

## Unit 8 - Statistics Review

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Robin is interested in knowing what fruit is most popular among her classmates. She plans to survey her classmates.

Which question should the survey include to get the best results?

- A. Do you like fruit?
- B. What fruit do you like with your cereal?
- C. What is your favorite kind of fruit?
- D. Do you like apples more than bananas?

2. A survey is conducted to find the most popular food among eighth-grade students at a school. Which of the following sampling methods would give the *most* accurate results?

- A. choose every fourth student in an alphabetical list of all eighth-grade students
- B. choose every eighth-grade teacher and every eighth-grade parent
- C. choose every fourth student in an alphabetical list of all eighth-grade girls
- D. choose every eighth-grade student athlete

3. The school counselor will survey 100 students to determine which elective courses to offer next year.

Which method will provide a simple random sample of the student population?

- A. Survey the first 100 students who enter the cafeteria on a randomly selected day.
- B. Have 25 teachers each randomly select 4 eleventh-grade students to be surveyed.
- C. Assign each student a number. Use a random number generator to generate 100 numbers. Survey those students whose numbers are generated.

4. Which of the following could represent a census of a school?

- A. sophomore class
- B. P.E. classes
- C. math club members
- D. entire student body

5. Wendy wants to take a survey to determine which flavor of ice cream is the most popular at her school. Which of the following methods is the *best* way for her to choose a random sample of the students at her school?

- A. selecting ten students from each homeroom
- B. selecting members of the girls' softball team
- C. selecting members of the boys' basketball team
- D. selecting students who like her favorite flavor of ice cream

6. A poll is being taken at the Junior High School to determine whether to change the school mascot. Which of the following would be the best place to find a sample of students to interview that would be most representative of the entire student body?

- A. An algebra class
- B. The cafeteria
- C. The guidance office
- D. The faculty room

7. Milo is conducting a poll concerning people's favorite form of entertainment. Which location should he choose to obtain the *least* biased sample?

- A. a concert
- B. a movie theater
- C. a football game
- D. a grocery store

8. Wendy asked 40 students on the school football team if they have ever injured themselves playing sports. Fifteen football team members responded "Yes." Wendy concluded that 375 of the 1,000 students in her school have injured themselves playing sports. Which of these explains why her conclusion is invalid?

- A. computation is incorrect
- B. sample size is too large
- C. sample is biased
- D. sample is random

9. The 12th-grade class is conducting a survey to determine music preferences for the spring dance. The class decides to survey the first 150 students that enter the school on Monday. Which of these *best* describes why this type of sampling may give biased results?

- A. The sample size is too small.
- B. Students are randomly selected.
- C. Not all students have the same chance to be surveyed.
- D. Every other student entering the school should be surveyed.

10. Harold took a survey on America's favorite movies by asking 50 students at his school to complete the survey. Which is the *best* reason why his survey may be flawed?
- A. The students were not old enough to take a survey.
  - B. Some students are not American citizens.
  - C. The students may include people who do not go to the movies.
  - D. Harold is not getting a diverse representation from the American population.
11. A study is done to determine the attitudes of male university students towards careers. The researcher interviews 100 of the male students enrolled in a first-year course at the university. What is the sample in this situation?
- A. male university students
  - B. the 100 male students interviewed
  - C. the male students taking this course
  - D. all university students
12. A study is done to determine the attitudes of male university students towards careers. The researcher interviews 100 of the male students enrolled in a first-year course at the university. What is the population in this situation?
- A. male university students
  - B. the male students taking this course
  - C. all men taking the first-year course
  - D. all university students
13. Odyssey School wants to choose a new school mascot. They decide to take a survey to make the determination of what the new mascot will be. Which sample is best for this task?
- A. Mrs. Smith's 3rd period gym class
  - B. The chess club
  - C. The varsity football team
  - D. 5 boys and 5 girls from each grade level
14. You want to test the effectiveness of a new medicine in lowering blood pressure. You randomly select a group to take a sugar pill (unknown to the patients) and you randomly select a group to take the new medicine. Blood pressure readings are taken for both groups before the doses are given. After taking the medication for 1 month, blood pressure readings are taken again. What type of study is described?
- A. Survey
  - B. Observation
  - C. Experiment
  - D. Sample

15. A light bulb manufacturer wants to determine how long its light bulbs will burn. They decide to test every 50th light bulb produced. What type of sample does this represent?
- A. a random sample
  - B. a stratified sample
  - C. a clustered sample
  - D. a systematic sample
16. A battery manufacturer wants to determine how long its batteries will last. They assign a number to each battery produced and have a computer select the batteries to be tested. What type of sample does this represent?
- A. a random sample
  - B. a clustered sample
  - C. a self-selective sample
  - D. a systematic sample
17. A club has 20 male and 80 female members. If a committee of 20 is being formed by random selection, what is the best method of sampling to use to ensure that there is a proportional representation of males and females in the club.
- A. simple random sample
  - B. stratified random sample
  - C. cluster sample
  - D. self-selective sample
18. A company preparing to throw its annual Christmas party is collecting data to determine the top ten favorite foods of all the employees in the company. Which of the following methods represents clustered sampling?
- A. interview every second employee who arrives at work Monday morning
  - B. invite employees to fill in a survey and return it
  - C. survey all the employees in the Shipping Department
  - D. interview employees who frequently dine out.
19. The student council at a local high school is collecting data to determine the top ten favorite songs of the students in the school. Which of the following methods represents systematic sampling?
- A. interview every second student who arrives at school Monday morning
  - B. invite students to fill in a survey and return it
  - C. randomly interview 10% of students from each grade
  - D. interview students who download music on the web.

20. Which of the following is an example of systematic sampling?

- A. The first 5 numbers called in a BINGO game are selected by drawing balls from a rotating bin in which all the numbers have been placed.
- B. In order to collect information about students living in residence, the university selects 10 floors from the 180.
- C. In order to determine the percentage of firecrackers that do not work, the manufacturer fires off every 1000th firecracker produced.
- D. Surveying the first 10 drivers who enter the parking lot.

21. Suppose a researcher wishes to survey to survey high school students in a large city. There are ten high schools in the city.

Which of the following is an example of stratified random sampling?

- I. The researcher could select at random two schools from the ten and interview all the students of these schools.
- II. The researcher could assign each of the students a number and use a random number generator to select the sample.
- III. The researcher could assign each of the students a number and use a random number generator to select the first person the select every 20<sup>th</sup> person after that.
- IV. The researcher could go to one of the schools and interview the first 10 students who enter the building.
- V. The researcher could randomly select an equal percentage of students from schools on the west side and from those on the east side.

- A. I only
- B. III only
- C. IV only
- D. V only

22. Suppose a researcher wishes to survey high school students in a large city. There are ten high schools in the city.

Which of the following is an example of a convenience sample.

- I. The researcher selects at random two schools from the ten and interview all the students of these schools.
- II. The researcher assigns each of the students a number and use a random number generator to select the sample.
- III. The researcher assigns each of the students a number and use a random number generator to select the first person, then select every 20<sup>th</sup> person after that.
- IV. The researcher goes to one of the schools and interview the first 10 students who enter the building.
- V. The researcher randomly selects an equal percentage of students from schools on the west side and from those on the east side.

- A. I only
- B. II only
- C. IV only
- D. V only

23. The table gives the percentage of students in each of the grade levels at Kelvin High School. Find the number of students to select from each grade level to give a stratified random sample of 40 students.

Grade	Percentage of total school population	Number to be selected
9	30%	?
10	15%	?
11	35%	?
12	20%	?
Total	100%	40

What is the number of grade 9 students that should be chosen?

- A. 12
- B. 6
- C. 14
- D. 10

24. Maple Grove high school has a population of 1000 full-time students in grades 9 and 10. 40% of the grade 9 students and 60% of the grade 10 students are males. 70% of the students are in grade 9 and 30% are in grade 10. The population then could be divided into strata by grade and gender.

If a stratified sample of 50 students is to be selected by gender and grade level, what is the value of  $w$  in the table?

Number of Students in the sample grouped by gender and grade level

	Gender	
Grade	Males	Females
9	w	x
10	y	z

- A. 14
- B. 9
- C. 6
- D. 22

25. The number of students attending Quine High School is 100. 15 are in grade 9, 30 in grade 10, 20 in grade 11, and 35 in grade 12. Willard wants to find out if the students are interested in having a Spring Prom. He obtains a list of the 100 students at Quine High and numbers them so that so that students 00–14 were in grade 9, students 15–44 were in grade 10, students 45–64 were in grade 11 and students 65–99 were in grade 12. He decides to take a sample of 20 students using the random number generator on his calculator to select the sample. Since he wants the sample to be representative of the population of the school he decides to select a sample using the stratified random method separating the students into groups by grade level.

Grade	Number of students	Number to be selected
9	15	a
10	30	b
11	20	c
12	35	d
Total	100	20

Using this method, what is the value of  $b$  in the table?

- A. 5      B. 6      C. 7      D. 4

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|---|---|
| 1.<br>Answer:        C                            | 18.<br>Answer:        C<br>Objective:      S.IC.3 |
| 2.<br>Answer:        A                            | 19.<br>Answer:        A<br>Objective:      S.IC.3 |
| 3.<br>Answer:        C                            | 20.<br>Answer:        C<br>Objective:      S.IC.3 |
| 4.<br>Answer:        D                            | 21.<br>Answer:        D<br>Objective:      S.IC.3 |
| 5.<br>Answer:        A                            | 22.<br>Answer:        C<br>Objective:      S.IC.3 |
| 6.<br>Answer:        B                            | 23.<br>Answer:        A<br>Objective:      S.IC.4 |
| 7.<br>Answer:        D                            | 24.<br>Answer:        A<br>Objective:      S.IC.4 |
| 8.<br>Answer:        C                            | 25.<br>Answer:        B<br>Objective:      S.IC.4 |
| 9.<br>Answer:        C                            |   |
| 10.<br>Answer:        D                           |   |
| 11.<br>Answer:        B<br>Objective:      S.IC.1 |   |
| 12.<br>Answer:        A<br>Objective:      S.IC.1 |   |
| 13.<br>Answer:        D<br>Objective:      S.IC.1 |   |
| 14.<br>Answer:        C<br>Objective:      S.IC.3 |   |
| 15.<br>Answer:        D<br>Objective:      S.IC.3 |   |
| 16.<br>Answer:        A<br>Objective:      S.IC.3 |   |
| 17.<br>Answer:        B<br>Objective:      S.IC.3 |   |