

Test Your Knowledge- Normal Distribution.

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Find the indicated probability or percentage for the normally distributed variable.**

- 1) The variable  $X$  is normally distributed. The mean is  $\mu = 60.0$  and the standard deviation is  $\sigma = 4.0$ . Find  $P(X < 53.0)$ . 1) \_\_\_\_\_
- 2) The variable  $X$  is normally distributed. The mean is  $\mu = 15.2$  and the standard deviation is  $\sigma = 0.9$ . Find  $P(X > 16.1)$ . 2) \_\_\_\_\_
- 3) The variable  $X$  is normally distributed. The mean is  $\mu = 22.0$  and the standard deviation is  $\sigma = 2.4$ . Find  $P(19.7 < X < 25.3)$ . 3) \_\_\_\_\_
- 4) The diameters of bolts produced by a certain machine are normally distributed with a mean of 0.30 inches and a standard deviation of 0.01 inches. What percentage of bolts will have a diameter greater than 0.32 inches? 4) \_\_\_\_\_
- 5) The incomes of trainees at a local mill are normally distributed with a mean of \$1,100 and a standard deviation \$150. What percentage of trainees earn less than \$900 a month? 5) \_\_\_\_\_
- 6) The volumes of soda in quart soda bottles are normally distributed with a mean of 32.3 oz and a standard deviation of 1.2 oz. What is the probability that the volume of soda in a randomly selected bottle will be less than 32 oz? 6) \_\_\_\_\_
- 7) A bank's loan officer rates applicants for credit. The ratings are normally distributed with a mean of 200 and a standard deviation of 50. If an applicant is randomly selected, find the probability of a rating that is between 200 and 275. 7) \_\_\_\_\_
- 8) A bank's loan officer rates applicants for credit. The ratings are normally distributed with a mean of 200 and a standard deviation of 50. If an applicant is randomly selected, find the probability of a rating that is between 170 and 220. 8) \_\_\_\_\_
- 9) The lengths of human pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. What is the probability that a pregnancy lasts at least 300 days? 9) \_\_\_\_\_
- 10) Assume that the weights of quarters are normally distributed with a mean of 5.67 g and a standard deviation 0.070 g. A vending machine will only accept coins weighing between 5.48 g and 5.82 g. What percentage of legal quarters will be rejected? 10) \_\_\_\_\_

**Find the specified percentile, quartile, or decile.**

- 11) The lifetimes of lightbulbs of a particular type are normally distributed with a mean of 392 hours and a standard deviation of 9 hours. Find the first quartile,  $Q_1$ . 11) \_\_\_\_\_

- 12) At one college, GPA's are normally distributed with a mean of 2.6 and a standard deviation of 0.4. Find the third quartile,  $Q_3$  . 12) \_\_\_\_\_
- 13) The amount of Jen's monthly phone bill is normally distributed with a mean of \$76 and a standard deviation of \$12. Find the first quartile,  $Q_1$  . 13) \_\_\_\_\_
- 14) The annual precipitation for one city is normally distributed with a mean of 38.8 inches and a standard deviation of 3.5 inches. Find the 2nd decile. 14) \_\_\_\_\_
- 15) Assume that women have heights that are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. Find the value of the quartile  $Q_3$ . 15) \_\_\_\_\_
- 16) A bank's loan officer rates applicants for credit. The ratings are normally distributed with a mean of 200 and a standard deviation of 50. Find the 6th decile. 16) \_\_\_\_\_

## Answer Key

Testname: TYK NORMAL

- 1) 0.0401
- 2) 0.1587
- 3) 0.7477
- 4) 2.28%
- 5) 9.18%
- 6) 0.4013
- 7) 0.4332
- 8) 0.3811
- 9) 0.0166
- 10) 1.96%
- 11) 385.97
- 12) 2.868
- 13) \$67.96
- 14) 35.86 inches
- 15) 65.3 inches
- 16) 212.5