DAY 1 – Sampling Techniques

1. Check the appropriate sampling method for each scenario.

SCENARIO	SIMPLE RANDOM	STRATIFIED	CLUSTER	CONVENIENCE	VOLUNTARY	SYSTEMATIC
a. John was carrying out a survey to find how far, on average, residents in his town travel to work. He asked all the people at his local railway station one Monday morning.						
b. Hazel thinks that boys at her school get more pocket money than girls. There are 300 children at the school, 120 boys and 180 girls. In her survey she asks 24 boys and 36 girls.						
c. To find out attitudes on abortion, an interviewer stopped people in a local shopping centre one weekday morning and asked shoppers their views.						
d. Samantha wanted to find out how much people in Ontario were prepared to spend on holidays abroad. She asked people on the street where she lives.						
e. Caroline believes that more people in Canada get married in church than in a registry office. She asks all the people attending a church service where they got married.						
f. To investigate the statement 'children no longer do enough sports', all the children at one randomly selected school in were surveyed.						
g. Glowalot, a light bulb manufacturer claimed that their light bulbs lasted for more than 200 hours. Gina thought it would be a good idea to test their claim by lighting all the bulbs produced in one month.						
h. Larry decides to estimate the number of blades of grass in his lawn. He stands on the lawn and counts the blades of grass within 40cm of his feet.						
i. A machine producing drawing pins is believed to be produce defective pins at a rate of 10%. Every 100th pin was chosen to test.						
j. To determine the most popular video game on the market, Jane surveyed the first 20 people entering a video game store.						
k. A calculator manufacturer evaluates product quality by testing every 10th calculator produced daily.						
l. A radio station asks listeners to call in about whether they believe millions of dollars should be spend on a new golf course.						

2. What biases exist in each of the following scenarios?
    a. To decide whether improvements should be made to a local recreation centre, the staff surveys the first 50 people who arrive at the centre on Saturday morning.

    b. To find out how many hours the average person spends watching television, a company telephones every 25th person listed in their local telephone book.

    c. To see how most downtown business people get to work, a survey is taken between 12 noon and 1 pm on a downtown street corner.

3. A company wants to build a new shopping mall in Ajax. To get the reaction of local residents, the city council is distributing questionnaires through local grocery stores. The questionnaire asks, "Are you in favour of adding new stores to our community?" Results from the returned questionnaires will be used to help the council decide whether or not allow the mall to be built.
    a. Which sampling method was used?

    b. State the strengths and weaknesses of the city council's plan.

    c. Suggest a better way to gather the data.

4. Use a stratified random sample to determine the number of people from each group to be surveyed in each of the following.
    a. There are 30 girls and 20 boys in the ski club. 10 members of the club are to be surveyed to find out what trips to plan. How many girls and boys should be surveyed?

    b. A school has 260 grade 9s, 250 grade 10s, 220 grade 11s and 200 grade 12s. Determine how many from each grade would be included in a sample of 93 students.