1. How do you control for biases?
    a. Biases can be controlled by incorporating randomization, matching similar characteristics. Replication of previous studies which can contribute to bias prevention, and using sampling methods that represent the entire population.

2. What are confounding variables?
    a. Confounding variables are variables that influence both dependent and independent variables. They can cover the true relationship between important variables.

3. What is A/B testing?
    a. A/B testing is when a method is used to compare 2 versions of a single variable. This helps to see the response to multiple variables and seeing which is more effective.

4. When will you use Welch t-test?
    a. The Welch t-test is used when the 2 groups have unequal variances and unequal sample sizes. This method is known to be more reliable when it comes to groups with unequal variances and unequal sample sizes.

5. A company claims that the average time its customer service representatives spend on the phone per call is 6 minutes. You believe that the average time is actually higher. You collect a random sample of 50 calls and find that the average time spent on the phone per call in your sample is 6.5 minutes, with a standard deviation of 1.2 minutes. Test whether there is sufficient evidence to support your claim at a significance level of 0.05.

(5)

$\mu = 6$ $\quad \bar{x} = 6.5$ $\quad \alpha = 0.05$

$n = 50$ $\quad s = 1.2$

$$t = \frac{6.5 - 6}{1.2/\sqrt{50}} = 2.946$$

$2.946 > 1.676$, Reject Claim

Critical Value $= 1.676$

6. A researcher wants to determine whether there is a difference in the mean scores of two groups of students on a math test. Group A consists of 25 students who received traditional teaching methods, while Group B consists of 30 students who received a new

teaching method. The average score for Group A is 75, with a standard deviation of 8, and the average score for Group B is 78, with a standard deviation of 7. Test whether there is a significant difference in the mean scores of the two groups at a significance level of 0.05.