

7. The manufacturer of a certain type of tire claims that only 5% of the tires are defective. All four of your tires need to be replaced. What is the probability you would be a satisfied customer if you purchased all four tires from this manufacturer? Would you purchase from this manufacturer? Explain your answer using a probability distribution.

Lesson Summary

- To derive a probability distribution for a discrete random variable, you must consider all possible outcomes of the chance experiment.
- A discrete probability distribution displays all possible values of a random variable and the corresponding probabilities.

Problem Set

1. About 11% of adult Americans are left-handed. Suppose that two people are randomly selected from this population.
 - a. Create a discrete probability distribution for the number of left-handed people in a sample of two randomly selected adult Americans.
 - b. What is probability that at least one person in the sample is left-handed?
2. In a large batch of M&M candies, about 24% of the candies are blue. Suppose that three candies are randomly selected from the large batch.
 - a. Create a discrete probability distribution for the number of blue candies out of the three randomly selected candies.
 - b. What is probability that at most two candies are blue? Explain how you know.
3. In the 21st century, about 3% of mothers give birth to twins. Suppose three mothers-to-be are chosen at random.
 - a. Create a discrete probability distribution for the number of sets of twins born from the sample.
 - b. What is the probability that all three mothers do not give birth to twins?
4. About three in 500 people have type O-negative blood. Though it is one of the least frequently-occurring blood types, it is one of the most sought-after because it can be donated to people who have any blood type.
 - a. Create a discrete probability distribution for the number of people who have type O-negative blood in a sample of two randomly selected adult Americans.
 - b. Suppose two samples of two people are taken. What is the probability that at least one person in each sample has type O-negative blood?
5. The probability of being struck by lightning in one's lifetime is approximately 1 in 3,000.
 - a. What is the probability of being struck by lightning twice in one's lifetime?
 - b. In a random sample of three adult Americans, how likely is it that at least one has been struck by lightning exactly twice?