1. Suppose a realtor wants to determine the likelihood of a house in the city selling quickly, that is, within 2 months. Looking at the last 500 houses sold, the realtor finds that 125 of them sold quickly and creates a probability distribution based on this data.

(a) Explain why the distribution is a binomial distribution.

(b) What outcome do you consider the "success"? What is the probability p for this success?

If the realtor currently has 6 houses to sell, answer the following questions:

(c) Find the probability that all of the 6 houses sell quickly.

(d) Find the probability that exactly one of the six houses sells quickly.

(e) Find the probability that none of the six houses will sell quickly.

(f) Find the mean of the distribution.

(g) Find the standard deviation of the distribution.

(h) Determine what numbers of houses would be considered an "usual" number to sell quickly among six houses.

2. In a clinical drug trial of 1000 patients with a particular condition, 360 of them reported improvement after using the medication. Among patients with the same condition who did not participate in the trial, 22% of them also reported improvement over the same time period.

(a) Find the mean number out of a group of 1000 patients with this condition who can be expected to show improvement without using the drug.

(b) Find the standard deviation for a group of 1000 patients with this condition who can be expected to show improvement without using the drug.

(c) Is the result from the clinical trial unusual? What would you (preliminarily) conclude about the effectiveness of this drug?

3. Records indicate that the probability that a person buying music, etc. from iTunes will spend more than $30 at one time is .30.

(a) For 5 people shopping on iTunes, construct a table of the probability distribution.

(b) For 5 people shopping on iTunes, construct a histogram of the probability distribution.

(c) For 5 people shopping on iTunes, find the probability that at least 3 of them will spend more than $30.

(d) Find the mean and standard deviation for this probability distribution.