Solve the problem.

1) State whether the variable is discrete or continuous. The number of cups of coffee sold in a cafeteria during lunch
   A) discrete  B) continuous

2) State whether the variable is discrete or continuous. The height of a player on a basketball team
   A) continuous  B) discrete

3) Determine whether the distribution represents a probability distribution. If not, identify any requirements that are not satisfied. Also, the sum of the probabilities does not equal one.

   \[
   \begin{array}{c|c}
   x & P(x) \\
   \hline
   1 & 1.2 \\
   2 & 1.2 \\
   3 & 1.4 \\
   4 & 1.1 \\
   5 & 1.1 \\
   \end{array}
   \]

4) Determine whether the distribution represents a probability distribution. If not, state any requirements that are not satisfied.

   \[
   \begin{array}{c|c}
   x & P(x) \\
   \hline
   1 & 0.49 \\
   2 & 0.05 \\
   3 & 0.32 \\
   4 & 0.07 \\
   5 & 0.07 \\
   \end{array}
   \]

5) Determine the probability distribution’s missing value. The probability that a tutor will see 0, 1, 2, 3, or 4 students

   \[
   \begin{array}{c|c|c|c|c}
   x & 0 & 1 & 2 & 3 \\
   \hline
   P(x) & 0.01 & 0.04 & 0.37 & ? \\
   \end{array}
   \]

   A) 0.76  B) 0.95  C) -0.29  D) 0.24

6) Decide whether the experiment is a binomial experiment. If it is not, explain why. You spin a number wheel that has 19 numbers 950 times. The random variable represents the winning numbers on each spin of the wheel.

7) Decide whether the experiment is a binomial experiment. If it is not, explain why. You observe the gender of the next 150 babies born at a local hospital. The random variable represents the number of girls.
8) Thirty-eight percent of people in the United States have type O+ blood. You randomly select 30 Americans and ask them if their blood type is O+. Identify the values of n, p, and q, and list the possible values of the random variable x.

9) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Find the probability of exactly eight boys in ten births.
   A) 0.044  B) 0.8  C) 0.08  D) 0.176

10) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Find the probability of at most three boys in ten births.
   A) 0.003  B) 0.333  C) 0.300  D) 0.172

11) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. An individual's IQ score is found to be 110. Find the z-score corresponding to this value.
   A) -1.33  B) -0.67  C) 1.33  D) 0.67

12) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the x-score that corresponds to a z-score of 1.96.
   A) 129.4  B) 115.6  C) 132.1  D) 122.4

13) The distribution of cholesterol levels in teenage boys is approximately normal with \( \mu = 170 \) and \( \sigma = 30 \) (Source: U.S. National Center for Health Statistics). Levels above 200 warrant attention. Find the probability that a teenage boy has a cholesterol level greater than 200.
   A) 0.2138  B) 0.8413  C) 0.1587  D) 0.3419

14) The distribution of cholesterol levels in teenage boys is approximately normal with \( \mu = 170 \) and \( \sigma = 30 \) (Source: U.S. National Center for Health Statistics). Levels above 200 warrant attention. What percentage of teenage boys have levels between 170 and 225?
   A) 0.5613  B) 0.4664  C) 0.0336  D) 0.0606

15) Assume that the salaries of elementary school teachers in the United States are normally distributed with a mean of $32,000 and a standard deviation of $3000. If a teacher is selected at random, find the probability that he or she makes less than $28,000.
   A) 0.9981  B) 0.0912  C) 0.2113  D) 0.9827

16) Find the z-score that corresponds to the given area under the standard normal curve.

17) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. Find the x-score that corresponds to a z-score of -1.645.
   A) 75.3  B) 82.3  C) 91.0  D) 79.1
18) The body temperatures of adults are normally distributed with a mean of 98.6° F and a standard deviation of 0.66° F. What temperature represents the 95th percentile?
   A) 97.51° F   B) 99.44° F   C) 99.89° F   D) 99.69° F

19) The lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. If 64 women are randomly selected, find the probability that they have a mean pregnancy between 266 days and 268 days.
   A) 0.2881   B) 0.5517   C) 0.7881   D) 0.3577

20) The body temperatures of adults are normally distributed with a mean of 98.6° F and a standard deviation of 0.60° F. If 25 adults are randomly selected, find the probability that their mean body temperature is less than 99° F.
1) A
2) A
3) Not a probability distribution. A probability value cannot be greater than one.
4) probability distribution
5) D
6) Not a binomial experiment. There are more than two outcomes.
7) binomial experiment
8) n = 30; p = 0.38; q = 0.62; x = 0, 1, 2, . . . , 29, 30
9) A
10) D
11) D
12) A
13) C
14) B
15) B
16) z = 3.07
17) A
18) D
19) D
20) 0.9996