

## Continuous Distributions

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### MULTIPLE CHOICE

1. The center of a normal curve is
- always equal to zero
  - is the mean of the distribution
  - cannot be negative
  - is the standard deviation

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

2. A normal distribution with a mean of 0 and a standard deviation of 1 is called
- a probability density function
  - an ordinary normal curve
  - a standard normal distribution
  - None of these alternatives is correct.

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

3. In a standard normal distribution, the probability that Z is greater than zero is
- 0.5
  - equal to 1
  - at least 0.5
  - 1.96

ANS: A

PTS: 1

TOP: Continuous Probability Distributions

4. For any continuous random variable, the probability that the random variable takes on exactly a specific value is
- 1.00
  - 0.50
  - any value between 0 to 1
  - almost zero

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

5. Which of the following is **not** a characteristic of the normal probability distribution?
- The mean, median, and the mode are equal
  - The mean of the distribution can be negative, zero, or positive
  - The distribution is symmetrical
  - The standard deviation must be 1

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

6. Larger values of the standard deviation result in a normal curve that is
- shifted to the right
  - shifted to the left
  - narrower and more peaked
  - wider and flatter

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

7. For a normal distribution, a negative value of  $z$  indicates
- a mistake has been made in computations, because  $z$  is always positive
  - the area corresponding to the  $z$  is negative
  - the  $z$  is to the left of the mean
  - the  $z$  is to the right of the mean

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

8. The standard deviation of a standard normal distribution
- is always equal to zero
  - is always equal to one
  - can be any positive value
  - can be any value

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

9. If the mean of a normal distribution is negative,
- the standard deviation must also be negative
  - the variance must also be negative
  - a mistake has been made in the computations, because the mean of a normal distribution cannot be negative
  - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

10. The highest point of a normal curve occurs at
- one standard deviation to the right of the mean
  - two standard deviations to the right of the mean
  - approximately three standard deviations to the right of the mean
  - the mean

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

11. A standard normal distribution is a normal distribution
- with a mean of 1 and a standard deviation of 0
  - with a mean of 0 and a standard deviation of 1
  - with any mean and a standard deviation of 1
  - with any mean and any standard deviation

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

12.  $Z$  is a standard normal random variable. The  $P(-1.20 \leq Z \leq 1.50)$  equals
- 0.0483
  - 0.3849
  - 0.4332
  - 0.8181

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

13. Given that  $Z$  is a standard normal random variable, what is the probability that  $Z \geq -2.12$ ?
- a. 0.4830
  - b. 0.9830
  - c. 0.017
  - d. 0.966

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

14.  $Z$  is a standard normal random variable. The  $P(1.41 \leq Z \leq 2.85)$  equals
- a. 0.4978
  - b. 0.4207
  - c. 0.9185
  - d. 0.0771

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

15.  $X$  is a normally distributed random variable with a mean of 5 and a variance of 4. The probability that  $X$  is greater than 10.52 is
- a. 0.0029
  - b. 0.0838
  - c. 0.4971
  - d. 0.9971

ANS: A

PTS: 1

TOP: Continuous Probability Distributions

16.  $X$  is a normally distributed random variable with a mean of 22 and a standard deviation of 5. The probability that  $X$  is less than 9.7 is
- a. 0.000
  - b. 0.4931
  - c. 0.0069
  - d. 0.9931

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

17. Given that  $Z$  is a standard normal random variable, what is the value of  $Z$  if the area to the left of  $Z$  is 0.0559?
- a. 0.4441
  - b. 1.59
  - c. 0.0000
  - d. 1.50

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

18.  $Z$  is a standard normal random variable. What is the value of  $Z$  if the area between  $-Z$  and  $Z$  is 0.754?
- a. 0.377
  - b. 0.123
  - c. 2.16
  - d. 1.16

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

19. For a standard normal distribution, the probability of obtaining a z value between -2.4 to -2.0 is
- 0.4000
  - 0.0146
  - 0.0400
  - 0.5000

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

20. For a standard normal distribution, the probability of obtaining a z value between -1.9 to 1.7 is
- 0.9267
  - 0.4267
  - 1.4267
  - 0.5000

ANS: A

PTS: 1

TOP: Continuous Probability Distributions

21. Z is a standard normal random variable. The  $P(1.05 \leq Z \leq 2.13)$  equals
- 0.8365
  - 0.1303
  - 0.4834
  - 0.3531

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

22. Z is a standard normal random variable. The  $P(-1.5 \leq Z \leq 1.09)$  equals
- 0.4322
  - 0.3621
  - 0.7953
  - 0.0711

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

23. Given that Z is a standard normal random variable. What is the value of Z if the area to the right of Z is 0.1401?
- 1.08
  - 0.1401
  - 2.16
  - 1.08

ANS: A

PTS: 1

TOP: Continuous Probability Distributions

24. Given that Z is a standard normal random variable, what is the value of Z if the area to the right of Z is 0.9834?
- 0.4834
  - 2.13
  - +2.13
  - zero

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

25. Given that  $Z$  is a standard normal random variable, what is the value of  $Z$  if the area between  $-Z$  and  $Z$  is 0.901?
- a. 1.96
  - b. -1.96
  - c. 0.4505
  - d.  $\pm 1.65$

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-2**

The weight of football players is normally distributed with a mean of 200 pounds and a standard deviation of 25 pounds.

26. Refer to Exhibit 6-2. The probability of a player weighing less than 250 pounds is
- a. 0.4772
  - b. 0.9772
  - c. 0.0528
  - d. 0.5000

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

27. Refer to Exhibit 6-2. What is the minimum weight of the middle 95% of the players?
- a. 196
  - b. 151
  - c. 249
  - d. 190

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-3**

Consider the continuous random variable  $X$ , which has a uniform distribution over the interval from 20 to 28.

28. Refer to Exhibit 6-3. The probability that  $X$  will take on a value between 21 and 25 is
- a. 0.125
  - b. 0.250
  - c. 0.500
  - d. 1.000

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

29. Refer to Exhibit 6-3. The mean of  $X$  is
- a. 0.000
  - b. 0.125
  - c. 23
  - d. 24

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-6**

The starting salaries of individuals with an MBA degree are normally distributed with a mean of \$40,000 and a standard deviation of \$5,000.

30. Refer to Exhibit 6-6. What is the probability that a randomly selected individual with an MBA degree will get a starting salary of at least \$30,000?
- 0.4772
  - 0.9772
  - 0.0228
  - 0.5000

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

31. Refer to Exhibit 6-6. What percentage of MBA's will have starting salaries of \$34,000 to \$46,000?
- 38.49%
  - 38.59%
  - 50%
  - 76.98%

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-7**

The weight of items produced by a machine is normally distributed with a mean of 8 ounces and a standard deviation of 2 ounces.

32. Refer to Exhibit 6-7. What is the probability that a randomly selected item will weigh between 11 and 12 ounces?
- 0.4772
  - 0.4332
  - 0.9104
  - 0.0440

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

33. Refer to Exhibit 6-7. What percentage of items will weigh between 6.4 and 8.9 ounces?
- 0.1145
  - 0.2881
  - 0.1736
  - 0.4617

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-8**

The life expectancy of a particular brand of tire is normally distributed with a mean of 40,000 and a standard deviation of 5,000 miles.

34. Refer to Exhibit 6-8. What is the probability that a randomly selected tire will have a life of at least 30,000 miles?
- 0.4772
  - 0.9772
  - 0.0228
  - 0.5000

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

35. Refer to Exhibit 6-8. What percentage of tires will have a life of 34,000 to 46,000 miles?
- a. 38.49%
  - b. 76.98%
  - c. 50%
  - d. 88.49%

ANS: B

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-9**

The average price of personal computers manufactured by MNM Company is \$1,200 with a standard deviation of \$220. Furthermore, it is known that the computer prices manufactured by MNM are normally distributed.

36. Refer to Exhibit 6-9. What is the probability that a randomly selected computer will have a price of at least \$1,530?
- a. 0.0668
  - b. 0.5668
  - c. 0.4332
  - d. 1.4332

ANS: A

PTS: 1

TOP: Continuous Probability Distributions

37. Refer to Exhibit 6-9. What is the **minimum** value of the middle 95% of computer prices?
- a. \$1,768.80
  - b. \$1,295.80
  - c. \$2,400.00
  - d. \$768.80

ANS: D

PTS: 1

TOP: Continuous Probability Distributions

**Exhibit 6-10**

A professor at a local university noted that the grades of her students were normally distributed with a mean of 73 and a standard deviation of 11.

38. Refer to Exhibit 6-10. The professor has informed us that 7.93 percent of her students received grades of A. What is the minimum score needed to receive a grade of A?
- a. 90.51
  - b. 93.2
  - c. 88.51
  - d. 100.00

ANS: C

PTS: 1

TOP: Continuous Probability Distributions

39. Refer to Exhibit 6-10. If 69.5 percent of the students received grades of C or better, what is the minimum score of those who received C's?
- a. 70.39
  - b. 67.39
  - c. 50.39
  - d. 65.39

ANS: B

PTS: 1

TOP: Continuous Probability Distributions