25 25 26 26.5 27 27 27.5 28 28 28.5
 29 29 30 30 30.5 31 31 32 32.5 32.5
 33 33 34 34.5 35 35 37 37 38 38

- A) 28 B) 27 C) 38 D) 25

Answer: A

45) Basketball player Chauncey Billups of the Detroit Pistons makes free throw shots 88% of the time. Find the probability that he misses his first shot and makes the second. 45) _____

- A) 0.0144 B) 0.1056 C) 0.50 D) 0.7744

Answer: B

46) A placement exam for entrance into a math class yields a mean of 80 and a standard deviation of 10. The distribution of the scores is roughly bell-shaped. Use the Empirical Rule to find the percentage of scores that lie between 60 and 80. 46) _____

- A) 95% B) 68% C) 34% D) 47.5%

Answer: D

47) Given the size of a human's brain, x , and their score on an IQ test, y , would you expect a positive correlation, a negative correlation, or no correlation? 47) _____

- A) positive correlation B) negative correlation C) no correlation

Answer: C

48) A group of students were asked if they carry a credit card. The responses are listed in the table. 48) _____

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	25	35	60
Sophomore	29	11	40
Total	54	46	100

If a student is selected at random, find the probability that he or she owns a credit card given that the student is a sophomore. Round your answer to three decimal places.

- A) 0.725 B) 0.275 C) 0.537 D) 0.290

Answer: A

49) Use the standard normal distribution to find $P(0 < z < 2.25)$. 49) _____

- A) 0.8817 B) 0.5122 C) 0.7888 D) 0.4878

Answer: D

50) The access code to a house's security system consists of eight digits. How many different codes are available if each digit can be repeated? 50) _____
 A) 256 B) 100,000,000 C) 8 D) 16,777,216
 Answer: B

51) The random variable x represents the number of credit cards that adults have along with the corresponding probabilities. Find the mean and standard deviation. 51) _____

x	$P(x)$
0	0.07
1	0.68
2	0.21
3	0.03
4	0.01

- A) mean: 1.23; standard deviation: 0.44 B) mean: 1.30; standard deviation: 0.32
 C) mean: 1.30; standard deviation: 0.44 D) mean: 1.23; standard deviation: 0.66

Answer: D

52) State whether the variable is discrete or continuous. 52) _____
 The speed of a car on a Los Angeles freeway during rush hour traffic
 A) discrete B) continuous

Answer: B

53) A multiple-choice test has five questions, each with five choices for the answer. Only one of the choices is correct. You randomly guess the answer to each question. What is the probability that you answer the first two questions correctly? 53) _____
 A) 0.04 B) 0.2 C) 0.4 D) 0.02

Answer: A

54) A random sample of 40 students has a mean annual earnings of \$3120 and a standard deviation of \$677. Construct the confidence interval for the population mean, μ if $c = 0.95$. 54) _____
 A) (\$210, \$110) B) (\$2910, \$3330) C) (\$4812, \$5342) D) (\$1987, \$2346)

Answer: B

55) A survey of 280 homeless persons showed that 63 were veterans. Construct a 90% confidence interval for the proportion of homeless persons who are veterans. 55) _____
 A) (0.167, 0.283) B) (0.184, 0.266) C) (0.176, 0.274) D) (0.161, 0.289)

Answer: B

- 56) The random variable x represents the number of cars per household in a town of 1000 households. Find the probability of randomly selecting a household that has between one and three cars, inclusive. 56) _____

Cars	Households
0	125
1	428
2	256
3	108
4	83

- A) 0.125 B) 0.208 C) 0.792 D) 0.256

Answer: C

- 57) Find the equation of the regression line for the given data. 57) _____

x	-5	-3	4	1	-1	-2	0	2	3	-4
y	11	-6	8	-3	-2	1	5	-5	6	7

- A) $\hat{y} = 0.206x - 2.097$ B) $\hat{y} = -2.097x + 0.206$
 C) $\hat{y} = -0.206x + 2.097$ D) $\hat{y} = 2.097x - 0.206$

Answer: C

Determine whether the data are qualitative or quantitative.

- 58) the numbers on the shirts of a girl's soccer team 58) _____
 A) qualitative B) quantitative

Answer: A

- 59) the number of seats in a movie theater 59) _____
 A) quantitative B) qualitative

Answer: A

- 60) the colors of automobiles on a used car lot 60) _____
 A) quantitative B) qualitative

Answer: B

Provide an appropriate response. Use the Standard Normal Table to find the probability.

- 61) IQ test scores are normally distributed with a mean of 99 and a standard deviation of 11. An individual's IQ score is found to be 128. Find the z-score corresponding to this value. 61) _____
 A) 2.64 B) -2.64 C) 0.38 D) -0.38

Answer: A

Identify the data set's level of measurement.

- 62) the annual salaries for all teachers in California 62) _____
 A) ratio B) interval C) nominal D) ordinal

Answer: A

- 63) the ratings of a movie ranging from "poor" to "good" to "excellent" 63) _____
 A) ordinal B) nominal C) ratio D) interval

Answer: A

64) marriage status (married, single, or divorced) of the faculty at the University of Colorado
A) nominal B) interval C) ratio D) ordinal

64) _____

Answer: A

Approximate the mean of the grouped data.

65)

65) _____

Miles (per day)	Frequency
1-2	19
3-4	13
5-6	10
7-8	4
9-10	3

A) 4 B) 10 C) 5 D) 3

Answer: A

Identify the sampling technique used.

66) Every fifth person boarding a plane is searched thoroughly.

66) _____

- A) stratified
- B) systematic
- C) cluster
- D) random
- E) convenience

Answer: B