**1. State whether the data is qualitative or quantitative, and any possible sources of bias.**

a. At Hillside Farms, the number of hours each horse spends outside is recorded in order to ensure that the farm is providing enough outdoor time for their horses.

b. Every sixth person who enters the mall between 3:00 PM and 4:00 PM each Saturday for a month is surveyed about their favorite time of the year to go shopping.

c. 25 sophomores at Cranford High School are surveyed about the number and types of applications they have on their cellular devices, to get a sense of the students in the school’s use of technology.

**2. For each situation, state which method of data collection would be the most appropriate, and why. (Observational Study, Census Survey, Sampling Survey, Simulation, Experiment)**

a. A researcher would like to record the batting average of every player on a baseball team in order to determine the quality of the team.

b. A researcher is going to watch puppies playing in a room together to determine whether or not gender has an effect on which puppies interact with each other.

c. The batting average of the top five players on each team in the American League will be recorded in order to determine the quality of the league.

d. A study will be conducted in order to test the effects of Dove’s new body soap on skin smoothness.

e. A study will be conducted in order to determine the effects of changing the shape and length of a loop on a rollercoaster.

f. A researcher would like to collect data in order to analyze the effects of a vertical stair machine compared to an angled elliptical machine.

**3. State which type of sampling is used in each situation. Support your answer.**

**(Stratified, Simple Random, Random, Cluster, Systematic, Convenience)**

a. Ms. Williams has her student’s names on popsicle sticks, and chooses sticks at random to ask the selected students their feelings about the previous night’s homework assignment.

b. Jaclyn asks people in her classes their feelings about the presidential candidates.

c. Every seventh person to enter Nordstrom is surveyed about the new layout of the store

d. At a high school, some freshman and some seniors are surveyed about the types of community service they engage in.

e. A 200-acre plot of land is divided into subplots that are each 4 acres. Soil from fifty of these plots is observed for its quality.

f. At a pet store, there are five female dogs and five male dogs. Brian cannot decide which dog to play with, so he writes each dog’s name on a slip of paper, places them into a hat, and chooses one at random.

g. On a farm, there are ten Thoroughbred horses, fifteen Quarter Horses, two Arabian horses and four Friesians. A researcher chooses to observe the health of three horses on the farm, specifically two of the Friesians and one of the Quarter Horses.

4. 99.7% of the songs in a discjockey’s set fall between 6.8 minutes and 8.9 minutes. Determine the mean length of a song in this DJ’s set.