Answer the question.

1) Suppose that weight of adolescents is being studied by a health organization and that the accompanying tables describes the probability distribution for three randomly selected adolescents, where x is the number who are considered morbidly obese. Is it unusual to have no obese subjects among three randomly selected adolescents? 1) _____

x	P(x)
0	0.111
1	0.215
2	0.450
3	0.224

A) Yes B) No

Provide an appropriate response.

2) In a game, you have a 1/36 probability of winning $85 and a 35/36 probability of losing $4. What is your expected value? 2) _____

A) -$3.89 B) $6.25 C) $2.36 D) -$1.53

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. Round to three decimal places.

3) n =12, x = 5, p = 0.25 3) _____

A) 0.027 B) 0.091 C) 0.103 D) 0.082

Find the indicated probability. Round to three decimal places.

4) A machine has 11 identical components which function independently. The probability that a component will fail is 0.2. The machine will stop working if more than three components fail. Find the probability that the machine will be working. 4) _____

A) 0.162 B) 0.949 C) 0.839 D) 0.111

5) Find the probability of at least 2 girls in 6 births. Assume that male and female births are equally likely and that the births are independent events. 5) _____

A) 0.234 B) 0.656 C) 0.109 D) 0.891

6) An airline estimates that 94% of people booked on their flights actually show up. If the airline books 73 people on a flight for which the maximum number is 71, what is the probability that the number of people who show up will exceed the capacity of the plane? 6) _____

A) 0.062 B) 0.051 C) 0.179 D) 0.011

Find the indicated probability.

7) Suppose that 14% of people are left handed. If 9 people are selected at random, what is the probability that exactly 2 of them are left handed? 7) _____

A) 0.0196 B) 0.0933 C) 0.491 D) 0.245

Solve the problem.

8) On a multiple choice test with 17 questions, each question has four possible answers, one of which is correct. For students who guess at all answers, find the mean for the number of correct answers. 8) _____

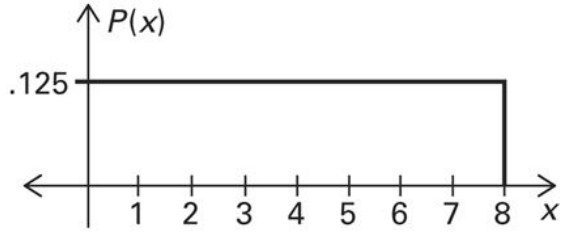
A) 4.3 B) 12.8 C) 5.7 D) 8.5

Determine if the outcome is unusual. Consider as unusual any result that differs from the mean by more than 2 standard deviations. That is, unusual values are either less than $\mu - 2\sigma$ or greater than $\mu + 2\sigma$.

9) A survey for brand recognition is done and it is determined that 68% of consumers have heard of Dull Computer Company. A survey of 800 randomly selected consumers is to be conducted. For such groups of 800, would it be unusual to get 494 consumers who recognize the Dull Computer Company name? 9) _____

A) Yes B) No

10) Using the following uniform density curve, answer the question. 10) _____

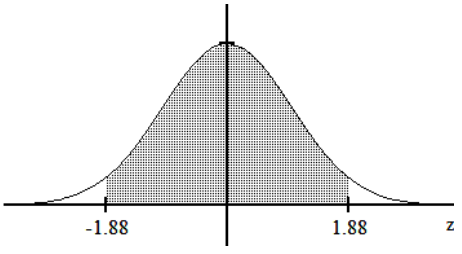


What is the probability that the random variable has a value greater than 5?

A) 0.500 B) 0.250 C) 0.375 D) 0.325

Find the area of the shaded region. The graph depicts the standard normal distribution with mean 0 and standard deviation 1.

11) 11) _____



A) 0.0602 B) 0.9398 C) 0.0301 D) 0.9699

If z is a standard normal variable, find the probability.

12) The probability that z is greater than -1.82 12) _____

A) -0.0344 B) 0.0344 C) 0.4656 D) 0.9656

13) $P(z < 0.97)$ 13) _____

A) 0.8315 B) 0.8078 C) 0.8340 D) 0.1660

Provide an appropriate response.

14) Assume that adults have IQ scores that are normally distributed with a mean of 100 and a standard deviation of 15 (as on the Wechsler test). Find P_{30}, which is the IQ score separating the bottom 30% from the top 70%. 14) _____

A) 92.8 B) 91.4 C) 91.9 D) 92.2

Solve the problem. Round to the nearest tenth unless indicated otherwise.

15) Assume that women have heights that are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. Find the value of the quartile Q_3. 15) _____

A) 64.3 inches B) 66.1 inches C) 65.3 inches D) 67.8 inches

Find the indicated probability.

16) The lengths of human pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. What is the probability that a pregnancy lasts at least 300 days? 16) _____

A) 0.0179 B) 0.0166 C) 0.9834 D) 0.4834

17) Assume that the weights of quarters are normally distributed with a mean of 5.67 g and a standard deviation 0.070 g. A vending machine will only accept coins weighing between 5.48 g and 5.82 g. What percentage of legal quarters will be rejected? 17) _____

A) 0.0196% B) 1.62% C) 2.48% D) 1.96%

Solve the problem.

18) The amount of snowfall falling in a certain mountain range is normally distributed with a mean of 70 inches, and a standard deviation of 10 inches. What is the probability that the mean annual snowfall during 25 randomly picked years will exceed 72.8 inches? 18) _____

A) 0.5808 B) 0.4192 C) 0.0808 D) 0.0026

19) Suppose that replacement times for washing machines are normally distributed with a mean of 9.3 years and a standard deviation of 1.1 years. Find the probability that 70 randomly selected washing machines will have a mean replacement time less than 9.1 years. 19) _____

A) 0.0714 B) 0.4286 C) 0.0643 D) 0.4357

20) Human body temperatures are normally distributed with a mean of 98.20°F and a standard deviation of 0.62°F. If 19 people are randomly selected, find the probability that their mean body temperature will be less than 98.50°F. 20) _____

A) 0.9826 B) 0.0833 C) 0.3343 D) 0.4826

21) Use the given degree of confidence and sample data to construct a confidence interval for the population proportion p. 21) _____

$n = 195$, $x = 162$; 95% confidence

A) $0.789 < p < 0.873$ B) $0.777 < p < 0.884$

C) $0.778 < p < 0.883$ D) $0.788 < p < 0.873$

22) Of 380 randomly selected medical students, 21 said that they planned to work in a rural community. Find a 95% confidence interval for the true proportion of all medical students who plan to work in a rural community. 22) _____

A) $0.0280 < p < 0.0826$ B) $0.0360 < p < 0.0745$

C) $0.0323 < p < 0.0782$ D) $0.0251 < p < 0.0854$

23) Use the given data to find the minimum sample size required to estimate the population proportion. 23) _____

Margin of error: 0.028; confidence level: 99%; p and q unknown

A) 2115 B) 1939 C) 2223 D) 1116

Use the given degree of confidence and sample data to construct a confidence interval for the population mean μ. Assume that the population has a normal distribution.

24) A sociologist develops a test to measure attitudes towards public transportation, and 27 randomly selected subjects are given the test. Their mean score is 76.2 and their standard deviation is 21.4. Construct the 95% confidence interval for the mean score of all such subjects. 24) _____

A) $74.6 < \mu < 77.8$ B) $67.7 < \mu < 84.7$ C) $69.2 < \mu < 83.2$ D) $64.2 < \mu < 88.2$

25) The principal randomly selected six students to take an aptitude test. Their scores were: 25) _____

72.2 71.1 74.5 76.6 85.9 77.7

Determine a 90% confidence interval for the mean score for all students.

A) 71.86 < μ < 80.81 B) 71.96 < μ < 80.71

C) 80.71 < μ < 71.96 D) 80.81 < μ < 71.86

26) The football coach randomly selected ten players and timed how long each player took to perform a certain drill. The times (in minutes) were: 26) _____

7.3 10.8 9.1 8.4 11.8

7.7 6.4 11.8 10.0 12.3

Determine a 95% confidence interval for the mean time for all players.

A) 8.04 min < μ < 11.08 min B) 10.98 min < μ < 8.14 min

C) 8.14 min < μ < 10.98 min D) 11.08 min < μ < 8.04 min

Use the given information to find the minimum sample size required to estimate an unknown population mean μ.

27) How many students must be randomly selected to estimate the mean weekly earnings of students at one college? We want 95% confidence that the sample mean is within $2 of the population mean, and the population standard deviation is known to be $60. 27) _____

A) 3458 B) 3047 C) 2435 D) 4886

Use the confidence level and sample data to find a confidence interval for estimating the population μ. Round your answer to the same number of decimal places as the sample mean.

28) A random sample of 187 full-grown lobsters had a mean weight of 19 ounces and a standard deviation of 3.3 ounces. Construct a 98% confidence interval for the population mean μ. 28) _____

A) 18 oz < μ < 21 oz B) 18 oz < μ < 20 oz

C) 17 oz < μ < 19 oz D) 19 oz < μ < 21 oz

Answer Key
Testname: STA2023_REVIEW2

1) B
2) D
3) C
4) C
5) D
6) A
7) D
8) A
9) A
10) C
11) B
12) D
13) C
14) D
15) C
16) B
17) D
18) C
19) C
20) A
21) C
22) C
23) A
24) B
25) B
26) C
27) A
28) B