

Wheeler High School AP Statistics Summer Assignment

Welcome to AP Statistics!

All of your work is attached with all instructions. Be sure to finish all work by the beginning of school in August as it will be collected and graded as a 50 point homework assignment. There will also be an assessment on the materials in this packet within the first month of returning to school.

1. Reading and Vocabulary

- Go to www.stattek.com
- Look for survey sampling, then click on topics that are on the reading and vocabulary list.
- Use khan academy to assist you in answering the open ended questions and the graphing calculator parts.
- Our textbook we use in class is “The Practice of Statistics” fifth edition, Josh Tabor if you need more assistance in doing this assignment.

If you have any questions you can email Mr Cervini @ cervinij@northstonington.k12.ct.us

Part One: Reading and Vocabulary

Define each of the following terms. Give your definition in complete sentences.

1. Population-

2. Census-

3. Sample-

4. Convenience sample-

5. Bias-

- Under-coverage-
- Nonresponse-

6. Voluntary response sample-

7. Random sampling-

8. Simple random sample-

9. Strata-

10. Stratified random sample-

11. Clusters-

12. Cluster sample-

Part II: Open Ended Questions

1. A department store mails a customer satisfaction survey to people who make credit card purchases at the store. This month, 45,000 people made credit card purchases. Surveys are mailed to 1000 of these people, chosen at random, and 137 people return the survey form. Identify the population and the sample.
2. You have probably seen the mall interviewer, approaching people passing by with clipboard in hand. Explain why even a large sample of mall shoppers would not provide a trustworthy estimate of the current unemployment rate.
3. A survey of drivers began by randomly sampling all listed residential telephone numbers in the United States. Of 45,956 calls to these numbers, 5,029 were completed. The goal of the survey was to estimate how far people drive, on average, per day.
 - What was the rate of nonresponse for this sample (give the answer as a %)?
 - Explain how nonresponse can lead to bias in the survey. Be sure to give the direction of the bias.
4. A lumber company wants to estimate the proportion of trees in a large forest that are ready to be cut down. They use an aerial map to divide the forest into 200 equal-sized rectangles. Then they choose a random sample of 20 rectangles and examine every tree that's in one of those rectangles.
 - What is the name for this kind of sampling method?
 - Give a possible reason why the lumber company chose this type of method.

Part III: Graphing Calculator and Graphs

1. The local genealogical society in Coles County, Illinois, has compiled records on all 55,914 gravestones in cemeteries in the county for the years 1825 to 1985. Historians plan to use these records to learn about African Americans in Coles County history. They first choose an SRS of 395 records to check their accuracy by visiting the actual gravestones.
 - Explain how you would use your calculator or Table D (attached) to choose an SRS. Your description should be clear enough for a classmate to carry out your plan.
 - Use your method from above to choose the first 3 gravestones.

2. Draw and label a dot plot of the following sample proportions: 0.4, 0.5, 0.6, 0.7, 0.85, 0.8, 0.85, 0.4, 0.5, 0.6, 0.7, 0.5, 0.6, 0.7, 0.45, 0.45, 0.55, 0.55, 0.55, 0.65, 0.65, 0.65, 0.6, 0.6, 0.6
 - Where is the graph centered?
 - Is there a clear shape?
 - How much do the sample proportions vary around the center?

Part IV: Multiple Choice

- 1) To gather information about the validity of a new standardized test for tenth-grade students in a particular state, a random sample of 15 high schools was selected from the state. The new test was administered to every 10th grade student in the selected high schools. What kind of sample is this?
- a. A simple random sample
 - b. A stratified random sample
 - c. A cluster sample
 - d. A systematic random sample
 - e. A voluntary response sample
- 2) Your statistics class has 30 students. You want to call an SRS of 5 students from your class to ask where they use a computer for the online quizzes. You label the students 01, 02, 03... , 30. You enter the table of random digits at this line:
- 14459 26056 31424 80371 65103 62253 22490 61181
- Your SRS contains the students labeled
- a. 14, 45, 92, 60, 22
 - b. 14, 31, 03, 10, 22
 - c. 14, 03, 10, 22, 22
 - d. 14, 03, 10, 22, 06
 - e. 14, 03, 10, 22, 11
- 3) The web portal AOL places opinion poll questions next to many of its news stories. Simply click your response to join the sample. One of the questions in January was “Do you plan to diet this year?” More than 30,000 people responded, with 68% saying “yes”. You can conclude that
- a. About 68% of Americans planned to diet in 2008
 - b. The poll used a convenience sample, so the results tell us little about the population of all adults.
 - c. The poll uses voluntary response, so the results tell us little about the population of all adults.
 - d. The sample is too small to draw any conclusion
 - e. None of the above.