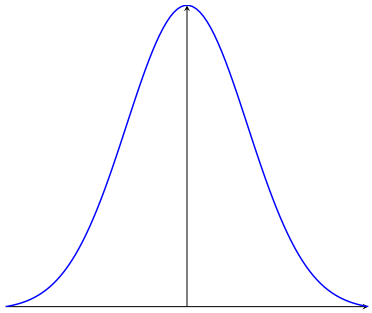

Normal Distribution Problems

1. The heights of adult women in a certain population are normally distributed with a mean of 65 inches and a standard deviation of 3 inches. What is the probability that a randomly selected woman from this population is taller than 68 inches?

2. A standardized test has a mean score of 500 and a standard deviation of 100. If a student scores in the 85th percentile on this test, what is their score?

3. The weights of cereal boxes filled by a particular machine are normally distributed with a mean weight of 16 ounces and a standard deviation of 0.5 ounces. If a box is chosen at random, what is the probability that it weighs between 15.5 and 16.5 ounces?

4. The amount of time it takes a student to complete a test is normally distributed with a mean of 45 minutes and a standard deviation of 5 minutes. What is the probability that a student takes more than 55 minutes to complete the test?

5. The diameter of ball bearings produced by a particular machine is normally distributed with a mean of 1.5 cm and a standard deviation of 0.1 cm. What is the probability that a randomly selected ball bearing has a diameter less than 1.4 cm?

6. The scores on a test are normally distributed with a mean of 75 and a standard deviation of 10. If the top 20% of students receive an A grade, what is the minimum score needed to receive an A grade?

7. The IQ scores of a particular population are normally distributed with a mean of 100 and a standard deviation of 15. What is the probability that a randomly selected individual has an IQ score between 85 and 115?

8. The time it takes to complete a certain task is normally distributed with a mean of 25 minutes and a standard deviation of 3 minutes. What is the probability that it takes less than 20 minutes to complete the task?

9. The weights of apples in a particular orchard are normally distributed with a mean weight of 150 grams and a standard deviation of 10 grams. If a box of apples is chosen at random and it contains 12 apples, what is the probability that the total weight of the apples in the box is less than 1.8 kg?

10. The amount of rainfall in a certain area is normally distributed with a mean of 50 inches and a standard deviation of 10 inches. What is the probability that in a given year the rainfall will be between 40 and 60 inches?

11. The time it takes to complete a race is normally distributed with a mean of 120 seconds and a standard deviation of 10 seconds. If the top 5% of runners receive a medal, what is the maximum time a runner can take to receive a medal?

12. The weights of bags of chips filled by a particular machine are normally distributed with a mean weight of 5 ounces and a standard deviation of 0.2 ounces. If a bag is chosen at random, what is the probability that it weighs more than 5.5 ounces?

13. The heights of adult men in a certain population are normally distributed with a mean of 70 inches and a standard deviation of 2.5 inches. If a man is randomly selected from this population, what is the probability that he is shorter than 65 inches?

14. The number of cars passing through a certain intersection per hour is normally distributed with a mean of 200 and a standard deviation of 20. What is the probability that in a randomly selected hour, more than 250 cars pass through the intersection?

15. The amount of time it takes to fix a machine is normally distributed with a mean of 60 minutes and a standard deviation of 8 minutes. If 10 machines need to be fixed, what is the probability that it takes more than 10 hours to fix them all?

16. The time it takes to complete a test is normally distributed with a mean of 60 minutes and a standard deviation of 8 minutes. What is the probability that a student takes between 45 and 75 minutes to complete the test?

17. The heights of adult men in a certain population are normally distributed with a mean of 68 inches and a standard deviation of 3 inches. If a man is randomly selected from this population, what is the probability that he is taller than 72 inches?

18. The scores on a standardized test are normally distributed with a mean of 80 and a standard deviation of 5. If the bottom 10% of students receive a failing grade, what is the maximum score a student can receive to avoid failing?

19. The weight of candy bars produced by a certain machine is normally distributed with a mean weight of 2 ounces and a standard deviation of 0.1 ounces. If a box contains 24 randomly selected candy bars, what is the probability that the total weight of the candy bars in the box is between 48 and 50 ounces?

20. The diameter of bolts produced by a particular machine is normally distributed with a mean of 0.5 cm and a standard deviation of 0.05 cm. If a bolt is randomly selected, what is the probability that its diameter is between 0.4 and 0.6 cm?