

Statistics
Population Vs. Sample Worksheet

Name answer key

Determine whether the data set is a population or a sample. Explain your reasoning.

1. The age of each state governor.

population

2. The speed of every fifth car passing a police speed trap.

Sample

3. The annual salary for each employee at a company.

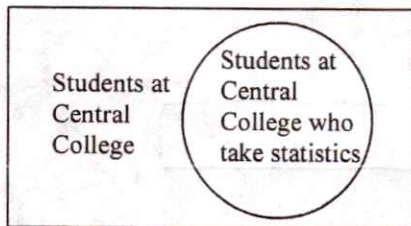
population

4. The number of pets in each U.S. household.

population

Identify the population and the sample.

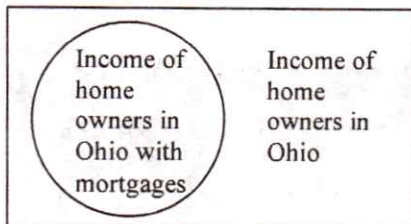
5.



population: all students at Central College

Sample: students at Central College who take stats

6.



population: all homeowners in Ohio

Sample: homeowners in Ohio who have mortgages

7. A study of 33,043 infants in Italy was conducted to find a link between heart rhythm abnormality and sudden infant death syndrome.

population: all infants in Italy

sample: 33,043 infants in Italy

8. A survey of 2104 households in the United States found that 65% subscribe to cable television.

population: all households in the United States

Sample: 2,104 households in the United States

Determine whether the numerical value is a parameter or a statistics.

Explain your reasoning.

↳ population ↳ Sample

9. The average annual salary for 35 of a company's 1200 accountants is

\$68,000.

sample → **statistic**

10. In a recent year, the interest category for 12% of all new magazines was sports.

population → **parameter**

11. In a recent survey of 1000 adults from the U.S., 47% said using a cell phone while driving should be illegal.

sample → **statistic**

12. In a recent year, the average math scores for all graduates on the ACT was 20.7.

population → **parameter**

Short response:

13. Why is a sample used more often than a population?

It is more difficult, time consuming, and expensive to gather information about an entire population.

1. What is the difference between a sample and a census?

← part of the population
→ entire population

2. What is the main difference between an observational study and an experimental study?

An experiment imposes a treatment on the subjects

3. What is the correct order of the four steps of the statistical problem-solving process?
(Order the following: analyze data, ask a question of interest, interpret results, produce data)

Step 1: Ask a question of interest (involves a characteristic that varies individual to individual)

Step 2: Produce data

Step 3: Analyze data

Step 4: Interpret results → via observational study or experiment

↓
should answer question of interest

→ graphs, numerical summaries

True/False.

4. Individuals are the entire group about which we want information. **False**

5. A variable is a data value which occurs most in a survey. **False**

6. An experiment imposes some treatment on individuals in order to observe their responses. **True**

7. An observational study measures variables, but does not attempt to influence the responses. **True**

8. Quantitative variables total up the number of variables in a statistical study. **False**

9. A sample is a part of the population from which we collect data. **True**

10. A population the entire group of individuals about which we want information. **True**

11. A categorical variable uses numerical values for which adding and averaging make sense. **False**

12. A study was conducted to see what quick service restaurant most people preferred at the food court at Town Center Mall. Several people were placed at various areas of the food court and they counted how many people ate at each restaurant between the hours of 11:00am-2:00pm. The survey was conducted each day for 1 week and the results were calculated.

a. Experiment or Observational Study?

observational study

b. Who are the individuals?

the restaurants

c. What is the variable?

the # of people who ate there
between 11 and 2.

13. A study was conducted to determine if bags of Spud Plain Potato Chips actually contain 28.3 grams of chips. Random samples from around the state of Georgia were collected from several different grocery stores (Publix, Kroger, Wal-Mart, Target Superstore, Piggly Wiggly, etc.). The chips were poured from each bag and weighed.

a. What population is represented?

all bags of Spud Plain Potato Chips

b. What is the sample?

random samples that were collected

c. Do you think this sample will provide accurate information?

Yes → samples were random,
collected from all around
the state, and from
different grocery stores

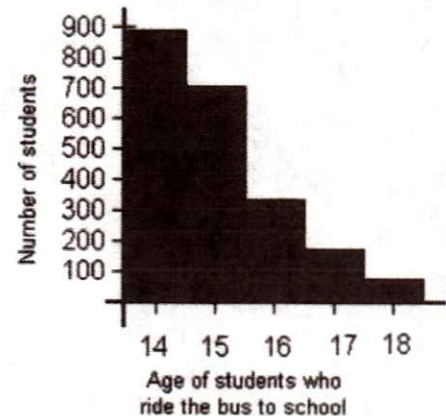
Use the histogram below to answer questions 15 and 16.

14. Do you think the data was obtained through an experiment or observational study?

observational study

15. Who are the individuals in this study?

the students



16. A group of students is interested in knowing if there is a correlation between attending an SAT Prep class and scores achieved on the SAT Examination. The students go online and collect their data from each state website of both students who took an SAT Prep class and those that did not take an SAT Prep class. They randomly select 100 who did take the class and 100 who did not from each state. A statistical analysis is performed.

- a. What is the question of interest?

* answers may vary *

Does taking an SAT Prep class lead to higher SAT scores?

- b. What is the population studied?

All students who took the SAT

- c. Did they take a sample or study the entire population?

sample

- d. Did they perform an observational or experimental study? How do you know?

Observational study → students picked whether or not they attended the SAT Prep class