Pledge:

10/19/2006 MATH171 – Statistical Decision Making Name:_____
Dr. Lunsford Quiz 6 20 Points Total

In a recent Gallup Poll conducted on October 9-12, 2006, the following question was asked: "In general, are you satisfied or dissatisfied with the way things are going in the United States at this time?" Based on their poll results, the Gallup Poll reported that 68% of Americans were dissatisfied, 30% were satisfied, and 2% were unsure (with a margin of error of $\pm 3\%$). *Suppose the true proportion of Americans who are dissatisfied with the way things are going in the United States at this time is actually 68%*. A polling organization for which you work is about to poll a simple random sample of 800 Americans and ask the same question as above. Let X be the number in your sample that are dissatisfied and $\hat{p}$ be the proportion of your sample that is dissatisfied. Please answer the following questions.

(a) Suppose 525 Americans in your sample are dissatisfied. Please provide the values of the following parameters and variables: (4 points)

$p =$_____ $n =$_____ $X =$_____ $\hat{p} =$_____

(b) How many in your sample would you expect, on average, to be dissatisfied? (2 points)

(c) On average, what proportion of your sample would you expect to be dissatisfied? What is the standard deviation of the sample proportion? (5 points)

(d) Use the normal approximation for the sampling distribution of the sample proportion to determine how likely it would be for fewer than 60% Americans in your sample to be dissatisfied. Please write a complete English sentence giving your answer. (5 points)

(e) Based on your answer in part (d), would it be very likely, somewhat likely, somewhat unlikely, or highly unlikely for fewer than 60% Americans in your sample to be dissatisfied? (2 points)

(f) Suppose 480 Americans in your sample are dissatisfied. Which of the following are reasonable explanations for this (circle all that apply)? (2 points)

1. This result is not unusual given our parameters.
2. The assumption that the true proportion of Americans who are dissatisfied is actually 68% may not be correct and in fact may be less than 68%.
3. There is some type of bias entering into our random sampling technique.

4. I believe these results are correct because they confirm what I have observed among my friends and neighbors.