Statistics
Chapter 5.1- 5.3 Review

Name _____
Date _____ Period _____

1. You are given that x is a random variable with a normal distribution. If μ=12 and σ=1.5, find the probability that x fails in the interval (9 < x < 15).

2. A competency test has scores with a mean of 80 and a standard deviation of 10. A histogram of the data shoes that the distribution is normal. Use the Empirical Rule to find the percentage of scores between 60 and 100.

3. The heights of adult women are normally distributed with a mean of 62.5 inches and a standard deviation of 2.5 inches. Use the Empirical Rule to determine between what two heights 99.7% of adult women will fall.

4. A math professor gives two different tests to two sections of his college algebra courses. The first class has a mean of 56 with a standard deviation of 9 while the second class has a mean of 75 with a standard deviation of 15. A student from the first class scores a 62 on the test while a student from the second class scores an 83 on the test. Compare the scores.

5. The lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days.
   a. Find the probability of a pregnancy lasting more than 300 days.

   b. A baby is premature if it is born three weeks early. What percentage of babies are born prematurely?

6. The distribution of cholesterol levels in teenage boys is approximately normal with μ=170 and σ=30. Levels above 200 warrant attention. What percentage of teenage boys have levels between 170 and 225?

7. Assume that the salaries of high school teachers in the US are normally distributed with a mean of $31,000 and a standard deviation of $3000.
   a. If a teacher is selected at random, find the probability that he or she makes more than $35,000.

   b. What is the cutoff salary for teachers in the top 10%?

8. The times for completing one circuit of a bicycle course are normally distributed with a mean of 72.5 minutes and a standard deviation of 6.5 minutes. An association wants to sponsor a race but only wants the top 25% of riders included. In a trial run, what should be the cutoff time?

9. Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. The US Army requires that the heights of women be between 58 and 80 inches. If a woman is randomly selected, what is the probability that her height is between 58 and 80 inches?

10. In a certain normal distribution, find the standard deviation when μ=50 and 10.56% of the area lies to the right of 55.