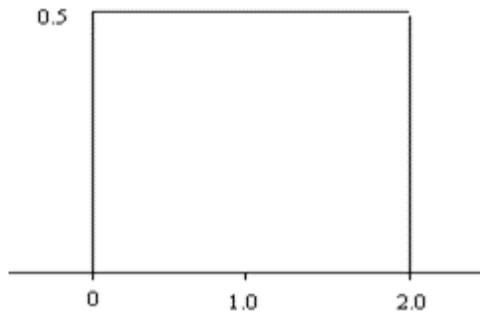


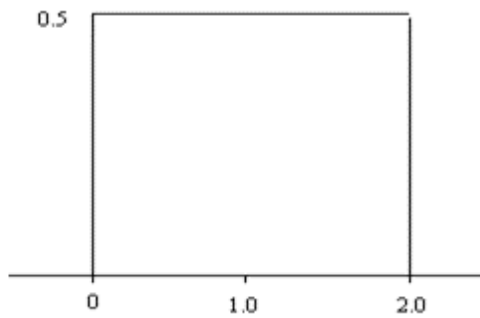
1.



For this density curve, the third quartile is:

- A) 0.5.
- B) 0.75.
- C) 1.5.
- D) 1.75.

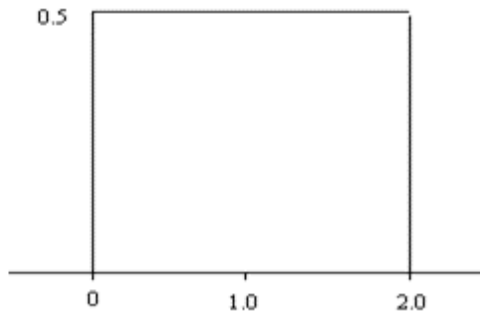
2.



For this density curve, what percent of the observations lie above 0.2?

- A) 10%
- B) 20%
- C) 80%
- D) 90%

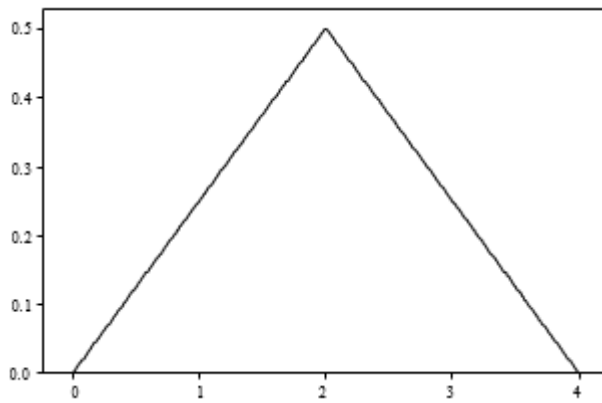
3.



For this density curve, what percent of the observations lie between 1.25 and 1.75?

- A) 0.25%
- B) 12.5%
- C) 25%
- D) 50%

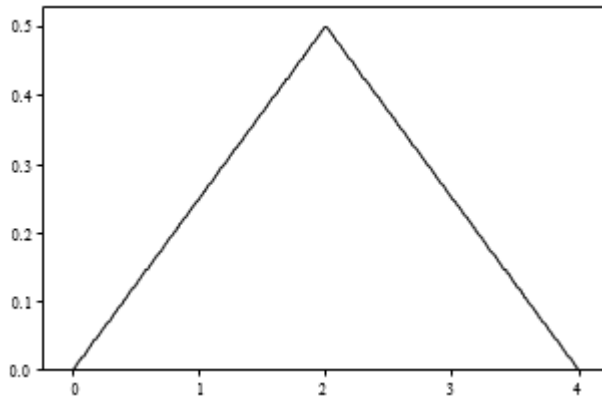
4.



For this density curve, the median is:

- A) 0.50.
- B) 1.50.
- C) 2.00.
- D) 3.50.

5.



For this density curve, the mean is:

- A) greater than the median.
 - B) equal to the median.
 - C) less than the median.
 - D) not possible to determine from the information given.
6. A Normal distribution:
- A) is symmetric.
 - B) can be completely specified by a mean, μ , and a standard deviation, σ .
 - C) has an area of exactly 1 underneath the density curve.
 - D) All of the answer options are correct.
7. Scores on a university exam are Normally distributed, with a mean of 78 and a standard deviation of 8. The professor teaching the class declares that a score of 70 or higher is required for a grade of at least C. Using the 68–95–99.7 rule, what percent of students score below 62?
- A) 2.5%
 - B) 5%
 - C) 16%
 - D) 32%
8. Scores on a university exam are Normally distributed, with a mean of 78 and a standard deviation of 8. The professor teaching the class declares that a score of 70 or higher is required for a grade of at least C. Using the 68–95–99.7 rule, what percent of students failed to earn a grade of at least C?
- A) 32%
 - B) 16%
 - C) 5%
 - D) 2.5%

9. Using the standard Normal distribution tables, the area under the standard Normal curve corresponding to $Z > -1.62$ is:
- A) 0.0044.
 - B) 0.0526.
 - C) 0.9474.
 - D) 0.9956.
10. Using the standard Normal distribution tables, what is the area under the standard Normal curve corresponding to $Z < 0.75$?
- A) 0.0401
 - B) 0.7500
 - C) 0.7734
 - D) 0.9599
11. Using the standard Normal distribution tables, the area under the standard Normal curve corresponding to $-0.5 < Z < 1.2$ is:
- A) 0.3085.
 - B) 0.8849.
 - C) 0.5764.
 - D) 0.2815.
12. Birth weights at a local hospital have a Normal distribution, with a mean of 110 oz and a standard deviation of 15 oz. The proportion of infants with birth weights above 125 oz is:
- A) 0.500.
 - B) 0.159.
 - C) 0.341.
 - D) 0.841.
13. Birth weights at a local hospital have a Normal distribution, with a mean of 110 oz and a standard deviation of 15 oz. The proportion of infants with birth weights between 125 oz and 140 oz is:
- A) 0.819.
 - B) 0.636.
 - C) 0.477.
 - D) 0.136.

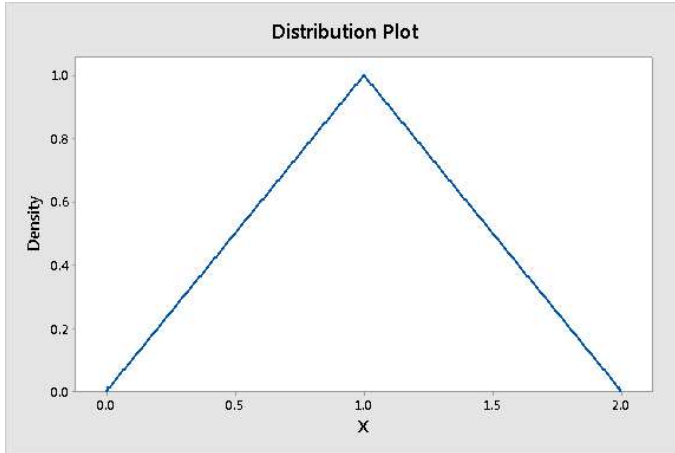
14. The scores on the Wechsler Adult Intelligence Scale are approximately Normal, with $\mu = 100$ and $\sigma = 15$. The proportion of adults with scores between 80 and 120 is closest to:
- A) 0.50.
 - B) 0.66.
 - C) 0.82.
 - D) 0.99.
15. The scores on the Wechsler Adult Intelligence Scale are approximately Normal, with $\mu = 100$ and $\sigma = 15$. The proportion of adults with scores above 110 is closest to:
- A) 0.08.
 - B) 0.10.
 - C) 0.25.
 - D) 0.35.
16. The scores on the Wechsler Adult Intelligence Scale are approximately Normal, with $\mu = 100$ and $\sigma = 15$. The score needed to be among the highest 10% of all scores is closest to:
- A) 81.
 - B) 119.
 - C) 75.
 - D) 125.
17. The scores on the Wechsler Adult Intelligence Scale are approximately Normal, with $\mu = 100$ and $\sigma = 15$. If you scored 130, your score would be higher than approximately what percent of adults?
- A) 92%
 - B) 95%
 - C) 97.5%
 - D) 99.7%
18. A company produces packets of soap powder labeled "Giant Size 32 Ounces." The actual weight of soap powder in such a box has a Normal distribution, with a mean of 33 oz and a standard deviation of 0.7 oz. To avoid having dissatisfied customers, the company says a box of soap is considered underweight if it weighs less than 32 oz. To avoid losing money, it labels the top 5% (the heaviest 5%) overweight. What proportion of boxes is underweight (weighs less than 32 oz)?
- A) 0.0764
 - B) 0.2420
 - C) 0.7580
 - D) 0.9236

19. A company produces packets of soap powder labeled "Giant Size 32 Ounces." The actual weight of soap powder in such a box has a Normal distribution, with a mean of 33 oz and a standard deviation of 0.7 oz. To avoid having dissatisfied customers, the company says a box of soap is considered underweight if it weighs less than 32 oz. To avoid losing money, it labels the top 5% (the heaviest 5%) overweight. How heavy does a box have to be for it to be labeled overweight?
- A) 31.60 oz
 - B) 31.85 oz
 - C) 34.15 oz
 - D) 34.40 oz
20. A high-profile consulting company chooses its new entry-level employees from a pool of recent college graduates using a five-step interview process. Unfortunately, there are usually more candidates who complete the interview process than the number of new positions that are available. As a result, cumulative GPA is used as a tie-breaker. GPAs for the successful interviewees are Normally distributed, with a mean of 3.3 and a standard deviation of 0.4. What percent of candidates have a GPA above 3.9?
- A) 2.3%
 - B) 6.7%
 - C) 93.3%
 - D) 97.7%
21. A high-profile consulting company chooses its new entry-level employees from a pool of recent college graduates using a five-step interview process. Unfortunately, there are usually more candidates who complete the interview process than the number of new positions that are available. As a result, cumulative GPA is used as a tie-breaker. GPAs for the successful interviewees are Normally distributed, with a mean of 3.3 and a standard deviation of 0.4. What proportion of candidates have a GPA under 3.0?
- A) 0.023
 - B) 0.227
 - C) 0.551
 - D) 0.773

22. A high-profile consulting company chooses its new entry-level employees from a pool of recent college graduates using a five-step interview process. Unfortunately, there are usually more candidates who complete the interview process than the number of new positions that are available. As a result, cumulative GPA is used as a tie-breaker. GPAs for the successful interviewees are Normally distributed, with a mean of 3.3 and a standard deviation of 0.4. Out of the 163 people who made it through the interview process, only 121 can be hired. What cut-off GPA should the company use?
- A) 3.00
 - B) 3.04
 - C) 3.08
 - D) 3.12
23. Scores on the SAT verbal test in recent years follow approximately the $N(515, 109)$ distribution. The proportion of students scoring at least 600 is closest to:
- A) 0.082.
 - B) 0.184.
 - C) 0.218.
 - D) 0.782.
24. Scores on the SAT verbal test in recent years follow approximately the $N(515, 109)$ distribution. The proportion of students scoring between 460 and 550 is closest to:
- A) 0.309.
 - B) 0.317.
 - C) 0.626.
 - D) 0.681.
25. Scores on the SAT verbal test in recent years follow approximately the $N(515, 109)$ distribution. How high must a student score in order to place in the top 5% of all students taking the SAT?
- A) 301
 - B) 336
 - C) 694
 - D) 729
26. The duration (in days) of human pregnancies follows approximately the $N(266, 16)$ distribution. How many days would a human pregnancy need to last to be among the top 10% of all pregnancy durations?
- A) 239.7 days
 - B) 245.5 days
 - C) 286.5 days
 - D) 292.3 days

27. The duration (in days) of human pregnancies follows approximately the $N(266,16)$ distribution. What proportion of pregnancy durations is more than 270 days?
- A) 0.334
 - B) 0.401
 - C) 0.599
 - D) 0.621
28. The average time taken for your Internet service provider to remotely resolve a trouble ticket has a Normal distribution, with a mean of 4.3 hours and a standard deviation of 3.1 hours. What percent of the time can you expect to wait longer than a full (8-hour) business day for a resolution?
- A) 11.7%
 - B) 15.7%
 - C) 88.3%
 - D) 100%
29. The average time taken for your Internet service provider to remotely resolve a trouble ticket has a Normal distribution, with a mean of 4.3 hours and a standard deviation of 3.1 hours. What percentage of the tickets are resolved in less than half an hour?
- A) 11.0%
 - B) 14.5%
 - C) 85.5%
 - D) 89.1%
30. A cappuccino vending machine is designed to dispense an average of μ oz per cup. If the ounces per fill are Normally distributed, with a standard deviation of 0.4 oz, at what value should μ be set so that 6 oz cups will overflow only 2% of the time?
- A) 6.82 oz
 - B) 6.00 oz
 - C) 5.18 oz
 - D) 5.60 oz

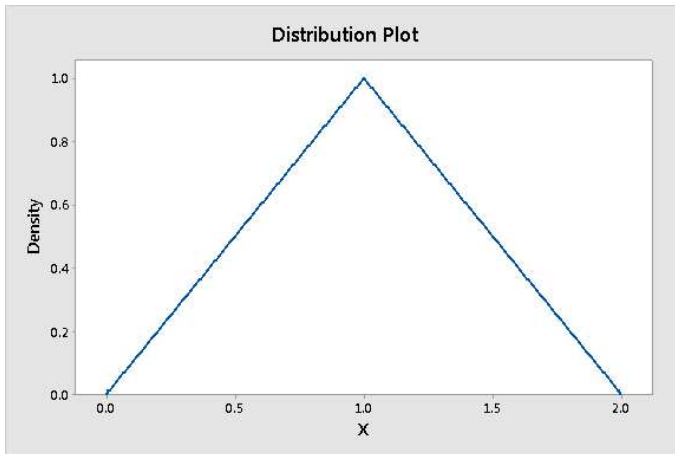
31. The graph below depicts a triangular distribution.



The area under the curve equals:

- A) 0.
- B) 0.5.
- C) 1.
- D) None of the answer options is correct.

32. The graph below depicts a triangular distribution.

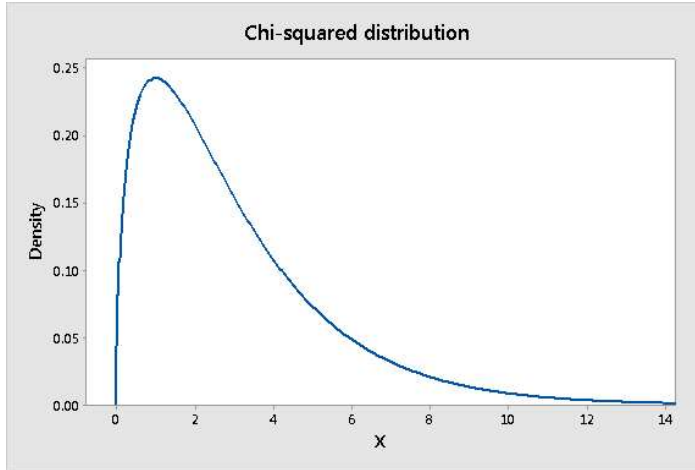


The proportion of values below 1 equals:

- A) 0.
- B) 0.5.
- C) 1.
- D) None of the answer options is correct.

33. The typical college freshman spends an average of $\mu = 150$ minutes per day, with a standard deviation of $\sigma = 50$ minutes, on social media. The distribution of time on social media is known to be Normal. The proportion of students spending at least 2 hours on social media equals:
- A) 0.726.
 - B) 0.964.
 - C) 0.928.
 - D) 0.072.
34. The typical college freshman spends an average of $\mu = 150$ minutes per day, with a standard deviation of $\sigma = 50$ minutes, on social media. The distribution of time on social media is known to be Normal. The third quartile is:
- A) 183.72 minutes.
 - B) 0.25 minutes.
 - C) 116.27 minutes.
 - D) 0.75 minutes.
35. The typical college freshman spends an average of $\mu = 150$ minutes per day, with a standard deviation of $\sigma = 50$ minutes, on social media. The distribution of time on social media is known to be Normal. The median of the distribution is:
- A) 75 minutes.
 - B) 150 minutes.
 - C) 180 minutes.
 - D) 240 minutes.
36. Running times for 400 meters are Normally distributed for young men between 18 and 30 years of age, with a mean of 93 seconds and a standard deviation of 16 seconds. What would a man's running time have to be to put him in the top 1% of runners?
- A) 130.2 seconds
 - B) 51.8 seconds
 - C) 134.2 seconds
 - D) 55.8 seconds
37. Running times for 400 meters are Normally distributed for young men between 18 and 30 years of age, with a mean of 93 seconds and a standard deviation of 16 seconds. Thus, 99.7% of running times are approximately between:
- A) 45 and 141 seconds.
 - B) 61 and 125 seconds.
 - C) 77 and 109 seconds.
 - D) None of the answer options is correct.

38. The graph below shows a distribution that is called a chi-squared distribution.



For this distribution, the median:

- A) is larger than the mean μ .
 - B) is smaller than the mean μ .
 - C) is equal to the mean μ .
 - D) cannot be determined from the graph.
39. Your friend took an introductory statistics class last year and learned all about density curves. He draws a smooth curve with a long left tail. For such a curve, which of the following is true for the mean and median?
- A) mean = median
 - B) mean > median
 - C) mean < median
 - D) There is not enough information to determine any of the answer options.
40. Your friend took an introductory statistics class last year and learned all about density curves. She tells you that two requirements of a density curve are:
- A) the curve is always above the horizontal axis, and the area under the curve is one.
 - B) the curve is always above the horizontal axis, and the curve is symmetric.
 - C) the area above the horizontal axis must be larger than one if there is any area below the axis.
 - D) the area below the curve and above the horizontal axis must exceed one.

41. You recently took a statistics exam in a large class. The instructor tells the class that the scores were Normally distributed, with a mean of 72 (out of 100) and a standard deviation of 12. The median for the exam is:
- A) 50.
 - B) 72.
 - C) 60.
 - D) 84.
42. You recently took a statistics exam in a large class. The instructor tells the class that the scores were Normally distributed, with a mean of 72 (out of 100) and a standard deviation of 12. Your score was 90. Your friend had a time conflict and took a course with another instructor. Your friend had a score of 75 on a test, with a mean of 60 and a standard deviation of 10. What can you conclude?
- A) You clearly ranked better.
 - B) You and your friend ranked equally well.
 - C) Your friend actually ranked better.
 - D) The tests cannot be compared.
43. Suppose you received a score of 95 out of 100 on exam 1. The mean was 79 and the standard deviation was 8. If your score on exam 2 is 90 out of 100, and the mean was 60 with a standard deviation of 15, then you did:
- A) worse on exam 1.
 - B) worse on exam 2.
 - C) better on exam 1.
 - D) the same on both exams.
44. Suppose you received a score of 91 out of 100 on exam 1. The mean was 79 and the standard deviation was 8. What score do you need on exam 2 to do equally well, if the mean is 60 and the standard deviation is 12?
- A) 78
 - B) 91
 - C) 95
 - D) 84

45. You recently took a statistics exam in a large class. The instructor tells the class that the scores were Normally distributed, with a mean of 72 (out of 100) and a standard deviation of 12. Your score was 96. You would like to know what proportion of students did better than you did. Unfortunately, your calculator batteries are dead and you must now rely on Normal tables. You need to find which of the following?
- A) the area to the right of 96
 - B) the area to the left of 96
 - C) the area to the right of 2
 - D) the area to the left of 2
46. You recently took a statistics exam in a large class with $n = 500$ students. The instructor tells the class that the scores were Normally distributed, with a mean of 72 (out of 100) and a standard deviation of 8, but when you talk to other students in the class, you find out that more than 30 students have scores below 45. That violates which rule for the Normal distribution?
- A) the 1–2–3 rule
 - B) the 30–60–90 rule
 - C) the 68–95–99.7 rule
 - D) It does not violate any rule; anything can happen.

Answer Key

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

- 45. C
- 46. C