Math 1600, Section 5, Fall 2015 – Statistics

Quiz 2 Review Sheet (Chapters 5, 6, and 7)

1. Define a **random variable**.
2. Define a probability distribution.
3. Give an example of a discrete random variable.
4. Give an example of a continuous random variable.
5. What is a **Bernoulli Trial**?
6. What is a probability model?

7. A company that sells magazine subscriptions announces a sweepstakes to attract new customers. The prizes and chances of winning are listed on the advertisement flyer as:

Prize	Chance
$50,000	1 in 250,000
$5,000	1 in 50,000
$100	1 in 500

Calculate your expected winnings.

8. The number of days, X, that it takes the post office to deliver a letter between City A and City B has the probability distribution:

X	f(x)
3	.4
4	.4
5	.2

a. Find the expected number of days for the post office to deliver a letter between City A and City B.
b. Find the standard deviation of the number of days for the post office to deliver a letter between City A and City B.
c. Draw the probability histogram and locate the mean on the histogram.

9. Calculate the mean and the standard deviation of the binomial distribution with:
$n = 14$ and $p = .4$

10. Let X be the number of successes in the 14 trials. Using the **formula**, with $p = .4$, compute:
$P[X = 6]$

11. If X is normally distributed with a mean on 100 and a standard deviation of 8, find
a. $P[X < 107]$
b. $P[X > 90]$
c. $P[96< X < 106]$

12. If X is normally distributed with a mean on 100 and a standard deviation of 5, find b such that
a. $P[X < b] = .6700$
b. $P[X > b] = .0110$

13. The weights of apples served in a restaurant are normally distributed with a mean of 5 ounces and standard deviation of 1.6 ounces. What is the probability that the next person served will be given an apple that weighs less than 4 ounces?

14. A random sample of size 60 is taken from a population having a mean of 43 and a standard deviation of 5. The shape of the population distribution is unknown.
a. What can you say about the probability distribution of the sample mean $\overline{X}$?

b. Find the probability that $\overline{X}$ will exceed 45.6.

15. The amount of sulfur in daily emissions from a power plant has a normal distribution with a mean of 96 pounds and a standard deviation of 20 pounds. A random sample of five days is taken:
a. What can you say about the probability distribution of the sample mean $\overline{X}$?

b. Find the probability that the total amount of sulfur emissions will exceed 500 pounds.