SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) What is statistics?  

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

2) Parking at a large university has become a very big problem. University administrators are interested in determining the average parking time (e.g. the time it takes a student to find a parking spot) of its students. An administrator inconspicuously followed 110 students and carefully recorded their parking times. Identify the population of interest to the university administration.

A) the parking times of the entire set of students that park at the university  
B) the students that park at the university between 9 and 10 AM on Wednesdays  
C) the entire set of faculty, staff, and students that park at the university  
D) the parking times of the 110 students from whom the data were collected

3) Parking at a large university has become a very big problem. University administrators are interested in determining the average parking time (e.g. the time it takes a student to find a parking spot) of its students. An administrator inconspicuously followed 130 students and carefully recorded their parking times. Identify the sample of interest to the university administration.

A) parking time of a student  
B) parking times of the 130 students  
C) location of the parking spot  
D) type of car (import or domestic)

4) The legal profession conducted a study to determine the percentage of cardiologists who had been sued for malpractice in the last ten years. The sample was randomly chosen from a national directory of doctors. Identify the individuals in the study.

A) each cardiologist selected from the directory  
B) the doctor’s area of expertise (i.e., cardiology, pediatrics, etc.)  
C) the responses: have been sued/have not been sued for malpractice in the last ten years  
D) all cardiologists in the directory

5) A manufacturer of cellular phones has decided that an assembly line is operating satisfactorily if less than 0.03% of the phones produced per day are defective. To check the quality of a day’s production, the company decides to randomly sample 50 phones from a day’s production to test for defects. Define the population of interest to the manufacturer.

A) the 50 phones sampled and tested  
B) all the phones produced during the day in question  
C) the 0.03% of the phones that are defective  
D) the 50 responses: defective or not defective

6) Which branch of statistics deals with the organization and summarization of collected information?

A) Computational statistics  
B) Descriptive statistics  
C) Inferential statistics  
D) Survey design
Classify the variable as qualitative or quantitative.

7) the colors of book covers on a bookshelf
   A) qualitative  B) quantitative

8) the number of calls received at a company's help desk
   A) quantitative  B) qualitative

9) the number of seats in a school auditorium
   A) quantitative  B) qualitative

10) the numbers on the shirts of a boy's football team
    A) quantitative  B) qualitative

Determine whether the quantitative variable is discrete or continuous.

11) the number of bottles of juice sold in a cafeteria during lunch
    A) discrete  B) continuous

12) the weight of a player on the wrestling team
    A) discrete  B) continuous

13) the cholesterol levels of a group of adults the day after Thanksgiving
    A) continuous  B) discrete

14) the low temperature in degrees Fahrenheit on January 1st in Cheyenne, Wyoming
    A) continuous  B) discrete

15) the number of goals scored in a hockey game
    A) continuous  B) discrete

16) the speed of a car on a Boston tollway during rush hour traffic
    A) continuous  B) discrete

Determine whether the study depicts an observational study or an experiment.

17) A medical researcher obtains a sample of adults suffering from diabetes. She randomly assigns 76 people to a treatment group and 76 to a placebo group. The treatment group receives a medication over a period of three months and the placebo group receives a placebo over the same time frame. At the end of three months the patients' symptoms are evaluated.
    A) observational study  B) experiment

18) A poll is conducted in which professional musicians are asked their ages.
    A) observational study  B) experiment

19) A pollster obtains a sample of students and asks them how they will vote on an upcoming referendum.
    A) experiment  B) observational study
20) The personnel director at a large company would like to determine whether the company cafeteria is widely used by employees. She calls each employee and asks them whether they usually bring their own lunch, eat at the company cafeteria, or go out for lunch.

A) observational study
B) experiment

21) A scientist was studying the effects of a new fertilizer on crop yield. She randomly assigned half of the plots on a farm to group one and the remaining plots to group two. On the plots in group one, the new fertilizer was used for a year. On the plots in group two, the old fertilizer was used. At the end of the year the average crop yield for the plots in group one was compared with the average crop yield for the plots in group two.

A) experiment
B) observational study

Provide an appropriate response.

22) The government of a town needs to determine if the city's residents will support the construction of a new town hall. The government decides to conduct a survey of a sample of the city's residents. Which one of the following procedures would be most appropriate for obtaining a sample of the town's residents?

A) Survey every 5th person who walks into city hall on a given day.
B) Survey a random sample of employees at the old city hall.
C) Survey a random sample of persons within each geographic region of the city.
D) Survey the first 300 people listed in the town's telephone directory.

23) The city council of a small town needs to determine if the town's residents will support the building of a new library. The council decides to conduct a survey of a sample of the town's residents. Which one of the following procedures would be most appropriate for obtaining a sample of the town's residents?

A) Survey 500 individuals who are randomly selected from a list of all people living in the state in which the town is located.
B) Survey a random sample of librarians who live in the town.
C) Survey a random sample of persons within each neighborhood of the town.
D) Survey every 13th person who enters the old library on a given day.

Determine the sampling technique which is used.

24) Thirty-five math majors, 43 music majors and 26 history majors are randomly selected from 496 math majors, 278 music majors and 336 history majors at the state university. What sampling technique is used?

A) stratified
B) random
C) cluster
D) convenience
E) systematic

25) Every fifth adult entering an airport is checked for extra security screening. What sampling technique is used?

A) convenience
B) cluster
C) random
D) systematic
E) stratified
26) At a local technical school, five auto repair classes are randomly selected and all of the students from each class are interviewed. What sampling technique is used?
   A) systematic
   B) random
   C) stratified
   D) cluster
   E) convenience

27) A writer for an art magazine randomly selects and interviews fifty male and fifty female artists. What sampling technique is used?
   A) convenience
   B) random
   C) systematic
   D) stratified
   E) cluster

28) A travel industry researcher interviews all of the passengers on five randomly selected cruises. What sampling technique is used?
   A) stratified
   B) cluster
   C) convenience
   D) systematic
   E) random

29) A statistics student interviews everyone in his apartment building to determine who owns a cell phone. What sampling technique is used?
   A) random
   B) convenience
   C) stratified
   D) cluster
   E) systematic

30) A lobbyist for the oil industry assigns a number to each senator and then uses a computer to randomly generate ten numbers. The lobbyist contacts the senators corresponding to these numbers. What sampling technique was used?
   A) cluster
   B) stratified
   C) systematic
   D) random
   E) convenience

31) Based on 10,500 responses from 29,500 questionnaires sent to all its members, a major medical association estimated that the annual salary of its members was $102,500 per year. What sampling technique was used?
   A) convenience
   B) random
   C) stratified
   D) systematic
   E) cluster
32) In a recent online survey, participants were asked to answer “yes” or “no” to the question “Are you in favor of stricter gun control?” 6571 responded “yes” while 4237 responded “no”. There was a fifty-cent charge for the call. What sampling technique was used? 
   A) systematic  
   B) convenience  
   C) random  
   D) cluster  
   E) stratified

33) A sample consists of every 25th worker from a group of 4000 workers. What sampling technique was used? 
   A) convenience  
   B) stratified  
   C) systematic  
   D) random  
   E) cluster

34) A market researcher randomly selects 200 homeowners under 50 years of age and 200 homeowners over 50 years of age. What sampling technique was used? 
   A) random  
   B) convenience  
   C) cluster  
   D) systematic  
   E) stratified

35) To avoid working late, the plant foreman inspects the first 10 microwaves produced that day. What sampling technique was used? 
   A) stratified  
   B) systematic  
   C) convenience  
   D) random  
   E) cluster

36) The names of 40 employees are written on 40 cards. The cards are placed in a bag, and three names are picked from the bag. What sampling technique was used? 
   A) stratified  
   B) random  
   C) systematic  
   D) convenience  
   E) cluster