

Questions 1 – 10, determine if the statements that follow are true (T) or false (F).

1. The expected value of a random variable can be thought of as a long-range average.
2. If the standard deviation of a probability distribution is 6.25 , the variance is 2.30 .
3. The mean of the following probability distribution is 1.6 .

X	0	1	2	3
P(x)	0.4	0.3	0.1	0.2

4. In binomial experiments, the outcomes are usually classified as successes or failures.
5. One requirement for a probability distribution is that the sum of all events in the sample space must equal 1 or -1.
6. The mean for a binomial variable can be found using the formula $\mu = \Sigma(x P(x))$.
7. The variance of a binomial experiment can be determined using the formula $\sigma^2 = p \cdot q$.
8. If 30% of all commuters ride the train to work, the probability that if 10 commuters are selected, 5 of them ride the train is 0.1029 .
9. If 59% of nursing students are able to pass a drug calculation test and 180 nursing students take the test, the mean number of students who pass the test is 62.658 .
10. There are 5 envelopes in a box. One envelope contains a penny, one a nickel, one a dime, one a quarter, and one a half dollar. If a person randomly selects one envelope then the expected value of the draw is 18.2 cents.

Use the following information to answer questions 11 -15. Show all work.

The number of cartoons watched by Mrs. Christopher's first grade students on Saturday morning is shown below.

X	P(x)
0	0.15
1	0.20
2	0.30
3	0.20
4	0.05
5	0.10

11. What is the mean of the distribution of the data above?
12. What is the standard deviation of the distribution above?
13. What is the likelihood that a randomly selected child in Mrs. Christopher's class watches more than 3 cartoons?
14. What is the expected number of cartoons watched by Mrs. Christopher's children?
15. How many cartoons would Mrs. Christopher expect a child in her class to watch on Saturday mornings for an entire year (assume that there are 52 Saturdays in a year)?

Use the following information to answer question 20. Show all work.

20. At the Wimbledon Tennis Championship, to win a match in men's singles, a player must win 3 out of 5 sets. The following data represents the number of sets played, x , in the men's singles finals match for the years 1968 to 2011. **Round $p(x)$ to the nearest thousandths when necessary.**

<u>X</u>	<u>Frequency</u>
3	19
4	12
5	13

(a) Construct a probability distribution for the random variable x .

(b) Compute the mean of the distribution.

(c) Compute the variance and standard deviation of the distribution.