Statistical Reasoning Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

WS 1.4 Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Day \_\_\_\_\_\_\_

**Observational vs. Experimental**

1. Before a new variety of frozen muffin is put on the market, it is subjected to extensive taste testing. People are asked to taste the new muffin and a competing brand and to say which they prefer. Is this an observational or experimental study? Explain.
2. A teacher asks her students to write down all they eat in a day and then calculate the total number of calories consumed. Is this observational or experimental?
3. The cafeteria manager of a high school wants to find out if high prices are keeping student from using the cafeteria. Fifty students are chosen at random to receive help-price lunch passes every day for a month. The manager then records the number of passes used. Is this observational or experimental?
4. My grandmother once told me the color red makes bees angry. Here is a method I have designed to test her claim: Select half my students to wear white clothes and the other half to wear red clothes. Then, let a bunch of bees loose in the classroom and record how many time each student gets stung.
	1. Observational or Experimental?
	2. What are the variables?
	3. If students wearing red clothes are stung much more, can we conclude that the color red causes bees to get angry?
	4. Are there any flaws or issues with this study?
5. Compare the grades of 25 math students who used a calculator on their final exam vs. 25 students who did not use a calculator. Observational or Experimental?
6. Determine which brand of orange juice people prefer. Participants are asked to taste both brands with knowing which brand they are tasting. Observational or Experimental?
7. To determine whether a review session will help students scores on a Math Test, a teacher divides her class into two groups. One group is required to attend a study session. The grades on the test for both groups are then compared. Observational or Experimental?
8. Many people eat fast food as a regularly. Is fast food unhealthy? The best answer may be it depends on what you eat. The following table lists nutritional facts about popular fast food burgers:
	1. What are the individuals?
	2. What are the variables?

c. Are fast food chicken sandwiches healthier than burgers? Use the internet and find some data

 on a popular fast food chicken sandwich.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sandwich** | **Restaurant** | **Calories** | **Fat** | **Cholesterol** | **Sodium** |
|  |  |  |  |  |  |

Populations vs. Samples

***Identify each of the following data sets as either: (P) Population or (S) Sample***

\_\_\_\_\_\_\_1. ….the age of a few randomly selected participants in a study about a race of runners

\_\_\_\_\_\_\_2. ….the annual salary of each full-time teacher in a study about Phoenix High School

\_\_\_\_\_\_\_3. ….a survey of 750 Georgia homeowners in a study about all of Georgia’s homeowners.

4. A beverage company wanted to see if people in the United States liked their new logo. Which choice **best** represents a population?

A. A selection of logo artists.

B. Every person in the United States.

C. A selection of shoppers from different states.

D. 3,800 children age 5 – 15

5.A musician wanted to see what people who bought his last album thought about the songs. Which choice **best** represents a sample?

A. Every person who bought the album.

B. A selection of people who didn't want to buy the album.

C. 250 girls who bought the album.

D. A selection of 3,294 people who bought the album.

6.A gaming website wanted to find out which console its visitors owned. Which choice **best** represents a population?

A. Visitors to the 3DS section.

B. All of the website visitors.

C. Visitors to the PS4 section.

D. Visitors who are on the website for more than 5 minutes.

7.Before a nation wide election, a polling place was trying to see who would win. Which choice **best** represents a sample?

A. A selection of voters over age 50.

B. A selection of male voters.

C. A selection of voters of different ages.

D. All voters.

8.A toy store owner tracking how much kids spend each month on toys. Which choice **best** represents a population?

A. All of the kids who buy toys.

B. 227 rich kids.

C. 228 boys age 7 - 15

D. 235 kids from age 10 to 15.