

Name _____

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

Identify the study as an observational study or a designed experiment.

- 1) An examination of the medical records of 10,000 women showed that those who were short and fair skinned had a higher risk of osteoporosis. 1) _____
A) Designed experiment B) Observational study
- 2) At one hospital in 1992, 674 women were diagnosed with breast cancer. Five years later, 88% of the Caucasian women and 83% of the African American women were still alive. 2) _____
A) Designed experiment B) Observational study
- 3) 400 patients suffering from chronic back pain were randomly assigned to one of two groups. Over a four-month period, the first group received acupuncture treatments and the second group received a placebo. Patients who received acupuncture treatments improved more than those who received the placebo. 3) _____
A) Designed experiment B) Observational study
- 4) A clinic gives a drug to a group of ten patients and a placebo to another group of ten patients to find out if the drug has an effect on the patients' illness. 4) _____
A) Designed experiment B) Observational study
- 5) An educational researcher used school records to determine that, in one school district, 84% of children living in two-parent homes graduated high school while 75% of children living in single-parent homes graduated high school. 5) _____
A) Designed experiment B) Observational study
- 6) A researcher wished to assess the importance of exercise in weight-loss programs. 412 people, all considered to be at least 20 pounds overweight, volunteered to participate in a study. The participants were randomly assigned to one of two groups. Over a two-month period, the first group followed a particular diet but were instructed to perform no exercise other than walking. The second group followed the same diet but also performed aerobic exercise for one hour each day. At the end of the two months, the weight loss of each participant was recorded. The average weight loss was calculated for each group and it was found that the average weight loss for the second group was significantly greater than the average weight loss for the first group. 6) _____
A) Designed experiment B) Observational study
- 7) A doctor performs several diagnostic tests to determine the reason for a patient's illness. 7) _____
A) Designed experiment B) Observational study
- 8) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received the experimental drug, the second group received a placebo, and the third group received no treatment. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. The average change in blood pressure was calculated for each of the three groups and the three averages were compared. 8) _____
A) Designed experiment B) Observational study

Provide an appropriate response.

- 9) A meteorologist constructs a graph showing the total precipitation in Phoenix, Arizona in each of the months of 1998. Does this involve descriptive statistics or inferential statistics? 9) _____
A) Descriptive B) Inferential

- 10) A news article appearing in a national paper stated that "The fatality rate from use of firearms sank to a record low last year, the government estimated Friday. But the overall number of violent fatalities increased slightly, leading the government to urge an increase in police forces in major urban areas. Overall, 15,600 people died from violent crimes in 2005, up from 15,562 in 2004, according to projections from a government source. Is the figure 15,600 a descriptive statistic or an inferential statistic? Is the figure 15,562 a descriptive statistic or an inferential statistic? 10) _____
A) The figure 15,600 is an inferential statistic since it is indicated in the statement that it is a projection (probably based on incomplete data for the year 2004). The figure 15,562 is an inferential statistic as well.
B) The figure 15,600 is a descriptive statistic since it reflects the actual number of deaths from violent crimes for the year 2005. The figure 15,562 is a descriptive statistic as well.
C) The figure 15,600 is an inferential statistic since it is indicated in the statement that it is a projection (probably based on incomplete data for the year 2005). The figure 15,562 is a descriptive statistic since it reflects the actual number of deaths from violent crimes for the year 2004.
D) The figure 15,600 is a descriptive statistic since it reflects the actual number of deaths from violent crimes for the year 2004. The figure 15,562 is an inferential statistic since it is indicated in the statement that it is a projection (probably based on incomplete data for the year 2005).

- 11) The table below shows the number of new AIDS cases in the U.S. in each of the years 1989–1994. 11) _____

Year	New AIDS cases
1989	33,643
1990	41,761
1991	43,771
1992	45,961
1993	103,463
1994	61,301

Classify the study as either descriptive or inferential.

- A) Descriptive B) Inferential

- 12) The table below shows the average income by age group for the residents of one town in the year 1998. The average incomes for each age group are estimates based on a sample of size 100 from each group. 12) _____

Age group	Average income
18-24	\$17,180
25-39	\$26,661
40-54	\$32,471
55-70	\$25,960
Over 70	\$18,241

Classify the study as either descriptive or inferential.

- A) Descriptive B) Inferential

13) The table below shows the number of homicides in the U.S. in each of the years 1989–1993.

13) _____

Murder and non-negligent manslaughter	
Year	Number of offenses
1989	21,500
1990	23,440
1991	24,700
1992	23,760
1993	24,530

Classify the study as either descriptive or inferential.

A) Descriptive

B) Inferential

14) A researcher randomly selects a sample of 100 students from the students enrolled at a particular college. She asks each student his age and calculates the mean age of the 100 students. It is 21.3 years. Based on this sample, she then estimates the mean age of all students enrolled at the college to be 21.3 years. In what way are descriptive statistics involved in this example? In what way are inferential statistics involved?

14) _____

A) When calculating the mean age of the students in the sample, the researcher is using descriptive statistics. When estimating the mean age of all students at the college, the researcher is using inferential statistics.

B) When calculating the mean age of the students in the sample, the researcher is using inferential statistics. When estimating the mean age of all students at the college, the researcher is using descriptive statistics.

15) Thirty of the 198 students enrolled in Statistics 101 were asked if they wanted Exam II to be a take-home or an in-class assessment. Twenty, or about 67%, of the students polled indicated a preference for an in-class exam. The professor concluded that the majority of students in Statistics 101 would prefer an in-class examination for the second assessment. Did the professor perform a descriptive study or an inferential study?

15) _____

A) Descriptive

B) Inferential

16) The table below shows the total number of births in the U.S. and the birth rate per 1,000 population in each of the years 1990–1994.

16) _____

Year	Births	Birth Rate
1990	4,158,512	16.7
1991	4,110,907	16.3
1992	4,065,014	15.9
1993	4,000,240	15.5
1994	3,979,000	15.3

Classify the study as either descriptive or inferential.

A) Descriptive

B) Inferential

- 17) Based on a random sample of 1000 people, a researcher obtained the following estimates of the percentage of people lacking health insurance in one U.S. city. 17) _____

Age	Percentage not covered
18-24	28.2
25-39	24.9
40-54	19.1
55-65	16.5

Classify the study as either descriptive or inferential.

- A) Descriptive B) Inferential

Answer the question.

- 18) George, a network engineer, ordered 600 CAT 5e Ethernet cables for use at his company's network. After receiving these cables, he decided to randomly test 180 of these cables before using them. He was alarmed to find out that 82% of these cables failed completely. He returned the entire lot to the manufacturer. When he tested the cables, what was George's sample? 18) _____
A) 492 cables B) 180 cables C) 148 cables D) 600 cables
- 19) A magazine publisher always mails out a questionnaire six months before a subscription ends. This questionnaire asks its subscribers if they are going to renew their subscriptions. On average, only 10% of the subscribers respond to the questionnaire. Of the 10% who do respond, an average of 44% say that they will renew their subscription. This 10% who respond to the questionnaire are known as what? 19) _____
A) The population B) The sample
- 20) An employee at the local ice cream parlor asks three customers if they like chocolate ice cream. Identify the sample and population. 20) _____
A) Sample: the customers who like chocolate ice cream; population: all customers
B) Sample: the 3 selected customers; population: all customers
C) Sample: all customers; population: the 3 selected customers
D) Sample: the 3 selected customers; population: the customers who like chocolate ice cream
- 21) A magazine publisher mails a survey to every subscriber asking about the timeliness of its subscription service. The publisher finds that only 3% of the subscribers responded. This 3% represents what? 21) _____
A) The population B) The sample
- 22) A computer network manager wants to test the reliability of some new and expensive fiber-optic Ethernet cables that computer department just received. The computer department received 8 boxes containing 30 cables each. The manager does not have the time to test every cable in each box. The manager will choose one box at random and test 6 cables chosen randomly within that box. What is the sample? 22) _____
A) The one box that was chosen at random from the 8 boxes
B) The 8 boxes
C) 240 cables
D) The 6 cables chosen for testing
- 23) A magazine publisher mails a survey to every subscriber asking about the quality of its subscription service. The total number of subscribers represents what? 23) _____
A) The population B) The sample

- 24) 100,000 randomly selected adults were asked whether they drink at least 48 oz of water each day and only 45% said yes. Identify the sample and population. 24) _____
- A) Sample: the 100,000 selected adults; population: all adults
 - B) Sample: the 45% of adults who drink at least 48 oz of water; population: all adults
 - C) Sample: the 100,000 selected adults; population: the 45% of adults who drink at least 48 oz of water
 - D) Sample: all adults ; population: the 100,000 selected adults

- 25) A computer network manager wants to test the reliability of some new and expensive fiber-optic Ethernet cables that the computer department just received. The computer department received 4 boxes containing 10 cables each. The manager does not have the time to test every cable in each box. The manager will choose one box at random and test 2 cables chosen randomly within that box. What is the population? 25) _____
- A) The 2 cables chosen randomly for testing
 - B) The 4 boxes
 - C) The one box that was chosen at random from the 4 boxes
 - D) 40 cables

Provide an appropriate response.

- 26) A newly-premiered play just ended that evening at a local theater. Theater management briefly interviews every tenth person leaving the theater to see if that person will recommend the play at that theater to other people. Identify the type of sampling used in this example. 26) _____
- A) Stratified sampling
 - B) Systematic sampling
 - C) Multistage sampling
 - D) Cluster sampling

- 27) Several watch-dog consumer groups have criticized the fast food industry for serving food with excessive fat content. One watch-dog announced that it will randomly select one fast food chain per week. The watch-dog will then decide, as a group, to purchase one item off the menu that has been advertised the most on television and in the newspapers. The watch-dog will then have that heavily-advertised, just-purchased item professionally sampled for fat content. Weekly results will be posted on the watch-dog's website. For this scenario, what best describes the watch-dog's sampling activities each week? 27) _____
- A) Systematic sampling
 - B) Stratified sampling
 - C) Multistage sampling
 - D) Cluster sampling

- 28) An education researcher randomly selects 38 schools from one school district and interviews all the teachers at each of the 38 schools. Identify the type of sampling used in this example. 28) _____
- A) Simple random sampling
 - B) Systematic random sampling
 - C) Cluster sampling
 - D) Stratified sampling

- 29) Before premiering a blockbuster movie at a theater, test screenings are done beforehand. A small number of selected theaters are chosen geographically throughout the country. Each theater chosen is supposed to be representative of theatergoers in that area. Everyone is interviewed when the movie is over. Identify the type of sampling used in this example. 29) _____
- A) Systematic sampling
 - B) Stratified sampling
 - C) Attempted census
 - D) Cluster sampling

- 30) At a college there are 120 freshmen, 90 sophomores, 110 juniors, and 80 seniors. A school administrator selects a simple random sample of 12 of the freshmen, a simple random sample of 9 of the sophomores, a simple random sample of 11 of the juniors, and a simple random sample of 8 of the seniors. She then interviews all the students selected. Identify the type of sampling used in this example. 30) _____
- A) Simple random sampling
B) Stratified sampling
C) Systematic random sampling
D) Cluster sampling
- 31) From a group of 496 students, every 49th student starting with the 3rd student is selected. Identify the type of sampling used in this example. 31) _____
- A) Systematic random sampling
B) Stratified sampling
C) Simple random sampling
D) Cluster sampling
- 32) A mega-discount chain store just opened a new clothing store in town emphasizing mainly women's clothing. Before opening, management had to decide whether to only carry either men's, women's, boys', girls', or infants' clothing. After performing representative sampling of potential customers from each of these groups, it was decided to carry only women's clothing. Identify the type of sampling used in this example. 32) _____
- A) Multistage sampling
B) Systematic sampling
C) Cluster sampling
D) Stratified sampling
- 33) Geologists have an interest in the structure and the history of the earth. A geologist can go back in time by drilling deep into the ground, retrieving a core sample, estimating the ages of the various layers, and examining the composition. A timeline can be built of the entire area from where the core sample was drilled. A geologist may retrieve several core samples to confirm the history of the earth's structure in that sampled area. Mountains, lakes, and unstable ground can easily impede a simple random sampling of a desired geographical area, therefore what is the most realistic sampling method that represents the actual drillings, comparisons, and scientific examinations of several core samples within the same geographical area? 33) _____
- A) Stratified sampling
B) Systematic sampling
C) Multistage sampling
D) Cluster sampling
- 34) The human resources department of a large, well-known telecommunications firm is behind schedule in sampling the job satisfaction of the company's employees. In an effort to catch-up, the HR manager quickly goes down an alphabetical list of employees and e-mails a survey to every tenth employee. An neutral third party collects all surveys and ensures all of the selected employees respond to the survey. What sampling method best describes what the HR manager is doing? 34) _____
- A) Stratified sampling
B) Multistage sampling
C) Systematic sampling
D) Cluster sampling
- 35) A pollster uses a computer to generate 500 random numbers and then interviews the voters corresponding to those numbers. Identify the type of sampling used in this example. 35) _____
- A) Cluster sampling
B) Stratified sampling
C) Systematic random sampling
D) Simple random sampling

A designed experiment is described. Identify the specified element of the experiment.

- 36) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the factor. 36) _____
- A) The participants in the experiment B) The experimental drug
C) Diastolic blood pressure D) The dosage of the drug
- 37) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the levels of the factor. 37) _____
- A) The experimental drug
B) High blood pressure, low blood pressure
C) Placebo, low dosage, high dosage
D) Diastolic blood pressure at the start, diastolic blood pressure at the end
- 38) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the experimental units (subjects). 38) _____
- A) The treatment (i.e., placebo, low dosage of drug, or high dosage of drug)
B) The three different groups
C) The diastolic blood pressures of the participants
D) The participants in the experiment
- 39) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the response variable. 39) _____
- A) The participants in the experiment
B) Change in diastolic blood pressure
C) The dosage of the drug
D) The treatment received (placebo, low dosage, high dosage)

- 40) In a clinical trial, 780 participants suffering from high blood pressure were randomly assigned to one of three groups. Over a one-month period, the first group received a low dosage of an experimental drug, the second group received a high dosage of the experimental drug, and the third group received a placebo. The diastolic blood pressure of each participant was measured at the beginning and at the end of the period and the change in blood pressure was recorded. Identify the treatments. 40) _____
- A) Placebo, low dosage of drug, high dosage of drug
 - B) Low dosage of drug, high dosage of drug
 - C) Diastolic blood pressure at start, diastolic blood pressure at end
 - D) The experimental drug
- 41) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are four different teachers (Juliana, Felix, Sonia, and Helen) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the levels of the factor "teaching method". 41) _____
- A) Score on reading test
 - B) Method A, method B, method C
 - C) Juliana, Felix, Sonia, and Helen
 - D) Teaching method and teacher
- 42) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the experimental units. 42) _____
- A) The male bullfrogs
 - B) The female bullfrogs
 - C) All of the frogs, male and female
 - D) The scientist
- 43) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the factor(s). 43) _____
- A) Body type and mating call
 - B) Body size, body color, and mating call pitch
 - C) Whether or not (yes or no) the female frogs approached a male dummy
 - D) Large or small, dark or light, high pitch, normal pitch, or low pitch
- 44) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are four different teachers (Juliana, Felix, Sonia, and Helen) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the response variable. 44) _____
- A) Score on reading test
 - B) Teaching method
 - C) Teacher
 - D) Method A, method B, method C

- 45) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the treatments. 45) _____
- A) The eighteen different possible combinations of the two body sizes, three body colors, and three mating call pitches
 - B) The twelve different possible combinations of the two body sizes, two body colors, and three mating call pitches
 - C) The twelve different possible combinations of the three body sizes, two body colors, and two mating call pitches
 - D) The eight different possible combinations of the two body sizes, two body colors, and two mating call pitches
- 46) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the response variable. 46) _____
- A) Whether or not (yes or no) the female frogs approached a male dummy
 - B) Whether or not the male frogs were large and light-colored
 - C) The four life-sized dummy male bullfrogs
 - D) Large and small; dark and light; call and no call
- 47) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are two different teachers (Juliana and Felix) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the treatments. 47) _____
- A) Method A, method B, method C
 - B) Juliana, Felix, Sonia, and Helen
 - C) Teaching method and teacher
 - D) Juliana and method A, Juliana and method B, Juliana and method C, Felix and method A, Felix and method B, Felix and method C
- 48) A herpetologist performed a study on the effects of the body type and mating call of the male bullfrog as signals of quality to mates. Four life-sized dummies of male bullfrogs and two sound recordings provided a tool for testing female response to the unfamiliar frogs whose bodies varied by size (large or small) and color (dark or light) and whose mating calls varied by pitch (high, normal, or low). The female bullfrogs were observed to see whether they approached each of the four life-sized dummies. Identify the levels of each factor. 48) _____
- A) Body size has three levels: large, medium, and small. Body color has three levels: dark, medium, and light. Mating call pitch has three levels: high, normal, and low.
 - B) There are three levels: body size, body color, and mating call pitch
 - C) Body size has two levels: large and small. Body color has two levels: dark and light. Mating call pitch has three levels: high, normal, and low.
 - D) Body size has three levels: large, medium, and small. Body color has three levels: dark, medium, and light. Mating call pitch has two levels: high and low.

- 49) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are four different teachers (Juliana, Felix, Sonia, and Helen) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the factors. 49) _____
- A) Teaching method and teacher
B) Score on reading test
C) Method A, method B, method C
D) Juliana, Felix, Sonia, and Helen
- 50) An education researcher was interested in examining the effect of the teaching method and the effect of the particular teacher on students' scores on a reading test. In a study, there are four different teachers (Juliana, Felix, Sonia, and Helen) and three different teaching methods (method A, method B, and method C). The number of students participating in the study is 258. Students are randomly assigned to a teaching method and teacher. Identify the experimental units (subjects). 50) _____
- A) Teaching method and teacher
B) Method A, method B, method C
C) The 258 students participating in the study
D) The three groups of students (those assigned to method A, those assigned to method B, and those assigned to method C)

Answer Key

Testname: STATS PRACTICE CH 1

- 1) B
- 2) B
- 3) A
- 4) A
- 5) B
- 6) A
- 7) B
- 8) A
- 9) A
- 10) C
- 11) A
- 12) B
- 13) A
- 14) A
- 15) A
- 16) A
- 17) B
- 18) B
- 19) B
- 20) B
- 21) B
- 22) D
- 23) A
- 24) A
- 25) D
- 26) B
- 27) C
- 28) C
- 29) D
- 30) B
- 31) A
- 32) D
- 33) D
- 34) C
- 35) D
- 36) B
- 37) C
- 38) D
- 39) B
- 40) A
- 41) B
- 42) B
- 43) B
- 44) A
- 45) B
- 46) A
- 47) D
- 48) C
- 49) A
- 50) C