

Experiments, Surveys, and Observational Studies Comparisons

Name: _____

1. Complete the table to the left answering yes or no, then answer the following:

Has?	Random Sample of subjects?	Randomly Assigned Treatments?
Sample Survey or Poll		
Experiment		
Observational Study		

a) Taking a random sample of subjects is a key characteristic of certain statistical studies.

i. Why is taking a random sample of subjects important for generalizing results to a bigger group you're studying?

ii. What problems does it help eliminate that could possibly be present in study?

b) Why is randomly assigning treatments important to establishing their effectiveness.

c) Fill out the following table with yes or no:

	Can generalize to larger population?	Can you prove causation?
Experiment		
Survey		
Obs. Study		

2. For each study, Identify the following: What type of statistical study it is, if there is evidence of causation by the treatments, and whether or not you can generalize to a bigger group. Explain your reasoning.

a) A recent, randomized poll of 2625 elementary school children found that the mean grade of obese children was less than the mean grade of children with a standard weight.

b) At an airport, luggage is randomly selected during a day and searched. The luggage's owner's gender is documented and there was a result that the proportion of men's luggage containing contraband was higher than that of women's luggage.

c) A community college student interviews everyone in his biology class about their car ownership and its effect on their tardiness. He got results indicating that the mean number of tardies for the car owners was greater than the mean number of tardies for non-car owners.

d) A biomedical company selects 500 cancer patients randomly from American private and public hospitals (luckily everyone agreed to participate). The company randomly assigned 250 of them to receive an experimental injection and 250 to receive a saline injection in addition to their normal treatments. Neither the patients nor their doctors know who is receiving the experimental injection. The evaluators find statistically significant results that the remission rate was higher in the experimental group.