Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Statistics Test Review

CP Algebra II

**Describe each quantity as a parameter or as a statistic.**

1) The average height of the senior class is 5’7.”

2) The height of every student in the school is measured, and found to be 5’4.”

3) The average amount of time it takes for ten students out of a class of 10 students to complete 5 problems is 2 minutes.

**Describe the data as qualitative or quantitative.**

4) The individual distances of 20 velociraptors covered in a day.

5) A list of John Cena’s favorite foods.

6) The amount of wood a wood chuck could chuck if a wood chuck could chuck wood, measured in pounds.

7) The amount of chicken wings Mr. Jala could consume. You can assume he has an empty stomach, and an open mind.

8) A list of top-performing pitchers in baseball.

9) A list of Mr. Jala’s favorite student-created nicknames. Happy Jalaween!

**Which Data Collection method would be most appropriate? Explain.**

**Observational Study Experiment Simulation Census Survey**

**Sample Survey**

10) The migratory patterns of velociraptors.

11) Ascertaining the world’s opinion of genetically-modified foods.

12) Determining how cold weather affects plant growth.

13) The sophomore class wants to determine a theme for their grade for Halloween.

14) A star will go super nova (explode) in 1,000,000 years and you wish to know how it will affect the surrounding solar systems.

**Which sampling method is described? Explain.**

**Random Simple Random Stratified Cluster Systematic Convenience**

15) A 1000-acre farm is divided into 50-acre subplots, and 10 of those subplots are surveyed for plant growth.

16) Your friend is organizing a dinner outing, but only asks the two people with her at her house, instead of the larger group.

17) A giant chicken mascot for a fast-food company asks every third person on the street what they think about chicken.

18) A hat has 100 slips of paper with students’ names on them. I pull out 10 names.

19) Refer to #18. Now there are 50 boys’ names, and 50 girls’ names. I randomly pick 20 names.

20) Still in regard to #18, I split the names into a pile for girls and a pile for boys. I select 10 boys’ names and 10 girls’ names.

21) Yep. Still 18. I separate the names by grade level, picking names from each grade.

23) You guessed it. Number 18. I separate the names by grade level again, picking freshmen and sophomores.

**State whether or not each situation contains bias, and explain your answer.**

24) Asking every third person on the street what they thought of the movie “Frozen.”

25) Asking people who have “Frozen” merchandise on them if they liked “Frozen.”

26) In an effort to know what Democrats think of various Republican candidates, you use a list of registered democratic voters, randomly selecting 1000 to call.

27) In an effort to know what Republicans think about Republican candidates, you ask every 4th person on the street.

**Use the z-score formula for the following questions. Show all work.**

28) The average test grade was an 79% with a standard deviation of .7%. **(a)**What is the z-score of a student who scored 90%? **(b)** A student who scored 79.7%? **(c)** What is the test score of a student whose z-score is -1.25? **(d)**Would a student who scores an 80.6% be considered an outlier? Why or why not? **(e)** Sketch part (d) using the provided x-value, the corresponding z-score, the average, and the standard deviation.

**Calculate the standard deviation manually for both data sets. Verify your results on a graphing calculator.**

30) 48.0, 53.2, 52.3, 46.6, 49.9

31) 78, 90, 456, 673, 111, 381, 21

**Use what you know about data percentages and the normal distribution to answer the following questions.**

32) A teacher gives a test and finds the grades to be normally distributed with a mean of 83% and a standard deviation of 5%.

a) What percentage of test-takers scored above 83%?

b) What percentage of test-takers scored in between a 68% and a 98%?

c) What percentage of test-takers scored between 73% and 83%?

d) What percentage of test-takers did not score higher than a 98%?

 e) What score range corresponds to 95% of the scores?

**Sample Proportions & Margin of Error.**

33) One thousand people are asked their favorite season and 280 respondents answer “Fall.”

a) Determine the margin of error.

b) What is the interval for the true population proportion, if the population is 10,683 people?

**Conditional Probability and Independence**

34) Freshman and seniors are asked about their preferred way to spend downtime. Given a choice between reading and videogames, the responses were as follows. Use the table below to answer the questions.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Freshmen** | **Seniors** | **Totals** |
| **Reading** | 62 | 74 | 136 |
| **Videogames** | 80 | 95 | 175 |
| **Totals** | 142 | 169 | 311 |

Let V be the event that a respondent likes videogames, and S be the event that a respondent is a senior.

 a) Find P(S given V).

 b) Check to see if S and V are independent. Thoroughly support your work.