

1. Extra information always changes a probability assignment.
- ☐ a. True
- ☐ b. False
2. In the conditional probability statement  $P(A | B)$ , the relevant sample space is \_\_\_\_\_.
- ☐ a. A
- ☐ b. B
- ☐ c. Both A and B
- ☐ d. Neither A nor B
3. The manager at of The Land Gallery in Red Lake Falls, Minnesota, is looking at many ways to increase pottery sales for next year. The probability that she will advertise more is 0.65, and the probability of advertising more and increasing revenue is 0.35.

Fill in the blanks.

- Suppose the store manager decides to advertise more. The probability that revenue will increase is (Answer 1). (Give your answer to two decimal places.)
  - If the store manager does advertise more, the probability that revenue will not increase is (Answer 2). (Give your answer to two decimal places.)
4. Two events A and B are independent if and only if  $P(A | B) = \underline{\hspace{2cm}}$ .
- ☐ a.  $P(A)$
- ☐ b.  $P(A \cap B)$
- ☐ c.  $P(B)$
- ☐ d.  $P(A \cup B)$
5. If A and B are independent events,  $P(A \cap B) = P(A) \cdot P(B)$
- ☐ a. True
- ☐ b. False
6. For any two events A and B,  $P(A \cap B) = P(A) \cdot P(B|A)$
- ☐ a. True
- ☐ b. False

7. This problem will change each time you access it.  
Consider the given probabilities:  $P(A) = x$ ,  $P(B) = y$ , and  $P(B|A) = x$ .
- $P(A \cap B) = \underline{\hspace{2cm}}$  (4 decimal places)
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- Are A and B independent?
- ☐ Events A and B are dependent.
  - ☐ Events A and B are independent.
  - ☐ There is not enough information to determine if the events A and B are dependent or independent.
8. When sampling from a population with replacement, each draw is independent of any other draw.
- ☐ a. True
  - ☐ b. False
9. A random variable may assign more than one numerical value to an outcome.
- ☐ a. True
  - ☐ b. False
10. This problem will change each time you access it.  
Identify the given random variable as discrete or continuous You will have two questions
11. The sum of all the probabilities in a probability distribution for a discrete random variable must equal 1.
- ☐ a. True
  - ☐ b. False
12. For a discrete random variable, under certain circumstances  $p(x)$  could be less than 0.
- ☐ a. True
  - ☐ b. False

13. Camden, New Jersey, has one of the highest crime rates in the United States. As a result, a new Camden County Police Department will include 400 officers and be responsible for an area covering nine square miles. Suppose the number of times a police cruiser from this new department drives through the Whitman Park neighborhood during a one-hour period is a random variable  $X$ , with probability distribution as given in the table below.

$x$	0	1	2	3	4	5	6	7
$p(x)$	0.3679	0.3679	0.1839	0.0613	0.0153	0.0031	0.0005	0.0001

Fill in the blanks. (Give your answers to four decimal places.)

- The probability that no police cruisers will drive through the neighborhood is (Answer 1).
  - The probability that at least one police cruiser will drive through the neighborhood is (Answer 2).
  - The probability that at most one police cruisers will drive through the neighborhood is (Answer 3).
  - The probability that more than seven police cruisers will drive through the neighborhood is (Answer 4).
14. The expected value of a discrete random variable can be negative.
- ☐ a. True
- ☐ b. False
15. The probability distribution for a random variable  $X$  is given.

$x$	5	10	15	20
$p(x)$	0.10	0.15	0.70	0.05

Fill in the blanks.

- The mean of  $X$  is (Answer 1). (Give your answer to one decimal place.)
- The standard deviation of  $X$  is (Answer 2). (Give your answer to two decimal places.)
- The probability that  $X$  takes on a value smaller than the mean is (Answer 3). (Give your answer to two decimal places.)