Worksheet: Statistics **Name:**_____

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. What is the best sampling technique to use for determining the average speed of the cars on a section of highway?
a. simple random sample
b. systematic sample
c. convenience sample
d. a) or b)

____ 2. Which method is most likely to produce a random sample of the members of your class?
a. listing the first six students that come to mind
b. choosing the five oldest students in the class
c. writing the name of each student on a separate piece of paper and then drawing these slips from a hat
d. selecting the first six students to arrive at class

____ 3. A large corporation wants to find out which benefits plan its employees would prefer. Which procedure would be most likely to obtain a statistically unbiased sample?
a. surveying a random sample of employees from a list of all employees
b. inviting all employees to indicate their choices by e-mail
c. placing suggestion boxes at random locations in the company's plant and offices
d. assembling a group with one member from each department and recording the preferences of these employees

____ 4. A college president wants to find out which courses students consider to be of the most benefit to them. Which procedure would be most likely to produce a statistically unbiased sample?
a. asking students to mail in a questionnaire
b. surveying a random sample of students taken from the list of all students
c. surveying the first hundred students on an alphabetical list
d. having students complete a questionnaire on the college web site

____ 5. A pollster wants to find out if citizens are satisfied with the city council. Which procedure would be most appropriate for obtaining a statistically unbiased sample?
a. interviewing people at a popular local shopping centre
b. surveying people whose names have been randomly chosen from the telephone book
c. placing an advertisement in the local newspaper asking for mail-in responses
d. mailing a questionnaire to people whose names have been chosen randomly from a list of customers of the municipal utility company

Completion
Complete each statement.

6. The group of individuals who actually have a chance of being selected for a survey is called _____.

7. The set of all individuals who belong to the group being studied by a survey is called _____.

Short Answer

8. A television reporter interviewed travellers stranded at an airport during a snowstorm about the efficiency of air travel in Canada. Name the sampling techniques used.

9. A soap company distributed free samples of a new laundry detergent to all households in several randomly selected neighbourhoods. The company requested the recipients to return a postage-paid card indicating whether they thought the sample was better than their usual detergent. What sampling techniques was the company using?

10. Identify the population implied in each statement.
    a) *Hockey Night in Canada* is watched by 23% of the TV audience.

    b) A politician has the support of the party.

    c) Today's teenagers prefer comfort over style.

d) A survey shows that 60% of adult respondents in Ontario prefer toothbrushes with soft bristles.

11. A psychologist is studying the sleep patterns of the 3960 students at her university. She decides to start by asking a random sample of 30 students how many hours of sleep they get weekday nights. Identify the type of sample in each of the following survey methods.
    a) The psychologist assigns each student a number from 1 to 3960. She selects the sample by randomly choosing one of the first 132 numbers and every 132nd number thereafter.

    b) The psychologist assigns each student a number from 0001 to 3960 and uses a computer to randomly generate a list of 30 numbers to select the students for the sample.

    c) Students are listed by the neighbourhood they live in. The psychologist randomly selects six neighbourhoods and then randomly selects five students from each one.

    d) An equal proportion of students are randomly selected from each discipline.

Problem

12. A particular school has 550 female students and 590 male students. A random sample of 30 students was surveyed for suggestions about social activities for the following school year.
    a) Is it possible that the sample included only male students?
    b) Would a sample consisting entirely of male students be representative of the school population? Explain your reasoning.

Worksheet: Statistics
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 REF: Knowledge & Understanding
   OBJ: Section 2.3 TOP: Sampling techniques

2. ANS: C PTS: 1 REF: Knowledge & Understanding
   OBJ: Section 2.3 TOP: Sampling techniques

3. ANS: A PTS: 1 REF: Knowledge & Understanding
   OBJ: Section 2.3 TOP: Sampling techniques

4. ANS: B PTS: 1 REF: Knowledge & Understanding
   OBJ: Section 2.3 TOP: Sampling techniques

5. ANS: B PTS: 1 REF: Knowledge & Understanding
   OBJ: Section 2.3 TOP: Sampling techniques

COMPLETION

6. ANS: the sampling frame

   PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
   TOP: Sampling techniques

7. ANS: the population

   PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
   TOP: Sampling techniques

MATCHING

SHORT ANSWER

8. ANS:
   Convenience sample

   PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
   TOP: Sampling techniques

9. ANS:
   voluntary-response within a cluster sample

   PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
   TOP: Sampling techniques

10. ANS:
    a) either all people who own TVs or just those who are watching TV at the time the program is on

b) all members of the party
c) people who are teenagers now
d) adult Ontario residents who use toothbrushes

PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
TOP: Sampling techniques

11. ANS:
a) systematic sample
b) simple random sample
c) cluster sample
d) stratified sample

PTS: 1 REF: Knowledge & Understanding OBJ: Section 2.3
TOP: Sampling techniques

PROBLEM

12. ANS:
a) Yes, although the probability is quite low.
b) Answers will vary. Since male students could well have different interests than female students do, such a sample probably would not be representative.

PTS: 1 REF: Thinking/Inquiry/Problem Solving | Communication
OBJ: Section 2.3 TOP: Sampling techniques