

Name: _____ Date: _____

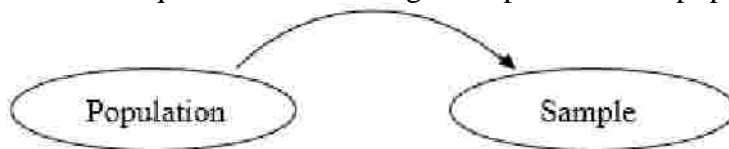
1. In 2004, the San Francisco police began using DNA evidence in unsolved homicides. The crime lab found evidence that suggested John Puckett was a DNA match for a crime committed three decades earlier, based on $5^{1/2}$ genetic locations. Usually 13 genetic markers are used to distinguish between two different people. Jurors were told that the chance of randomly finding the defendant's DNA profile at the crime scene was 1 in 1.1 million. The jurors found the DNA evidence compelling and convicted Puckett of first-degree murder. This conclusion is an example of:
 - A) relative frequency and probability.
 - B) summary statistics.
 - C) probability and odds.
 - D) statistical likelihood and inference.

2. Descriptive statistics may be BEST defined as:
 - A) techniques and methods used to analyze a small, specific set of data in order to draw a conclusion about a large, more general collection of data.
 - B) graphical and numerical methods used to describe, organize, and summarize a statistically valid conclusion.
 - C) graphical and numerical methods used to describe, organize, and summarize data.
 - D) techniques and methods used to analyze a small data set in order to describe its usefulness in making general statements about a population.

3. Inferential statistics may be BEST defined as:
 - A) techniques and methods used to analyze a small, specific set of data in order to draw a conclusion about a large, more general collection of data.
 - B) graphical and numerical methods used to describe, organize, and summarize a statistically valid conclusion.
 - C) graphical and numerical methods used to describe, organize, and summarize data.
 - D) techniques and methods used to analyze a small data set to make inference concerning its accuracy.

4. The effect of different lighting levels on productivity is evaluated using a designed experiment. Two hundred office workers who have the same basic job assignments are randomly selected to participate. Each worker is randomly assigned a different lighting level at his or her desk. Ambient (background) lighting is held constant for all workers. A benchmark of productivity is recorded for each worker. In this study, the **sample** is best described as:
- A) 200 office workers.
 - B) the different lighting levels.
 - C) the amount of productivity.
 - D) all office workers with similar job assignments.
5. A _____ sample has characteristics similar to those of the entire population and therefore can be used to draw a conclusion about the (general) population.
- A) general
 - B) descriptive
 - C) statistical
 - D) representative
6. A psychologist wishes to test a behavioral modification therapy that is claimed to improve the behavior of pre-teen autistic children. She randomly selects 20 pre-teen autistic children and exposes half of the group to the behavioral modification therapy while the other half continue with their standard treatment regimen. A standardized behavioral test is administered to each child both before and after his/her respective treatment. The **population** in this experiment is:
- A) all pre-teen autistic children.
 - B) the behavioral modification therapy.
 - C) the standardized behavioral test scores.
 - D) the 20 selected pre-teen autistic children.
7. A group of 20 monitor lizards is observed over the course of the lizards' life spans. The total food consumption of each lizard is recorded and displayed on a bar graph. This presentation of raw information in a more user-friendly format is an example of:
- A) inferential statistics.
 - B) simple random sampling.
 - C) pictorial statistics.
 - D) descriptive statistics.

8. In September of 2000 the United Nations adopted an initiative known as the UN Millennium Declaration. The goal was to take active steps in eliminating poverty, HIV/AIDS, hunger, and other global issues adversely affecting humanity by 2015. The UN consistently tracks each country's progress by recording data on numerous markers that provide an indication of compliance with these "Millennium Development Goals." The data for each country is summarized by year in tabular format. The organization of this raw data into a more user-friendly table format is an example of:
(See: <http://www.un.org/millenniumgoals/stats.shtml>)
- A) inferential statistics.
B) the scientific method.
C) descriptive statistics.
D) population statistics.
9. A random sample of 10 cars is analyzed to evaluate the effect of installing a computer chip modification on a vehicle's horsepower. Based on the sample, researchers conclude that there is a significant increase in vehicle horsepower associated with the computer chip. This is an example of:
- A) inferential statistics.
B) the scientific method.
C) descriptive statistics.
D) population statistics.
10. In a(n) _____ problem, certain characteristics of a population are assumed known. We then answer questions concerning a sample from that population.



- A) statistical inference
B) inferential statistical
C) probability
D) statistics

11. In a _____ problem, we assume very little about a population. We use the information about a sample to answer questions concerning the population.



- A) statistically determined
 - B) statistical differential
 - C) probability
 - D) statistics
12. A _____ of size n is a sample selected in such a way that every possible sample of size n has the same chance of being selected.
- A) circular random sample
 - B) simple random sample
 - C) systematic random sample
 - D) synchronized random sample
13. An experiment that forces rats to take a particular direction at a junction in a maze and then observes the differences in times between the rats that went left to those who went right is a(n) _____ study.
- A) observational
 - B) longitudinal
 - C) experimental
 - D) None of the above
14. In many real-world settings, it is not possible or feasible to know the characteristics of the population. Since we cannot safely assume these characteristics, we must use the information from a sample to answer questions concerning the population. In cases such as these, we are dealing with a(n) _____ problem.
- A) probability
 - B) underdetermined
 - C) statistics
 - D) reality

15. The time required to cure concrete is pivotal in the construction business. Insufficient curing time results in lower structural strength, which can create hazardous design conditions. Too much time wastes valuable resources and may result in greatly inflated building costs. To help ascertain the optimum curing time, a random sample of 80 poured concrete foundations is drawn. The total time to completely cure each foundation is recorded. This study is BEST described as a(n) _____ study.
- A) observational
 - B) longitudinal
 - C) experimental
 - D) inferential
16. A professor wishes to record information on some of his students for later use. He arrives to class early and samples the first five students that enter the room. Is this a simple random sample of size 5?
- A) yes
 - B) no
 - C) It depends on the information the professor seeks from the students.
 - D) More information is needed to answer the question.
17. Which of the following is a good estimate of the probability of lung cancer for a typical American adult?
- A) the incidence of lung cancer among U.S. adults
 - B) the average number of U.S. adults who died from lung cancer in 2013
 - C) the relative frequency of lung cancer among U.S. adults
 - D) All of the above
18. The registrar at a small liberal arts college computes description summaries for all members of the entering class on a regular basis. For example, the average high school GPA for the entering students in the most recent year was 3.16. The Chemistry department is interested in helping all students who wish to take a chemistry class identify the appropriate course, so they offer a placement exam. They randomly select a subset of 175 students who took this exam during the past decade, and found they had an average score on the exam of 71.05. The **variable** of interest to the Chemistry department in this study is the:
- A) 175 selected students who took this exam during the past decade.
 - B) students' scores on the placement exam
 - C) average score on the placement exam.
 - D) GPA of the 175 students who took the placement exam.

19. The 2009 National Survey on Drug Use and Health selected a random sample of U.S. college students and asked them about illicit drug use. Roughly 23% of the students surveyed reported using illicit drugs in the past year. The **population** in this study is:
- A) U.S. college students.
 - B) the 23% of the students who reported using illicit drugs.
 - C) the college students who responded to the National Survey on Drug Use and Health.
 - D) all U.S. adults.
20. The 2009 National Survey on Drug Use and Health selected a random sample of U.S. college students and asked them about illicit drug use. Roughly 23% of the students surveyed reported using illicit drugs in the past year. The **sample** in this study is:
- A) U.S. college students.
 - B) the 23% of the students who reported using illicit drugs.
 - C) the college students who responded to the National Survey on Drug Use and Health.
 - D) all U.S. adults.
21. The 2009 National Survey on Drug Use and Health selected a random sample of U.S. college students and asked them about illicit drug use. Roughly 23% of the students surveyed reported using illicit drugs in the past year. The **variable** in this study is:
- A) the percentage of students who reported using illicit drugs.
 - B) whether or not a student used illicit drugs.
 - C) whether or not a college student responded to the survey.
 - D) the number of college students who use illicit drugs.
22. In the mid-1990s a study was conducted to determine if arthroscopic surgery was an effective treatment for arthritis of the knee. Ten men were scheduled for surgery and each patient was anesthetized. But then the surgeon consulted a randomly generated code to determine whether to do the actual surgery, or to perform a “sham” surgery (make three small incisions in the knee, stitch the patient up, and leave a small scar). This is BEST described as a(n) _____ study.
- A) voluntary
 - B) observational
 - C) medical
 - D) experimental