Name: **Statistics Classwork 1**

1-A Populations and Samples

1. Fill in each blank with μ, $\bar{x}$, σ, s, p, $\hat{p}$, n, or a value.

Lincoln is studying how much high school students worked over the summer. He surveys the _____ = 33 students in this class and finds that _____ = 55% had a job, and the average number of hours per week for those jobs was _____ = 21.4 with standard deviation 6.1. Therefore, he estimates that _____ = _____% of high school students had a job last summer, and high school summer jobs on average were _____ = _____ hours per week with standard deviation _____ = _____ hours per week.

2. Identify the following for Lincoln's study above.

a) the sample

b) the population

3. State an aspect of Lincoln's study may have led to sampling bias.

4. Using the symbols p and μ, explain how sampling bias may have affected Lincoln's conclusion.

1-B Measuring Data

5. Otto is studying the effects of marijuana use on academic success on high school students.

a) What is the independent variable?

b) What is the dependent variable?

b) Give reasonable levels of the independent variable.

d) Give a reasonable operational definition of the dependent variable.

e) What is the level of measurement of this independent variable?

f) What is the level of measurement of this dependent variable?

1-C Research Designs

6. Give a possible mediator variable for Otto's study, and explan how it could mediate the relationship between marijuana use and academic success.

7. Give a possible moderator variable for Otto's study, and explan how it could moderate the relationship between marijuana use and academic success.

8. What makes Otto's study not a true experiment?

9. Give a possible example of each of the following outcomes for Otto's study.

a) a main effect

b) a simple effect

c) an interaction

10. Fill in each blank with *a* or *e*.

a) Marijuana may __ffect academics.

b) Marijuana may have an __ffect on academics.

c) The __ffects of marijuana increase with more usage.

d) Some people are particularly __ffected by marijuana.

1-D Extraneous and Confounding Variables

11. Assume Otto finds that the marijuana users perform worse academically.

a) What would be a causal relationship between academics and using marijuana?

b) Why will he not be able to conclude this?

c) What can he conclude?

12. Give a possible extraneous variable for Otto's study, and explain how it could cause random error.

13. Give a possible confounding variable in Otto's study, and explain how it could cause systematic error.

14. Sketch a diagram showing how the variables stated for Otto's study may affect each other.

15. For each of the following claims, identify a possible confounding variable and write a sentence explaining how it could make the claim true correlationally but not causally.

a) Teens who binge drink are more susceptible to anxiety later in life.

b) People who live near industrial zones are more likely to have health problems.