AP Statistics
Sampling Methods #1   Name _____

For problems 1 – 4, identify the population and the sample in each situation.

1. A high school's student newspaper plans to survey local businesses about the importance of students as customers. From telephone book listings, the newspaper staff chooses 150 businesses at random. Of these, 73 return the questionnaire mailed by the staff.

2. An archaeological dig turns up large numbers of pottery shards, broken stone tools, and other artifacts. Students working on the project classify each artifact and assign it a number. The counts in different categories are important for understanding the site, so the project director chooses 2% of the artifacts at random and checks the students' work.

3. A large retailer prepares its customers' monthly credit card bills using an automatic machine that folds the bills, stuffs them into envelopes, and seals the envelopes for mailing. Are the envelopes completely sealed? Inspectors choose 40 envelopes from the 1000 stuffed each hour for visual inspection.

4. A department store mails a customer satisfaction survey to people who make credit card purchases at the store. This month 45,000 people made credit card purchases. Surveys are mailed to 1000 of these people, chosen at random, and 137 people return the survey form.

5. A newspaper advertisement for an upcoming TV show said: "Should handgun control be tougher? You call the shots in a special call-in poll tonight. If yes, call extension 6181 and if no, call extension 6182. Charge is 50 cents for the first minute." Explain why this opinion poll is almost certainly biased.

6. You are on the staff of a member of Congress who is considering a bill that would provide government sponsored insurance for nursing home care. You report that 1128 letters have been received on the issue, of which 871 oppose the legislation. "I'm surprised that most of my constituents oppose the bill. I thought it would be quite popular," says the congresswoman. Are you convinced that a majority of the voters oppose the bill? How would you explain the statistical issue to the congresswoman?

7. A recent online poll posed the question "Should female athletes be paid the same as men for the work they do?" In all, 13,147 (44%) said "Yes" and 15,182 (50%) said "No" and the remaining 1448 said "Don't know". In spite of the large sample size for this survey, we can't trust the result. Why not?

8. You have probably seen the mall interviewer, approaching people passing by with clipboard in hand. Explain why even a large sample of mall shoppers would not provide a trustworthy estimate of the current unemployment rate.

9. You want to ask a sample of high school students the question "How much do you trust information about health that you find on the Internet – a great deal, somewhat, not much, or not at all?" You try out this and other questions on a pilot group of 5 students chosen from your class. The class members are listed below.

Anderson	Deng	Glaus	Nguyen	Samuels
Arroyo	De Ramos	Helling	Palmiero	Shen
Batista	Drasin	Husain	Percival	Tse
Bell	Eckstein	Johnson	Prince	Velasco
Burke	Fernandez	Kim	Puri	Wallace
Cabrera	Fullmer	Molina	Richards	Washburn
Calloway	Gandhi	Morgan	Rider	Zabidi
Delluci	Garcia	Murphy	Rodriguez	Zhao

a) Explain how you would use a line from a table of random numbers to choose an SRS of 5 students from the list. Explain your method clearly enough for a classmate to obtain your results.

b) Use line 107 from the random number table to select the sample. Show how you use each of the digits.

10. To gather data on a 1200-acre pine forest in Louisiana, the U.S. Forest Service laid a grid of 1410 equally spaced circular plots over a map of the forest. A ground survey visited a sample of 10% of these plots.

a) Explain how you would use technology to choose an SRS of 141 plots. Your description should be clear enough for a classmate to obtain your results.

b) Use your method from part (a) to choose the first 3 plots.