Prob/Stat/Discrete **Name**____

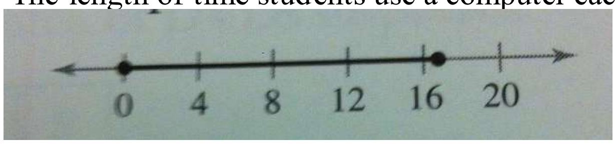
Worksheet 5.1

True or False? *In Exercises 1-4, determine whether the statement is true or false. If it is false, rewrite is as a true statement.*

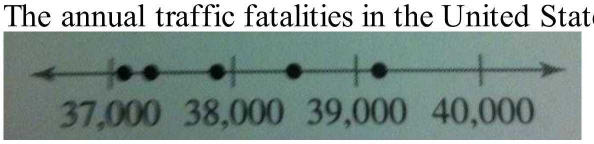
1. In most applications, continuous random variables represent counted data, while discrete random variables represent measured data.
2. For a random variable *x* the word *random* indicates that the value of *x* is determined by chance.
3. The mean of a random variable represents the "theoretical average" of a probability experiment and sometimes is not a possible outcome.
4. The expected value of a discrete random variable is equal to the standard deviation of the random variable.

Graphical Analysis *In Exercises 5 and 6, decide whether the graph represents a discrete random variable or a continuous random variable. Explain your reasoning.*

5. The length of time students use a computer each week



6. The annual traffic fatalities in the United States.

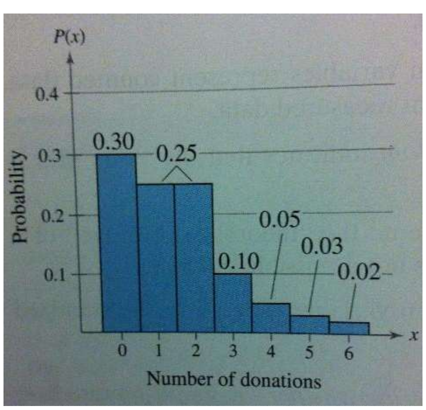


Distinguishing Between Discrete and Continuous Random Variables *In Exercises 8-15, decide whether the random variable x is discrete or continuous. Explain your reasoning.*

7. *x* represents the length of time it takes to get to work.
8. *x* represents the number of rainy days in the month of July in Orlando, Florida.
9. *x* represents the tension at which a randomly selected guitar's strings have been strung.
10. *x* represents the total number of die rolls required for an individual to roll a five.

Using and Interpreting Concepts

11. **Blood Donations** A survey asked a sample of people how many times they donate blood each year. The random variable *x* represents the number of donations for one year. Use the histogram to find the probability that a person selected at random from the survey's sample donated blood (a) more than once a year and (b) less than three times in a year.



Determine a Missing Probability *In Exercise 12 determine the probability distribution's missing probability value.*

12. **Dependent Children** A sociologist surveyed the households in a neighboring town. The random variable x represents the number of dependent children in the households.

x	0	1	2	3	4	5	6
$P(x)$	0.05	?	0.23	0.21	0.17	0.11	0.08

Identifying Probability Distributions *In Exercises 13 and 14, decide whether the distribution is a probability distribution. If it is not a probability distribution, identify the property (or properties) that are not satisfied.*

13. **Phone Lines** A company recorded the number of phone lines in use per hour during one work day. The random variable x represents the number of phone lines in use.

x	0	1	2	3	4	5	6
$P(x)$	0.135	0.186	0.226	0.254	0.103	0.64	0.032

14. **Golf Putts** A golf tournament director recorded the number of putts needed on a hole for the four rounds of a tournament. The random variable x represents the number of putts needed on the hole.

x	0	1	2	3	4	5
$P(x)$	0.007	0.292	0.394	0.245	0.058	0.004

Constructing Probability Distributions *In Exercise 15, (a) use the frequency distribution to construct a probability distribution, find the (b) mean, (c) variance, and (d) standard deviation of the probability distribution, and (e) interpret the results in the context of the real-life situation.*

15. **Cats** The number of cats per household in a small town

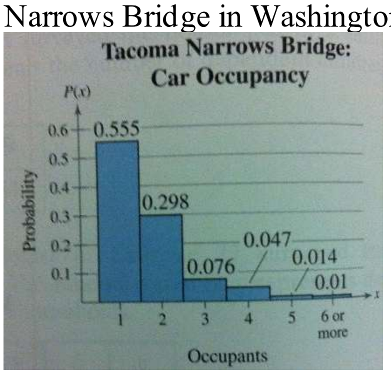
Cats	0	1	2	3	4	5
Households	1941	349	203	78	57	40

Finding Expected Value *In Exercises 16-17, use the probability distribution or histogram to find the (a) mean, (b) variance, (c) standard deviation, and (d) expected value of the probability distribution, and (e) interpret the results.*

16. **911 Calls** A 911 service center recorded the number of calls received per hour. The number of calls per hour for one week can approximated by the following probability distribution.

x	0	1	2	3	4	5	6	7
$P(x)$	0.01	0.10	0.26	0.33	0.18	0.06	0.03	0.03

17. **Car Occupancy** The histogram shows the distribution of occupants in cars crossing the Tacoma Narrows Bridge in Washington each week.



Game of Chance *In Exercise 18, find the expected net gain to the player for one play of the game. If x is the net gain to a player in a game of chance, than E(x) is usually negative. This value gives the average amount per game the player can expect to lose.*

18. A charity organization is selling $4 raffle tickets as part of a fund-raising program. The first prize is a boat valued at $3150, and the second prize is a camping tent values at $450. The remaining 15 prizes are $25 gift certificates. The number of tickets sold is 5000.