A.P. Statistics
Assignment 6-9

Remember to show your thinking through your work.

1. A random variable X has a mean of 10 and a standard deviation of 3. If 2 is added to each value of X, what will the new mean and standard deviation be?

2. A random variable X has a mean of 10 and a standard deviation of 3. If each value of X is multiplied by 2, what will the new mean and standard deviation be?

3. A random variable X has a mean of 10 and a standard deviation of 3. A random variable Y has a mean of 15 and a standard deviation of 4. What is the mean of the combined random variable X+Y?

4. A random variable X has a mean of 10 and a standard deviation of 3. A random variable Y has a mean of 15 and a standard deviation of 4. What is the standard deviation of the combined random variable X+Y?

5. In a card game (using a standard deck of cards), you pay $5 to draw a single card. If you draw an Ace, you win $20. If you draw a face card, you win $10. If you draw a 2, you win $5.

   a) Fill in the probability distribution below:

X	5	10	20
P(X)			

   b) What is the expected value?

   c) Is the game fair? Why or why not?

6. The average weight of a chicken egg is 2.25 ounces with a standard deviation of 0.2 ounces. You take a random sample of a dozen eggs.

    a. What are the mean and standard deviation of the sampling distribution of sample size 12?

    b. What is the probability that the mean weight of the eggs in the sample will be less than 2.2 ounces?

7. The distribution of salaries in a company is skewed to the right. That is, most employees make a small amount of money while a few executives earn much higher salaries.

    a) What would a sampling distribution of sample size 3 look like?

    b) What would a sampling distribution of sample size 10 look like?

    c) What would a sampling distribution of sample size 50 look like?

8. Suppose that 44% of all Americans approve of the job our President is doing. The most recent Gallup poll consisted of a random sample of 1400 American adults.

    a. What is the mean of the sampling distribution?

    b. What is the standard deviation of the sampling distribution (don't for get to justify the use of the formula)?

c. Describe the normal approximation for this sampling distribution (don't forget to justify this). You can simply write as N(mean, standard deviation).

d. What is the probability that the Gallup poll will come up with a proportion within three percentage points of the true 44%?