Surveys and Sampling

Name: Key

Period:

Identify the population and the sample

1. Principal Swenson has received multiple complaints that the chicken sandwiches sold in the cafeteria are cold. He has the cafeteria staff wrap the sandwiches in numbered wrappers and he chose 20 chicken sandwiches by placing the numeric labels of all chicken sandwiches on equally sized slips of papers and drew out 20 numeric labels from a well-mixed container.

Population: _All chicken sandwiches sold in the cafeteria_

Sample: _20 randomly chosen chicken sandwiches_

2. Delta airlines randomly selected two of their flights and surveyed every customer on those flights to gage customer satisfaction.

Population: _All Delta customers_

Sample: _All customers on the two randomly chosen flights_

3. Amazon mailed a customer service satisfaction survey to people that called into their customer care center. This month 13,000 people called into the center. Surveys were mailed out randomly to 500 of these people by picking every 26th person on an ordered list of customers. _320 responded to survey._

Population: _13,000 people who called into Amazon's customer Service_

Sample: _320 customers who mailed back the Survey_

4. Name the sampling method used in question 1. Explain.

This is an SRS using the "Hat method". Every possible chicken ~~sample~~ sandwich has an equal chance of being chosen.

5. Name the sampling method used in question 2. Explain.

This is a cluster sample. The two randomly planes/flights are the clusters. Each member in cluster is selected for the sample.

6. Name the sampling method used in question 3. Explain.

This is a systematic sample. Every n^{th} customer is chosen for Sample.

Counselor Perrotti is concerned that students are not getting enough sleep. He surveys the first 50 students through the school doors one morning. The students reported an average of 7.8 hours a sleep in the last night.

7. What type of sampling method did Mr. Perrotti use? Explain.

Convenience sample. Mr. Perrotti chose students who were easiest to reach.

8. This sampling method is biased. Explain why. Bias occurs when one outcome is favored. In this case students who get more sleep are more likely to get to school early and be a part of the sample.

9. Does the average reported, 7.8 hours, likely overestimate or underestimate the true average hours of sleep a night for OHS students? Explain.

It likely overestimates average hour of sleep for OHS students. Students who are up late, often not getting much sleep, are more likely to arrive to school later.

A local radio station, 105.1, asked their listeners to phone in to discuss their feelings about Florida's new ban on using cell phones while driving. 12% agreed that cell phone use should be banned while driving.

10. What type of sampling method did ~~Mr. Perrotti~~ the radio station use? Explain.

Voluntary response/self selection
listeners choose to call into the station to take part in the survey.

11. This sampling method is biased. Explain why.

Those that feel strong about the ban (probable against) will likely be the majority of listners who call in.

12. Does the 12% who agree with cell phone ban while driving likely overestimate or underestimate the true proportion of drivers who agree with the ban? Explain.

It likely underestimates the true proportion who agree with the ban because those who feel strongly about ban (probably against) will care enough to call in.

You are interested in whether students trust the information/news on Facebook. You want to randomly select 5 AP Statistics students to answer the question, "How much, on a scale of 1-5, do you trust news on Facebook? Where 1 represents no trust and 5 represents total trust.

13. Explain how you would use the random digits below and a class roster to randomly select 5 AP Statistics Students. Start with line 113.

113	62568	70206	40325	03699	71080	22553	11486	11776
114	45149	32992	75730	66280	03819	56202	02938	70915
115	61041	77684	94322	24709	73698	14526	31893	32592
116	14459	26056	31424	80371	65103	62253	50490	61181
117	38167	98532	62183	70632	23417	26185	41448	75532
118	73190	32533	04470	29669	84407	90785	65956	86382

* Give each student a class roster

1) Give each student a distinct numeric label making sure to use the same number of digits for each student

... 01-25

2) Start at line 113. Record two-digit labels reading left to right that fall within your range of labels. Ignore repeats and numbers outside of range.

3) Stop when you have your first 5 distinct labels.

14. Describe how you would take an SRS of 5 students using the "hat method."

Write each students name or numerical label on equally sized slips of paper. Place in a container. Mix well. Draw out 5 slips of paper to represent your sample.

15. You are going to take this study to a new level. You believe that gender may play a role in how students feel about news on Facebook. You decide to extend the study to all students at OHS. Describe how you would take a stratified sample of students to survey at OHS.

Separate the males and females into two groups. Take an SRS of equal proportion from both groups to represent your sample.

16. OHS is very large, over 3400 students. Taking a stratified sample may be too time consuming. Describe how to take a cluster sample of students to survey at OHS.

Answers will vary.

Randomly select 3 classrooms on campus. All students in those 3 randomly selected classrooms will be your sample.