Statistics, Data Collection Methods and Sampling

In statistics, a _____ refers to all members of a group being studied.

A _____ is a smaller group selected from the population to draw conclusions.

Data should be collected in a way that the _____ accurately represents the population.

A good sample is selected _____ to avoid bias.

If a sample is **not large enough**, the conclusions drawn may not be _____.

1. What is a population in a statistical study?

A) A random group of people
B) A subset of a group
C) The entire group being studied
D) Only students in a single classroom **Answer is**

2. Why do researchers use a sample instead of studying the whole population?

A) It's more fun
B) It's quicker and easier to manage
C) The sample is always better
D) Populations do not exist **Answer is**

3. Which of the following would be a sample?

A) All students in a school
B) All teachers in the state
C) One year level in a school
D) Every student in the country **Answer is**

---

4. What is important when selecting a sample?

A) Picking your friends
B) Choosing whoever is available
C) Selecting randomly and ensuring it's representative
D) Asking people who agree with your opinion **Answer is**

LIVEWORKSHEETS

Part B

Question 1

A city council wants to know how residents feel about a new park. They send surveys to 200 randomly selected households out of 5,000 in the city.

a. Who makes up the population and how many people are in it?
b. Who makes up the sample and how many people are in it?

Question 2:

A company has 1,200 employees. To gather opinions on a new work-from-home policy, managers interview 60 employees selected at random.

a. Who makes up the population and how many people are in it?
b. Who makes up the sample and how many people are in it?

Question 3:

A researcher wants to find out how often high school students use social media. She surveys 100 students from a school of 900.

a. Who makes up the population and how many people are in it?
b. Who makes up the sample and how many people are in it?

PART C

1. In _____ **sampling**, every member of the population has an equal chance of being selected.

2. In _____ **sampling**, selections are made at regular intervals after a randomly chosen starting point.

3. In _____ **sampling**, the population is divided into groups (strata), and a random sample is taken from each group.

4. In _____ **sampling**, individuals choose to participate themselves, which can lead to bias.

5. An example of _____ **sampling** is choosing 6 numbers from 45 in a Tattslotto draw.

6. I=N/n where I = the interval, N = total and n = the sample size. This formulae is used in _____ **sampling**.

LIVEWORKSHEETS

7. **1. Which sampling method ensures every individual has an equal chance of being selected?**
   A) Systematic sampling
   B) Stratified sampling
   C) Simple random sampling
   D) Self-selected sampling **Answer is**

8. **2. What is a disadvantage of self-selected sampling?**
   A) It requires too much math
   B) It's always the fastest method
   C) It may be biased due to strong opinions
   D) It's more accurate than other methods **Answer is**

9. **Which formula is used to calculate the sampling interval in systematic sampling?**
   I = Interval N= population size n = sample size
   A) I=N x n
   B) I=N + n
   C) I=2(N-n)
   D) I=N/n **Answer is**

10. **Dividing a population into groups such as age or gender before sampling is called:**
   A) Simple random sampling
   B) Self-selected sampling
   C) Stratified sampling
   D) Systematic sampling **Answer is**

11. **What is a real-world example of systematic sampling?**
   A) Drawing lottery numbers
   B) Testing every 20th product off a production line
   C) Broadcasting a survey to the public
   D) Asking volunteers to join a research project **Answer is**

12. n _____ **sampling**, a randomly selected starting point is followed by regular intervals.

13. In stratified sampling, a _____ is a subgroup within the population that shares a characteristic.

14. In a _____ **sampling** method, volunteers participate, often leading to overrepresentation of strong opinions.

15. Dividing the population by **geographic region** and sampling each region is an example of _____ **sampling**.

16. Systematic sampling might hide trends if there's a _____ **pattern** in the population.

17. **6. What is a key feature of simple random sampling?**
   A) Volunteers join the study
   B) Sampling is done at fixed intervals
   C) Each member has an equal chance of being selected
   D) Groups are divided by characteristics **Answer is**

18. **7. Why can self-selected sampling be unreliable?**
   A) It is too expensive
   B) It requires random number generators
   C) It often overrepresents strong opinions
   D) It requires group division **Answer is**

LIVEWORKSHEETS

19. **8. What is an example of stratified sampling?**
    A) Picking every 10th person
    B) Picking a group based on who volunteers
    C) Selecting people randomly from each age group
    D) Letting people opt in to a survey **Answer is**

20. **Which of the following is NOT a feature of systematic sampling?**
    A) Selection at regular intervals
    B) Use of strata
    C) Random starting point
    D) Sampling interval formula **Answer is**

21. **10. What's a potential issue with systematic sampling?**
    A) It's always biased
    B) It takes too long
    C) It may miss patterns if the population has cycles
    D) It's too random **Answer is**

LIVEWORKSHEETS