

1.

Suppose that  $x$  is normally distributed with mean 78 and standard deviation 8.9, and that an  $x$ -value is chosen at random. Find the following probabilities, rounding your answers to four decimal places.

$$P(x < 70.168) = \boxed{\phantom{0.0000}}$$

$$P(71.77 < x < 82.272) = \boxed{\phantom{0.0000}}$$

$$P(x > 86.188) = \boxed{\phantom{0.0000}}$$

2. The actual weight of a five-pound bag of sugar is normally distributed with mean  $\mu = 5$  lb and standard deviation  $\sigma = 0.32$  lb. Find the following probabilities, rounding your answers to four decimal places.

The probability that the bag contains no more than 4.69 lb:

The probability that the bag contains between 4.83 and 5.19 lb:

The probability that the bag contains no less than 5.33 lb:

3. The height of a certain plant is normally distributed with mean 16.5 cm and standard deviation 5.1 cm. To three decimal places, what is the probability that a randomly chosen plant of this type is no taller than 24.3 cm?

4. Which of the following gives the area to the left of 18.3 under the normal curve with mean 39 and standard deviation 15?

A. `normalcdf(18.3,-1E99,39,15)`

B. `normalcdf(-1E99,18.3,39,15)`

- C. `normalcdf(39,15,-1E99,18.3)`
- D. `normalcdf(18.3,1E99,39,15)`

5. Which of the following gives the area to the right of 24.6 under the normal curve with mean 41.2 and standard deviation 13.1?

- A. `normalcdf(-1E99,24.6,41.2,13.1)`
- B. `normalcdf(24.6,-1E99,41.2,13.1)`
- C. `normalcdf(24.6,1E99,41.2,13.1)`
- D. `normalcdf(41.2,13.1,-1E99,24.6)`

6. Which of the following gives the area between 21.9 and 56.4 under the normal curve with mean 46.7 and standard deviation 13.7?

- A. `normalcdf(-1E99,56.4,46.7,13.7)`
- B. `normalcdf(46.7,13.7,21.9,56.4)`
- C. `normalcdf(-1E99,21.9,46.7,13.7)`
- D. `normalcdf(56.4,21.9,46.7,13.7)`
- E. `normalcdf(21.9,56.4,46.7,13.7)`

7. If a single value  $x$  is chosen at random from a normal population with mean 4.2 and standard deviation 2.86, what is the probability that

$2.7 < x < 5.2$  ?  (Round your answer to four decimal places.)

8. Suppose that the serum cholesterol level of adult males is normally distributed with mean  $\mu=103$  and standard deviation  $\sigma=23$ . Approximately what percentage of males have cholesterol level above 143?  (Round your answer to the nearest tenth.)

9. Let  $x$  be a normally distributed random variable with mean 995 and standard deviation 125, and suppose that the point  $(970, y)$  is on the graph of the cdf of  $x$ . Then  $y = \square$ . (Round your answer to two decimal places.)

10. For a random variable  $x$  which is normally distributed with mean 9.9 and standard deviation 1.76,  $Q_1 = \square$ . (Round your answer to four decimal places.)

11. The number of widgets produced by a particular machine in one day is approximately normally distributed with mean 81.04 and standard deviation 12.75. What is the 46<sup>th</sup> percentile? (Round your answer to four decimal places.)

12. Scores on a recent Stat test were normally distributed with mean 77.78 and standard deviation 8.99. What was the lowest score a student could earn and still be in the top 10%? (Round your answer to the nearest integer.)

13. Until recently, scores of college graduates on the Verbal portion of the GRE test were normally distributed with mean 470 and standard deviation 108. What is the lowest score a student could earn and still be in the 90<sup>th</sup> percentile?

(Round your answer to the nearest integer.)

14. The heights of plants of a certain species are approximately normally distributed with  $\mu = 18.9$  cm and  $\sigma = 5.5$  cm. What is the 92<sup>th</sup> percentile for the heights of these plants?  (Round your answer to four decimal places.)

15. The pH measurements of water specimens from various locations along a given river basin are normally distributed with mean 8.5 and standard deviation 0.3. Three-quarters of the pH measurements in this river basin are greater than:  (Round your answer to the nearest hundredth.)