

Student: _____
Date: _____
Time: _____

Instructor: Darryl Allen
Course: Elementary Statistics 60157
Book: Triola: Elementary Statistics, 11e

Assignment: Chapter 1 Practice Exam A

1. In a mail-in poll, 189,000 respondents each mailed in a post card with the answers to a question about an increase in the capital gains tax. The results showed that 69% of those who responded were in favor of an increase in the capital gains tax. Interpret the results by identifying what we can conclude about the way the general population feels about an increase in the capital gains tax.

What can we conclude?

- A. The sample suggests that 69% of the general public are in favor of an increase in the capital gains tax because it is a random sample.
- B. The sample suggests that 69% of the general public are in favor of an increase in the capital gains tax because it is a voluntary response sample.
- C. The sample suggests that more than 69% of the general public are in favor of an increase in the capital gains tax because it is a random sample.
- D. The sample cannot be used to conclude anything about the general population (general public) because it is a voluntary response sample.

2. A statistical abstract includes the average per capita income for each of 20 states. When those 20 values are added, then divided by 20, the result is \$29,822.15. Is \$29,822.15 the average per capita income for all individuals in the 20 states? Why or why not?

Choose the correct answer below.

- A. No, because not all states are taken into account.
- B. Yes, because everyone in the population is taken into account.
- C. No, because population sizes are not taken into account.
- D. Yes, because the calculated value is an average of each state average.

3. An ad for a device used to discourage car thefts stated that "This device reduces your odds of car theft by 400 percent." What is wrong with this statement?

Choose the correct answer below.

- A. If car thefts fell by 100%, it would be cut in half. Thus, a decrease of 200% means that it would be totally eliminated, and a decrease of more than 200% is impossible.
- B. If the device eliminated all car thefts, it would reduce odds of car theft by 100%, so the 400% figure is misleading.
- C. The statement does not mention the initial amount of car thefts.
- D. The actual amount of the decrease in car thefts is less than 100%.

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4. An author wrote a book about the benefits of home schooling. Her conclusions were based on 5,399 replies received after mailing 111,208 questionnaires.
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- Are her conclusions likely to be valid in the sense that they can be applied to the general population? Why or why not?
- A. Yes, enough responses were received to make valid conclusions.
 - B. No, not enough responses were received to make valid conclusions.
 - C. No, it was a voluntary response sample.
 - D. Yes, the numbers were precise.
-
5. Determine whether the given description corresponds to an observational study or an experiment.
- In a study of 439 women with a particular disease, the subjects drank herbal mixtures.
-
- Does the given description correspond to an observational study or an experiment?
- A. The given description corresponds to an experiment.
 - B. The given description corresponds to an observational study.
 - C. The given description does not provide enough information to answer this question.
-
6. What is a voluntary response sample?
-
- Choose the correct answer below.
- A. A sample in which the researchers decide which subjects to include in the study.
 - B. A sample in which the subjects themselves decide whether to be included in the study.
 - C. A sample in which the response "No Opinion" or "Not Applicable" are choices.
 - D. A sample in which the sample size is very large.
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7. A study compared surgery and splinting for subjects suffering from carpal tunnel syndrome. It was found that among 70 patients treated with surgery, there was a 95% success rate. Among 80 patients treated with splints, there was a 71% success rate. Calculations using those results showed that if there really is no difference in success rates between surgery and splints, then there is about 1 chance in 1000 of getting success rates like the ones obtained in this study. Complete parts (a) through (d).
- a.** Should we conclude that surgery is better than splints for the treatment of carpal tunnel syndrome?
- A. Yes, the chance of getting a similar success rate is very small.
 - B. No, there is not enough information given to make a conclusion.
 - C. Yes, surgery appears to have a substantially better success rate.
 - D. No, there is no statistical difference between the success rates.
- b.** Does the result have statistical significance? Why or why not?
- A. No, the difference in success rates is too small to be considered statistically significant.
 - B. No, the results have a chance to occur if there is no real difference in the success rates.
 - C. Yes, the difference in success rates is large enough to be considered practically significant.
 - D. Yes, the given success rates are too unlikely to occur by chance if there is no difference between the two treatment methods.
- c.** Does the result have practical significance?
- A. No, the difference in success rates is not large enough to be considered practically significant.
 - B. Yes, the given success rates are too unlikely to occur by chance if there is no difference between the two treatment methods.
 - C. No, the results have a chance to occur even if there is no difference between the two treatment methods.
 - D. Yes, the difference in success rates is large enough to be considered practically significant.
- d.** Should surgery be the recommended treatment for carpal tunnel syndrome?
- A. No, there is not a practically significant difference in the success rates.
 - B. Yes, it is easier to perform surgery than to use splints.
 - C. Yes, surgery appears to have a substantially higher success rate than splints.
 - D. No, there is not a statistically significant difference in the success rates.
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8. Determine which of the four levels of measurement (nominal, ordinal, interval, ratio) is most appropriate.

Monthly temperatures: 62° F, 68° F, 74° F, 80° F, and 86° F

Choose the correct answer below.

- Interval
- Ratio
- Nominal
- Ordinal

9. Identify the type of sampling used (random, systematic, convenience, stratified, or cluster sampling) in the situation described below.

A man experienced a tax audit. The tax department claimed that the man was audited because everyone in four randomly selected districts was being audited.

Which type of sampling did the tax department use?

- Random sampling
- Convenience sampling
- Stratified sampling
- Cluster sampling
- Systematic sampling

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10. Some people responded to this request: "Dial 1-900-PRO-LIFE to participate in a telephone poll on abortion. (\$3.45 per minute. Average call: 4 minutes. You must be 21 years old.)" Identify the (a) sample and (b) population. Also, determine whether the sample is likely to be representative of the population.

a. Identify the sample. Choose the correct answer below.

- A. The sample is all individuals who responded.
- B. The sample is all individuals who knew about abortion and were at least 21 years of age.
- C. The sample is a randomly selected group from all individuals who responded.
- D. The sample is a non-randomly selected group from all individuals who responded.

b. Identify the population. Choose the correct answer below.

- A. The population is all individuals regardless of their age.
- B. The population is all individuals who knew about the poll.
- C. The population is all individuals who are at least 21 years of age.
- D. The population is all individuals with opinions about the abortion issue.

Is the sample likely to be representative of the population?

- A. No, the sample is not likely to be representative of the population because those with strong opinions about abortion are more likely to respond.
- B. Yes, the sample is likely to be representative of the population because those who respond are not likely to be biased.
- C. Yes, the sample is likely to be representative of the population because any individual within the population can respond.
- D. No, the sample is not likely to be representative of the population because not all individuals within the population are likely to respond.

11. Determine whether the given value is a statistic or a parameter.

A sample of seniors is selected and it is found that 55% own a computer.

Choose the correct statement below.

- Parameter because the value is a numerical measurement describing a characteristic of a population.
- Parameter because the value is a numerical measurement describing a characteristic of a sample.
- Statistic because the value is a numerical measurement describing a characteristic of a sample.
- Statistic because the value is a numerical measurement describing a characteristic of a population.

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12. Determine whether the value is from a discrete or continuous data set.

Number of cars owned is 7

Is the value from a discrete or continuous data set?

- Continuous
 Discrete

13. Identify the type of sampling used: random, systematic, convenience, stratified, or cluster.

To estimate the percentage of defects in a recent manufacturing batch, a quality control manager at General Foods selects every 17th soup can that comes off the assembly line starting with the seventh until she obtains a sample of 70 soup cans.

Which type of sampling is used?

- A. Convenience
 B. Systematic
 C. Random
 D. Stratified
 E. Cluster

14. A quality control engineer selects every 13,000th candy coated chocolate that is produced. Does this sampling plan result in a random sample? Simple random sample?

Does this sampling plan result in a random sample?

- A. No, because each group of n items does not have an equal chance of being selected.
 B. No, because each item does not have an equal chance of being selected.
 C. Yes, because each item has an equal chance of being selected.
 D. Yes, because each group of n items has an equal chance of being selected.

Does this sampling plan result in a simple random sample?

- A. No, because each item does not have an equal chance of being selected.
 B. No, because each group of n items does not have an equal chance of being selected.
 C. Yes, because each item has an equal chance of being selected.
 D. Yes, because each group of n items has an equal chance of being selected.

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15. Based on a study of salaries of men and women who drive expensive cars, a researcher concludes that owning an expensive car causes people to become wealthier. Do you agree with this conclusion?
-
- Choose which conclusion you agree with.
- A. No. There is no relationship between driving an expensive car and a high salary.
 - B. No. There may be a relationship between driving an expensive car and a high salary, but that does not mean that one causes the other.
 - C. Yes. People who own expensive cars do make more money.
 - D. Yes. People who drive expensive cars look wealthy and wealthy people are more likely to get raises.
-
16. Use common sense to determine whether the given event is either impossible, possible but very unlikely, or possible and likely.
- When each of 26 statistics students turns on his or her graphing calculator, all 26 calculators operate successfully.
-
- Choose the correct answer below.
- Possible and likely
 - Possible, but very unlikely
 - Impossible
-
17. Determine which of the four levels of measurement (nominal, ordinal, interval, ratio) is most appropriate.
- Letter grades in a math course
-
- Choose the correct level of measurement.
- A. Ordinal
 - B. Interval
 - C. Nominal
 - D. Ratio
-

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18. Why is a voluntary response sample generally unsuitable for methods of statistics?

Choose the correct answer below.

- A. Samples are likely to be far too small, so conclusions should not be made.
- B. Samples are likely to be far too large, so conclusions should not be made.
- C. People likely to respond are targeted by the researchers, so the sample is likely to be biased.
- D. People with special interests are more likely to respond, so the sample is likely to be biased.

19. What is the difference between a random sample and a simple random sample?

Choose the correct answer below.

- A. With a random sample, each individual has the same chance of being selected. With a simple random sample, all samples of the same size have the same chance of being selected.
- B. With a random sample, all samples of the same size have the same chance of being selected. With a simple random sample, each individual has the same chance of being selected.

20. a. In a poll, 32% of 372 surveyed adults said that pesticides are "very harmful". What is the actual number of adults who said that pesticides are "very harmful"?

b. Among the 372 surveyed adults, 70 said that pesticides are "not at all harmful". What is the percentage of people who chose "not at all harmful"?

a. What is the actual number of adults who said that pesticides are "very harmful"?

(Round to the nearest integer as needed.)

b. What is the percentage of people who chose "not at all harmful"?

% (Round to the nearest tenth as needed.)

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1. D

2. C

3. B

4. C

5. A

6. B

7. C
D
D
C

8. the first choice

9. the fourth choice

10. A
C
A

11. the third choice

12. the second choice

13. B

14. B
B

15. B

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16. the first choice

17. A

18. D

19. A

20. 119
18.8
