Statistical Studies Review Honors Math 3 Name: _____

Date: _____

 A survey was taken asking registered voters to select which candidate they would vote for in the upcoming election. 42% of the voters are planning on voting for Candidate A. If the margin of error is +/- 3, what possible outcome do you expect after the election?

Candidate A could get between 39% and 45% of the vote

2. The local Planet Fitness has used a computer program to select 100 of their members to research if spraying a floral scent increases the amount of time people spend in the gym. For one week the employees of the gym would spray the scent and then time the 100 members.

a) Would you consider the sample to be random? Why or why not?

If all the members of the gym were put into the computer...then yes!b) What type of statistical study did the researchers conduct? Defend your answer.Observational, they did not force anything on the 100 members.

- If you want to reduce your margin of error by 40%, what would you have to do to the sample size? Support your answer. Multiple your population by 25/9.
- 4. Find the sample size needed to create a margin of error of 3.5%.

About 816 people

5. One of the major components of a well-defined statistical study is to choose a sample population that is random. Using your knowledge of what is considered random, determine which of the following scenarios is considered random.

- Lifetime Fitness is conducting a survey of its members on their experience at the gym. Each member of the gym was assigned a number. A random number generator then selected 100 numbers. Random
- Lifetime Fitness is conducting a survey of its members on their experience at the gym. Members who were enrolled in Yoga, Zumba, and Cycling classes were assigned a number. A random number generator then selected 100 numbers. Not Random
- A new cell phone company will select 2000 people to conduct an experiment testing a new type of phone. Participants will be given either a new phone or may be asked to use their current phone. Participants were selected by random draw based on their cell phone number. Not
- Mr. Maxwell put the names of every student he currently teaches on an index card. He then drew 25 names out of a hat. He will then record how often they wear jeans versus their test average to determine if there is a correlation. Random

6. Determine if the scenario described below would be considered a survey study, observational study, or an experimental study.

_____Survey______ Lifetime Fitness is using a questionnaire to ask its members their experience at the gym.

Experimental A cell phone company will select people to test a new type of phone. Participants will be given either a new phone or may be asked to use their current phone.

<u>observational</u> Mr. Maxwell will record how often students wear jeans versus their test average to determine if there is a correlation.

7. 30% of Aliens have purple fingers. If you select 5 random Aliens 1000 times, about how many times would you get all five of them to have purple fingers? Explain how you could conduct a simulation using a bag of marbles. Put 3 purple marbles and 7 non purple marbles in a bag. Select 5 marbles. Repeat 1000 times. Count up the times all 5 were purple and divide by 1000.

For each situation, identify the sampling technique used (simple random, cluster, stratified, convenience, voluntary response, or systematic):

____Systematic______ 8. Every 5th person is given a survey that will determine the school's favorite color.

_____Random______9. Every student's name is placed in a hat and 50 are selected and asked their favorite color.

_____Voluntary Response____10. A Snap Chat Poll (is that a thing) is released asking students their favorite song.

_____Stratified______ 11. 25 students are selected from each graduating class and asked their favorite song.

_____Convenience______12. Mr. Mares asked students in the car pool line what is your favorite song.

____Cluster_____ 13. All freshman were asked their favorite song.

Determine if the questions below are biased or unbiased.

14. ___Unbiased_____ Do you prefer dogs or cats?

- 15. ____Biased_____ Does the fake news help or hurt America?
- 16. ____Biased_____ Do you think the extravagant wedding of Prince Harry and Meghan Markle was worth the money?
- 17. ____Unbiased_____ Do you think Cem is cool?