

Population -

Sample -

Parameter -

Statistic -

1. Identify the population and the sample:
 - a) A survey of 1353 American households found that 18% of the households own a computer.
 - b) A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.
 - c) The average weight of every sixth person entering the mall within 3 hour period was 146 lb.

2. Determine whether the numerical value is a parameter or a statistics (and explain):
 - a) A recent survey by the alumni of a major university indicated that the average salary of 10,000 of its 300,000 graduates was 125,000.
 - b) The average salary of all assembly-line employees at a certain car manufacturer is \$33,000.
 - c) The average late fee for 360 credit card holders was found to be \$56.75.

3. For the studies described, identify the population, sample, population parameters, and sample statistics:
 - a) In a USA Today Internet poll, readers responded voluntarily to the question “Do you consume at least one caffeinated beverage every day?”
 - b) Astronomers typically determine the distance to galaxy (a galaxy is a huge collection of billions of stars) by measuring the distances to just a few stars within it and taking the mean (average) of these distance measurements.

Two branches of statistics:

Descriptive -

Inferential -

4. Identify whether the statement describes inferential statistics or descriptive statistics:
- The average age of the students in a statistics class is 21 years.
 - The chances of winning the California Lottery are one chance in twenty-two million.
 - There is a relationship between smoking cigarettes and getting emphysema.
 - From past figures, it is predicted that 39% of the registered voters in California will vote in the June primary.

Types of Data:

Qualitative -

Quantitative -

5. Determine whether the data are qualitative or quantitative:
- a) the colors of automobiles on a used car lot
 - b) the numbers on the shirts of a girl's soccer team
 - c) the number of seats in a movie theater
 - d) a list of house numbers on your street
 - e) the ages of a sample of 350 employees of a large hospital

Levels of Measurement:

Nominal -

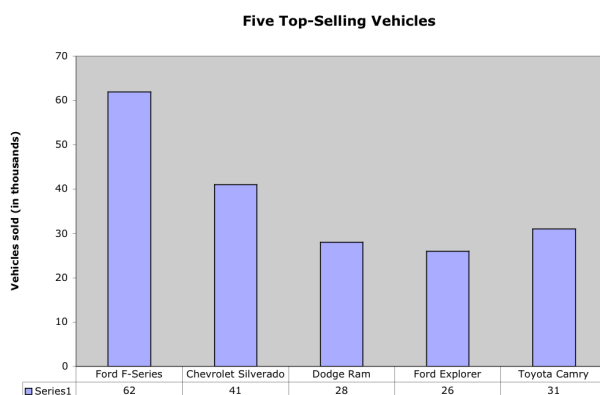
Interval -

Ordinal -

Ratio -

6. Identify the data set's level of measurement (nominal, ordinal, interval, ratio):

- a) hair color of women on a high school tennis team
- b) numbers on the shirts of a girl's soccer team
- c) ages of students in a statistics class
- d) temperatures of 22 selected refrigerators
- e) number of milligrams of tar in 28 cigarettes
- f) number of pages in your statistics book
- g) marriage status of the faculty at the local community college
- h) list of 1247 social security numbers
- i) the ratings of a movie ranging from "poor" to "good" to "excellent"
- j) the final grades (A,B,C,D, and F) for students in a chemistry class
- k) the annual salaries for all teachers in Utah
- l) list of zip codes for Chicago
- m) the nationalities listed in a recent survey
- n) the amount of fat (in grams) in 44 cookies
- o) the data listed on the horizontal axis in the graph



Data Collection:

Observational Study -

Experiment -

Simulation -

Survey -

7. Decide which method of data collection you would use to collect data for the study (observational study, experiment, simulation, or survey):

- a) A study of the salaries of college professors in a particular state
- b) A study where a political pollster wishes to determine if his candidate is leading in the polls
- c) A study where you would like to determine the chance getting three girls in a family of three children
- d) A study of the effects of a fertilizer on a soybean crop
- e) A study of the effect of koalas on Florida ecosystem

Sampling Technique:

Random -

Cluster -

Stratified -

Convenience -

Systematic -

8. Identify the sampling technique used (random, cluster, stratified, convenience, systematic):

- a) Every fifth person boarding a plane is searched thoroughly.
- b) At a local community College, five math classes are randomly selected out of 20 and all of the students from each class are interviewed.
- c) A researcher randomly selects and interviews fifty male and fifty female teachers.
- d) A researcher for an airline interviews all of the passengers on five randomly selected flights.
- e) Based on 12,500 responses from 42,000 surveys sent to its alumni, a major university estimated that the annual salary of its alumni was 92,500.
- f) A community college student interviews everyone in a biology class to determine the percentage of students that own a car.
- g) A market researcher randomly selects 200 drivers under 35 years of age and 100 drivers over 35 years of age.
- h) All of the teachers from 85 randomly selected nation's middle schools were interviewed.
- i) To avoid working late, the quality control manager inspects the last 10 items produced that day.
- j) The names of 70 contestants are written on 70 cards, The cards are placed in a bag, and three names are picked from the bag.

Type of Sampling	Low Bias	High Bias	Representative?	Ranking
Cluster				
Convenience				
Random				
Stratified Random				
Systematic				

Name: _____

11.4 Random Samples and Surveys worksheet

State whether or not the sample is random. If it is not random, explain why.

1.) You survey customers at a mall. You want to know which stores they shop at the most. You walk around a computer shop and choose 20 customers there for your survey.	2.) A country radio station wants to know what the most popular type of music is, so they ask their listeners to call in to say their favorite type.
3.) You want to know what 7 th graders think of their science class. You poll 100 random 7 th graders.	4.) You want to survey the students in your school about their exercise habits. At lunchtime you stand by a vending machine. You survey every student who buys something from the vending machine.

State whether or not the statement is biased or fair. If it is biased, explain why.

5.) Do you want a delicious salad for lunch or the usual sandwich?	6.) Do you watch TV on Saturday like everybody else?
7.) Do you eat the recommended number of servings for fruits and vegetables?	8.) I don't like these shoes, do you?



9.) You want to estimate the number of students in a middle school who ride the bus. Which sample is best?

A.) 7 students in the hallway

B.) All students in the band

C.) 50 8th graders at random

D.) 100 students during the lunch periods

Explain why you selected your answer: answer you

10.) A survey asked 72 randomly chosen students if they were going to attend the school play. Twelve said yes. If there are 210 tickets sold for the play, predict the number of students who attend the school.

11.) A counselor surveys a random sample of 60 out of 900 high school students. 75% of them said they were going to college. She used these results to determine that 675 students in the overall school would be planning to go to college. Do you agree with her prediction?

12.) A survey asks 48 randomly chosen students if they plan to buy a school newspaper this week. Of the 48 surveyed, 32 plan to buy a school newspaper. If 360 students bought papers, predict the number of students enrolled at the school.

13a.) Write an example of a biased question.

13b.) Rewrite the biased question to make it fair.