

Name: _____ Date: _____

1. The following distribution is not a probability distribution because

x	-5	-4	-3	-2	-1
P(x)	0.12	0.16	0.44	0.13	0.26

- A) The values of x are negative
- B) The probability values are not increasing
- C) The probability values do not add to 1
- D) The probability values are not discrete

2. The following distribution is not a probability distribution because

x	-5	-4	-3	-2	-1
P(x)	0.21	0.23	-0.13	0.43	0.26

- A) A values of x is negative
- B) A probability is negative
- C) The probability values do not add to 1
- D) The probability values are not discrete

3. What probability value would be needed to complete the following probability distribution?

x	-2	-1	0	1	2
P(x)	0.11	0.21		0.15	0.31

- A) 0.11
- B) 0.22
- C) 0.41
- D) 0.78

4. What value would be needed to complete the following probability distribution?

x	P(x)
0	1/3
1	1/8
2	1/8
3	
4	1/6

- A) 1/5
- B) 1/12
- C) 1/4
- D) 1/8

5. Find the mean of the distribution shown.

x	4	6
$P(x)$	0.33	0.67

- A) 1.67
- B) 4.00
- C) 5.34
- D) 6.00

6. Give the mean of the following probability distribution?

x	$P(x)$
1	0.20
2	0.10
3	0.35
4	0.05
5	0.30

- A) 1.20
- B) 1.46
- C) 3.15
- D) 2.13

7. The number of cartoons watched by Mrs. Kelly's first grade class on Saturday morning is shown below.

x	$P(x)$
0	0.15
1	0.20
2	0.30
3	0.10
4	0.20
5	0.05

Give the standard deviation for the probability distribution above.

- A) 1.46
- B) 2.25
- C) 1.89
- D) 1.18

8. Give the variance of the following distribution?

x	$P(x)$
0	0.20
1	0.35
2	0.10
3	0.25
4	0.10

- A) 1.83
- B) 1.31
- C) 1.25
- D) 1.71

9. Find the mean of the distribution shown.

x	2	3	4
$P(x)$	0.27	0.24	0.49

- A) 1.72
- B) 2.22
- C) 2.72
- D) 3.22

10. What is the standard deviation of the following probability distribution?

x	$P(x)$
0	0.20
2	0.05
4	0.35
6	0.25
8	0.15

- A) 2.6
- B) 4.7
- C) 5.4
- D) 3.9

11. Find the mean of the distribution shown.

x	-3	-2	-1	0
$P(x)$	0.21	0.24	0.42	0.13

- A) -1.84
- B) -1.53
- C) -2.05
- D) 2.05

12. A coin is tossed five times. Find the probability of getting exactly three heads.
- A) 0.3750
 - B) 0.1563
 - C) 0.2500
 - D) 0.3125
13. If a student randomly guesses at 20 multiple-choice questions, find the probability that the student gets exactly four correct. Each question has four possible choices.
- A) 0.19
 - B) 0.17
 - C) 0.08
 - D) 0.23
14. In a large bag of marbles, 30% of them are red. A child chooses 4 marbles from this bag. If the child chooses the marbles at random, what is the chance that the child gets exactly one three red marbles?
- A) 0.0756
 - B) 0.1764
 - C) 0.2646
 - D) 0.0810
15. A student takes a 7 question multiple choice quiz with 4 choices for each question. If the student guesses at random on each question, what is the probability that the student gets exactly 4 questions correct?
- A) 0.014
 - B) 0.043
 - C) 0.058
 - D) 0.115
16. The failure rate for taking the bar exam in Philadelphia is 41%. If 375 people take the bar exam, what is the mean for the number of failures?
- A) 138.1
 - B) 171.2
 - C) 90.7
 - D) 153.8

17. A university has 10,000 students of which 5000 are male and 5000 are female. If a class of 30 students is chosen at random from the university population, find the mean and variance of the number of male students.
- A) Mean = 18, Variance = 18
 - B) Mean = 15, Variance = 7.5
 - C) Mean = 12, Variance = 6
 - D) Mean = 7.5, Variance = 15
18. On an easy test, the mean score was 95 out of a possible 100 points. The distribution of all test scores is mostly likely to be
- A) symmetric
 - B) negatively skewed
 - C) positively skewed
 - D) diagonally skewed
19. Which of the following properties does not apply to a theoretical normal distribution?
- A) The normal distribution is bell-shaped.
 - B) The mean, median, and mode are equal.
 - C) The normal distribution is bimodal.
 - D) The curve never touches the x -axis.
20. If a normal distribution has mean 17 and standard deviation 5, then
- A) the median is 17 and the mode is 17
 - B) the median is 12 and the mode is 22
 - C) the median is 22 and the mode is 12
 - D) the median is 17 and the mode is 22
21. What is the special property of the standard normal distribution?
- A) The mean is 0 and the standard deviation is 1.
 - B) The total area under the normal distribution curve is equal to 1.00.
 - C) The curve is continuous.
 - D) The mean is located at the center of the distribution.
22. Find the probability $P(Z < 0.17)$ using the standard normal distribution.
- A) 0.8300
 - B) 0.4325
 - C) 0.5675
 - D) 0.0675

23. Find the probability $P(z < -0.41)$ using the standard normal distribution.
A) 0.6591
B) 0.3409
C) 0.8409
D) 0.5900
24. Find the probability $P(z > 0.78)$ using the standard normal distribution.
A) 0.2200
B) 0.7823
C) 0.7177
D) 0.2177
25. Find the probability $P(z > -0.54)$ using the standard normal distribution.
A) 0.2946
B) 0.7054
C) 0.7946
D) 0.4600
26. Find the probability $P(0.26 < z < 1.33)$ using the standard normal distribution.
A) 0.3057
B) 0.6943
C) 0.8057
D) 0.4600
27. Find the probability $P(-0.72 < z < -0.11)$ using the standard normal distribution.
A) 0.0900
B) 0.7796
C) 0.3504
D) 0.2204
28. Find the probability $P(-1.14 < z < 1.01)$ using the standard normal distribution.
A) 0.8400
B) 0.2834
C) 0.7166
D) 0.6734

29. For a normal distribution with mean 7 and standard deviation 2, the value 8 has a z value of
- A) -0.5
 - B) 0.5
 - C) 1.5
 - D) 2.5
30. The average height of flowering cherry trees in a nursery is 10 feet. If the heights are normally distributed with a standard deviation of 1.4, find the probability that a tree is less than 12 feet tall.
- A) 0.76
 - B) 0.92
 - C) 0.96
 - D) 0.84
31. The average length of crocodiles in a swamp is 12 feet. If the lengths are normally distributed with a standard deviation of 1.9, find the probability that a crocodile is more than 11.5 feet long.
- A) 0.52
 - B) 0.54
 - C) 0.58
 - D) 0.6
32. The average gas mileage of a certain model car is 28 miles per gallon. If the gas mileages are normally distributed with a standard deviation of 1.7, find the probability that a car has a gas mileage of between 27.8 and 28.3 miles per gallon.
- A) 0.15
 - B) 0.17
 - C) 0.21
 - D) 0.23
33. At a large department store, the average number of years of employment for a cashier is 5.7 with a standard deviation of 1.8 years. If an employee is picked at random, what is the probability that the employee has worked at the store for over 10 years?
- A) 49.16%
 - B) 99.16%
 - C) 0.84%
 - D) 0.54%

34. In order to be accepted into a top university, applicants must score within the top 5% on the SAT exam. Given that the test has a mean of 1000 and a standard deviation of 200, what is the lowest possible score a student needs to qualify for acceptance into the university?
- A) 1330
 - B) 1400
 - C) 1250
 - D) 1100
35. If the standard deviation of a population is 45 and we take a sample of size 9, then the standard error (the standard deviation of the sample mean) is
- A) 15.00
 - B) 3.00
 - C) 135.00
 - D) 5.00
36. The average age of a vehicle registered in the United States is 8 years, or 96 months. If a random sample of 36 vehicles is selected, find the probability that the mean of their age is between 98 and 100 months? Assume the standard deviation for the population is 15.
- A) 66.67%
 - B) 15.71%
 - C) 63.47%
 - D) 75.82%
37. The mean weight of loads of rock is 44.0 tons with a standard deviation of 6.0 tons. If 25 loads are chosen at random for a weight check, find the probability that the mean weight of those loads is less than 42.92 tons. Assume that the variable is normally distributed.
- A) 0.1841
 - B) 0.3041
 - C) 0.2081
 - D) 0.3555
38. If the length of country and western songs has mean 190 seconds and standard deviation 20 seconds, then the probability that a random selection of 36 songs will have mean length of 186.43 seconds or less is
- A) 0.8577
 - B) 0.3577
 - C) 0.1423
 - D) 0.6423

39. A television station estimates that 60% of college students watch the Super Bowl. For a sample of 80 students selected at random, what is the mean and variance of the number of students who watch this game?
- A) Mean = 48.0, Variance = 4.38
 - B) Mean = 19.2, Variance = 4.38
 - C) Mean = 19.2, Variance = 19.20
 - D) Mean = 48.0, Variance = 19.20
40. A biologist estimates that 70% of deer in the region carry a certain type of tick. For a sample of 300 deer selected at random, what is the chance that 216 or fewer deer have this tick?
- A) 0.8348
 - B) 0.7936
 - C) 0.7425
 - D) 0.7362
41. A magazine reported that 6% of American drivers read the newspaper while driving. If 500 drivers are selected at random, find the probability that exactly 40 will admit to reading the newspaper while driving.
- A) 1.96%
 - B) 2.04%
 - C) 1.28%
 - D) 0.56%
42. If a baseball player's batting average is 0.340 or 34%, find the probability that the player will have a bad season and only score at most 60 hits in 200 times at bat?
- A) 12.64%
 - B) 11.72%
 - C) 50.34%
 - D) 13.14%
43. A sample of 25 different payroll departments found that the employees worked an average of 310.3 days a year with a standard deviation of 23.8 days. What is the 90% confidence interval for the average days worked, m , of all payroll departments?
- A) $301.0 < m < 319.6$
 - B) $298.0 < m < 322.6$
 - C) $302.4 < m < 318.2$
 - D) $314.1 < m < 316.8$

44. A lawyer researched the average number of years served by 45 different justices on the Supreme Court. The average number of years served was 13.8 years with a standard deviation of 7.3 years. What is the 95% confidence interval for the average number of years served by all Supreme Court justices?
- A) $11.7 < m < 15.9$
 - B) $11.8 < m < 15.8$
 - C) $12.9 < m < 16.9$
 - D) $12.5 < m < 17.3$
45. An economics professor randomly selected 100 millionaires in the United States. The average age of these millionaires was 54.8 years with a standard deviation of 7.9 years. What is the 95% confidence interval for the mean age, m , of all United States millionaires?
- A) $53.5 < m < 56.1$
 - B) $53.3 < m < 56.3$
 - C) $52.8 < m < 56.8$
 - D) $51.7 < m < 57.7$
46. A study of 200 apple trees showed that the average number of apples per tree was 1500. The standard deviation of the population is 150. Which of the following is the 90% confidence interval for the mean number of apples for all trees?
- A) (1486.4, 1513.6)
 - B) (1482.6, 1517.4)
 - C) (1480.8, 1519.2)
 - D) (1479.2, 1520.8)
47. A study of 50 professors showed that the time they spent on the average in creating test questions was 15.0 minutes per question. The standard deviation of the population is 3. Which of the following is the 90% confidence interval for the average number of minutes it takes to create a test question?
- A) (13.91, 16.09)
 - B) (14.51, 15.49)
 - C) (14.30, 15.70)
 - D) (10.07, 19.93)

48. A study of 80 white mice showed that their average weight was 3.2 ounces. The standard deviation of the population is 0.5 ounces. Which of the following is the 80% confidence interval for the mean weight per white mouse?
- A) (3.13, 3.27)
 - B) (3.02, 3.38)
 - C) (3.11, 3.29)
 - D) (2.56, 3.84)
49. A study of 90 bolts of carpet showed that their average length was 180 yards. The standard deviation of the population is 4 yards. Which of the following is the 90% confidence interval for the mean length per bolt of carpet?
- A) (179.46, 180.54)
 - B) (178.35, 181.65)
 - C) (179.17, 180.83)
 - D) (179.31, 180.69)

Answer Key

1. C
2. B
3. B
4. C
5. C
6. C
7. A
8. D
9. D
10. A
11. B
12. D
13. A
14. A
15. C
16. D
17. B
18. B
19. C
20. A
21. A
22. C
23. C
24. D
25. A
26. A
27. D
28. C
29. B
30. B
31. D
32. B
33. C
34. A
35. A
36. B
37. A
38. C
39. D
40. B
41. C
42. D
43. C
44. A

- 45. B
- 46. B
- 47. C
- 48. A
- 49. D