

CHAPTER 7.1 | QUESTION 1

Consider the following data. The data shows the number of days patients stayed in a hospital.

Number of days stayed	Number of Patients
3	15
4	32
5	56
6	19
7	5

- Use the relative frequency approach to construct a probability distribution of the number of days stayed in the hospital and show that it satisfies the required conditions.
- Find the expected value of the number of days stayed.
- Compute the variance.
- Compute the standard deviation.

CHAPTER 7.1 | QUESTION 2

Three socks are selected, one at a time from a clothes drawer containing 6 black, 6 brown and 6 green socks. Let x represent the number of brown socks selected in 3 random selections from the drawer.

- a) Express the probability distribution of X in tabular form.
- b) What is the probability that at least one sock selected will be brown?
- c) What is the probability that none of the three selected will be brown?
- d) What is the expected number of brown socks selected?
- e) Find $V(X)$
- f) Find $E(4X - 2)$

CHAPTER 7.1 | QUESTION 3

A refrigerator holds 14 drinks: 8 sodas and 6 coolers. You select 3 drinks from the refrigerator. Let the random variable X be the number of sodas you get out of 3. Develop the probability distribution function of X .

CHAPTER 7.1 | Quiz

Question 1)

The weighted average of the possible values that a random variable X can assume, where the weights are the probabilities of occurrence of those values, is referred to as the:

- a. variance.
- b. standard deviation.
- c. expected value.
- d. None of these choices.

Question 2)

The number of accidents that occur annually on a busy stretch of highway is an example of:

- a. a discrete random variable.
- b. a continuous random variable.
- c. expected value of a discrete random variable.
- d. expected value of a continuous random variable.

Question 3)

A table, formula, or graph that shows all possible values a random variable can assume, together with their associated probabilities, is called a(n):

- a. discrete probability distribution.
- b. discrete random variable.
- c. expected value of a discrete random variable.
- d. None of these choices.

Question 4)

Which of the following are required conditions for the distribution of a discrete random variable X that can assume values x_i ?

- a. $0 \leq p(x_i) \leq 1$ for all x_i
- b. $\sum_{\text{all } x_i} p(x_i) = 1$
- c. Both a and b are required conditions.
- d. Neither a nor b are required conditions.

Question 5)

Which of the following is a discrete random variable?

- a. The Dow Jones Industrial average.
- b. The volume of water in Michigan Lakes.
- c. The time it takes you to drive to school.
- d. The number of employees of a soft drink company.

Question 6)

Which of the following is a continuous random variable?

- a. The number of employees of an automobile company.
- b. The amount of milk produced by a cow in one 24-hour period.
- c. The number of gallons of milk sold at Meijer grocery store last week.
- d. None of these choices.