A.P. Statistics
Assignment 5-6

Remember to show your thinking through your work.

1. Roll two 6-sided dice and examine their sum.
    a. How long will it take to roll 'snake-eyes' (a pair of ones)?

    b. What is the probability of rolling a sum of 7 on the first roll?

    c. What is the probability of rolling a sum of 7 on the fourth roll?

    d. What is the probability of rolling a sum of 7 by the fourth roll?

    e. What is the probability of it taking more than 10 rolls to roll the sum of 7?

2. In a recent season, Ichiro hit .378 for the season. That is, he got a hit 37.8 percent of the time (generally and simply speaking). How many at-bats would it typically take to get his first hit of the season?

3. There is a 6% chance that a vaccine will cause a certain side effect. A number of patients are given the vaccine. We are interested in the number of patients vaccinated until the first side effect is observed.

a) Define the random variable X.

b) Verify that this setting is a geometric setting.

c) Find the probability that the 5^{th} patient is the first to experience a side effect.

d) Construct a probability distribution table for X up through X=5.

e) How many patients would you expect to vaccinate before the first side effect is observed.