

1. Explain the difference between discrete and a continuous variable.

In 2-7, state whether the variable is discrete or continuous.

2. The number of cheeseburgers a fast-food restaurant serves each day.
 3. The number of people to play the state lottery each week.
 4. The weight of an automobile
 5. The time it takes to have a medical physical exam
 6. The number of mathematics majors at your school
 7. The blood pressures of all patients admitted to a hospital on a specific day.
8. What are the requirements for a discrete probability distribution?

In 9-12, determine whether the distribution represents a probability distribution. If it does not, state why.

9.

X	3	6	8	12
P(X)	0.3	0.5	0.8	-0.6

10.

X	-2	0	2	5
P(X)	0.3	0.4	0.2	0.1

11.

X	3	7	9	12	14
P(X)	4/13	1/13	3/13	1/13	2/13

12.

X	1	2	3	4
P(X)	0.4	0.3	0.2	0.2

13. At a drop-in mathematics tutoring center, each teacher sees 4 to 8 students per hour. The probability that a tutor sees 4 students in an hour 0.117; 5 students is 0.123; 6 students is 0.295; and 7 students is 0.328. Find the probability that a tutor sees 8 students in an hour, construct a probability distribution and draw a graph.

14. USA Today reported that approximately 25% of all state prison inmates released on parole become repeat offenders while on parole. Suppose the parole board is examining five prisoners up for parole. Let x = number of prisoners out of five parole who become repeat offenders, and their corresponding probabilities.

X	0	1	2	3	4	5
P(x)	0.237	0.369	0.264	0.088	0.015	0.001

- What is the probability that one or more of the five parolees will be repeat offenders? How does this number relate to the probability that none of the parolees will be repeat offenders?
- Find the probability that two or more of the five parolees will be repeat offenders.
- Find the probability that two or less of the five parolees will be repeat offenders.

15. A lottery offers one \$1000 prize, one \$500 prize, and five \$100 prizes. One thousand tickets are sold at \$3 each.

- Find the expectation if the person buys one ticket.
- Find the expectation if the person buys two tickets. Assume that the player's ticket is replaced after each draw and that same ticket can win more than one prize.

16. For a daily lottery, a person selects a three-digit number. If the person plays for \$1, she can win \$500.

- Find the expectation.
- In the same daily lottery if a person boxes a number, she will win \$80. Find the expectation if the number 123 is played for \$1 and boxed. (When a number is "boxed" it can win when the digits occur in any order.)

17. A 35-year old woman purchases \$100,000 term life insurance policy for the annual payment of \$360. Based on a period of life table for the U.S. government, the probability that she will survive the year is 0.999057. Find the expected value for the insurance company.

18. A person pays \$2 to play a certain game by rolling a single die once. If a 1 or a 2 comes up, the person wins nothing. If, however, the player rolls a 3, 4, 5, or 6, he or she wins the difference between the number rolled and \$2. Find the expectation for this game. Is it fair? Explain.

19. If a person rolls doubles when she tosses two dice, she wins \$5. For the game to be fair, how much should she pay to play the game?