Test Chapter 6: Probability Distributions Name: _____

JCC Statistics[B] Date: _____

Questions 1 – 10, determine if the statements that follow are true (T) or false (F). Show all work to receive full credit.

1. One requirement for a probability distribution is that the sum of all events in the sample space must positive.

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)	0.6	0.2	0.1	0.1

4. In binomial experiments, the outcomes are usually classified as successes or failures.

5. The expected value of a random variable can be thought of as a long-range average.

6. There are 4 envelopes in a box. One envelope contains a penny, one a nickel, one a dime, and one a half dollar. If a person randomly selects one envelope then the expected value of the draw is 18.0 cents.

7. A the variance of a binomial experiment can be determined using the formula $\sigma = n \cdot p \cdot q$.

8. If 30% of all commuters ride the train to work, the probability that if 10 commuters are selected, 3 of them ride the train is 0.2668

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. The mean for a binomial variable can be found using the formula $\mu = \Sigma(x \cdot P(x))$.

Use the following information to answer question s 11 -15. <u>Show all work</u>.

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

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

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 month (assume that there are 4 Saturdays in a month)?

Multiple Choice questions 16 – 19. Show all work to receive full credit.

16. If a gambler rolls two dice and gets a sum of 10, he wins $10, and if he gets a sum of 3 he wins $20. The cost to play the game is $5. What is the expectation of this game from the gamblers perspective?

A. $3.06 B. $2.78 C. -$2.78 D. -$3.06

17. The foreman at a large manufacturing plant estimates that there are defective parts about 1 % of the time. If the plant produces 20,000 parts in week, what is the variance for the number of defective parts?

A. 200 B. 138 C. 198 D. 14.1

18. A coin is tossed 4 times. Find the probability of tossing exactly 3 heads

A. 0 .3750 B. 0.2500 C. 0.1563 D. .3125

19. A pet supplier has a stock of parakeets of which 10% are blue. A pet store orders 3 parakeets from this supplier. If the supplier select 3 parakeets at random, what is the chance that the pet store gets exactly one blue parakeet?

A. 0.003 B. 0.081 C. 0.243 D. 0.027

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

20. The Stanley Cup is a best of seven series to determine the NHL Champion. The following data represents the number of game played, x, in the Stanley Cup before a champion was determined: **Round p(x) to the nearest thousandths when necessary.**

X	Frequency
4	10
5	15
6	17
7	20

(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.