

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

Provide an appropriate response.

- 1) Find the mean of the binomial distribution for which $n = 70$ and $p = 0.2$. 1) _____
A) 70 B) 35 C) 3.35 D) 14
- 2) If the probability of a newborn child being female is 0.5, find the probability that in 100 births, 55 or more will be female. Use the normal distribution to approximate the binomial distribution. 2) _____
A) 0.0606 B) 0.8159 C) 0.1841 D) 0.7967
- 3) Use a standard normal table to find the z -score that corresponds to the 5th percentile. 3) _____
A) 0.00 B) 4 C) -2.575 D) -1.645
- 4) Fifty percent of the people that get mail-order catalogs order something. Find the probability that exactly two of 10 people getting these catalogs will order something. 4) _____
A) 0.044 B) 0.200 C) 11.250 D) 0.001
- 5) The weights of people in a certain population are normally distributed with a mean of 151 lb and a standard deviation of 23 lb. Find the mean and standard error of the mean for this sampling distribution when using random samples of size 8. 5) _____
A) 151, 23 B) 151, 8.13 C) 151, 8 D) 151, 2.88
- 6) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Find the probability of exactly eight boys in ten births. 6) _____
A) 0.8 B) 0.08 C) 0.176 D) 0.044
- 7) In a recent survey, 83% of the community favored building a police substation in their neighborhood. If 14 citizens are chosen, find the probability that exactly 8 of them favor the building of the police substation. 7) _____
A) 0.571 B) 0.830 C) 0.016 D) 0.001
- 8) According to government data, the probability that a woman between the ages of 25 and 29 was never married is 40%. In a random survey of 10 women in this age group, what is the probability that at least eight were married? 8) _____
A) 0.013 B) 0.161 C) 0.167 D) 1.002
- 9) The scores on a mathematics exam have a mean of 67 and a standard deviation of 6. Find the x -value that corresponds to the z -score 2.575. 9) _____
A) 51.6 B) 82.5 C) 73.0 D) 69.6
- 10) A test consists of 10 multiple choice questions, each with five possible answers, one of which is correct. To pass the test a student must get 60% or better on the test. If a student randomly guesses, what is the probability that the student will pass the test? 10) _____
A) 0.060 B) 0.377 C) 0.205 D) 0.006

11) Find the critical values, $X_{\frac{\alpha}{2}, R}$ and $X_{\frac{\alpha}{2}, L}$, for $c = 0.99$ and $n = 10$. 11) _____

- A) 1.735 and 23.587
 B) 2.156 and 25.188
 C) 2.088 and 21.666
 D) 2.558 and 23.209

12) Determine the probability distributions's missing value. 12) _____
 The probability that a tutor sees 0, 1, 2, 3, or 4 students on a given day.

x	0	1	2	3	4
P(x)	?	0.15	0.20	0.20	0.25

- A) 1.0
 B) 0.50
 C) 0.80
 D) 0.20

13) The random variable x represents the number of cars per household in a town of 1000 households. 13) _____
 Find the probability of randomly selecting a household that has between one and three cars, inclusive.

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

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

14) A random sample of 150 students has a grade point average with a mean of 2.86 and with a standard deviation of 0.78. Construct the confidence interval for the population mean, μ , if $c = 0.98$. 14) _____

- A) (2.31, 3.88)
 B) (2.51, 3.53)
 C) (2.71, 3.01)
 D) (2.43, 3.79)

15) Basketball player Chauncey Billups of the Detroit Pistons makes free throw shots 88% of the time. 15) _____
 Find the probability that he misses his first shot and makes the second.

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

16) Ten percent of the population is left-handed. In a class of 133 students, write the binomial probability for the statement "There are more than 14 left-handed students in the class." 16) _____

- A) $P(x > 14)$
 B) $P(x < 14)$
 C) $P(x \geq 14)$
 D) $P(x \leq 14)$

17) In a certain normal distribution, find the standard deviation σ when $\mu = 50$ and 10.56% of the area lies to the right of 55. 17) _____

- A) 5
 B) 3
 C) 4
 D) 2

18) 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. 18) _____

- A) (0.167, 0.283)
 B) (0.176, 0.274)
 C) (0.161, 0.289)
 D) (0.184, 0.266)

19) In a sample of 10 randomly selected women, it was found that their mean height was 63.4 inches. 19) _____
 From previous studies, it is assumed that the standard deviation σ is 2.4 and that the population of height measurements is normally distributed. Construct the 95% confidence interval for the population mean.

- A) (58.1, 67.3)
 B) (59.7, 66.5)
 C) (61.9, 64.9)
 D) (60.8, 65.4)

- 20) According to government data, the probability that a woman between the ages of 25 and 29 was never married is 40%. In a random survey of 10 women in this age group, what is the mean and standard deviation of the number that never married? 20) _____
- A) mean: 6; standard deviation: 1.55 B) mean: 4; standard deviation: 1.55
 C) mean: 4; standard deviation: 2.4 D) mean: 6; standard deviation: 155

- 21) Find the area of the indicated region under the standard normal curve. 21) _____



- A) 0.6562 B) 0.309 C) 1.309 D) 0.3438

- 22) A test consists of 10 true or false questions. To pass the test a student must answer at least eight questions correctly. If the student guesses on each question, what is the probability that the student will pass the test? 22) _____
- A) 0.20 B) 0.8 C) 0.08 D) 0.055

- 23) The random variable x represents the number of boys in a family of three children. Assuming that boys and girls are equally likely, find the mean and standard deviation for the random variable x . 23) _____
- A) mean: 1.50; standard deviation: 0.76 B) mean: 1.50; standard deviation: 0.87
 C) mean: 2.25; standard deviation: 0.87 D) mean: 2.25; standard deviation: 0.76

- 24) Assume that blood pressure readings are normally distributed with a mean of 116 and a standard deviation of 4.8. If 36 people are randomly selected, find the probability that their mean blood pressure will be less than 118. 24) _____
- A) 0.8615 B) 0.9938 C) 0.8819 D) 0.0062

- 25) In order to set rates, an insurance company is trying to estimate the number of sick days that full time workers at an auto repair shop take per year. A previous study indicated that the standard deviation was 2.8 days. How large a sample must be selected if the company wants to be 95% confident that the true mean differs from the sample mean by no more than 1 day? 25) _____
- A) 1024 B) 31 C) 512 D) 141

- 26) A private opinion poll is conducted for a politician to determine what proportion of the population favors decriminalizing marijuana possession. How large a sample is needed in order to be 99% confident that the sample proportion will not differ from the true proportion by more than 4%? 26) _____
- A) 849 B) 2073 C) 17 D) 1037

- 27) In a raffle, 1,000 tickets are sold for \$2 each. One ticket will be randomly selected and the winner will receive a laptop computer valued at \$1200. What is the expected value for a person that buys one ticket? 27) _____
- A) \$0.8 B) -\$0.80 C) -\$1.20 D) \$1.20

- 28) 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 $c = 0.95$. 28) _____
- A) (\$1987, \$2346) B) (\$4812, \$5342) C) (\$2910, \$3330) D) (\$210, \$110)

- 29) In one city, 22% of adults smoke. In groups of size 130 of adults, what is the variance of the number that smoke? 29) _____
A) 28.6 B) 22.31 C) 4.72 D) 11.15

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

- 30) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. An individual's IQ score is found to be 110. Find the z-score corresponding to this value. 30) _____
A) -0.67 B) -1.33 C) 1.33 D) 0.67

Assume the sample is taken from a normally distributed population and construct the indicated confidence interval.

- 31) The heights (in inches) of 20 randomly selected adult males are listed below. Construct a 99% confidence interval for the variance, σ^2 . 31) _____

70 72 71 70 69 73 69 68 70 71
67 71 70 74 69 68 71 71 71 72

- A) (1.47, 8.27) B) (2.16, 71.06) C) (1.35, 8.43) D) (21.61, 69.06)

Decide which probability distribution –binomial, geometric, or Poisson– applies to the question. You do not need to answer the question.

- 32) Given: The probability that a federal income tax return is filled out incorrectly with an error in favor of the taxpayer is 20%. Question: What is the probability that of the ten tax returns randomly selected for an audit in a given week, three returns will contain only errors favoring the taxpayer? 32) _____
A) Poisson B) geometric C) binomial

Use the Central Limit Theorem to find the mean and standard error of the mean of the indicated sampling distribution.

- 33) The monthly rents for studio apartments in a certain city have a mean of \$960 and a standard deviation of \$160. Random samples of size 30 are drawn from the population and the mean of each sample is determined. 33) _____
A) \$175.27, \$160 B) \$960, \$29.21 C) \$175.27, \$29.21 D) \$960, \$5.33

Answer Key

Testname: M13424567C

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