**PRACTICE PROBLEMS**

# CHAPTER 1: SETTING THE STAGE: WHY LEARNING THIS STUFF IS IMPORTANT!

1. If I wanted to know the average reading level of prison inmates in the United States, and I studied this by giving a reading comprehension test to 700 inmates whom I’ve selected from across the country, what would be my population and what would be my sample?
2. If the actual reading level of all prison inmates in the United States is the 9.2nd grade, and the reading level of the 700 inmates I’ve selected and studied is the 9.6th grade, then the 9.2nd grade is my \_\_\_\_\_\_ (population parameter or sample statistic) while the 9.6th grade is my \_\_\_\_\_\_ (population parameter or sample statistic).
3. What is the relationship between my sample statistic and my population parameter?
4. Is my population parameter known or unknown? Is it knowable?
5. When I take a sample from a population, will the sample statistic be equal to the population parameter? Why or why not? If I took a second sample, will that sample statistic be equal to the first sample statistic? What is this called?
6. If the sample statistic is not equal to the population parameter, what can I do to ensure that they are close? In other words, how can I increase the precision or accuracy of my sample statistic? What is the difference between descriptive and inferential statistics?
7. If I take a sample of 700 prison inmates, and all I want to know about them is the average reading level of this group of 700, am I using descriptive or inferential statistics?
8. If I take a sample of 700 prison inmates and I want to know their reading level so that I can say something about the reading level of prison inmates in the entire United States, am I using descriptive or inferential statistics?
9. If I want to make an inference from a sample statistic to an unknown population parameter, should I use a nonprobability or a probability sample?
10. The symbol or term for a population parameter for a mean is \_\_\_\_\_\_ and the symbol or term for the corresponding sample mean is \_\_\_\_\_\_.
11. The symbol or term for a population parameter for a proportion is \_\_\_\_\_\_ and the symbol or term for the corresponding sample proportion is \_\_\_\_\_\_.

12. If I measured the age, IQ, and number of prior delinquent acts committed within a sample of 200 boys sent to juvenile court,

1. Would age be a variable or a constant?
2. Would IQ be a variable or a constant?
3. Would sex (gender) be a variable or a constant?

13. If I was interested in knowing whether or not boys who had low IQ scores were more delinquent than boys with higher IQ scores, what would be my independent variable and what would be my dependent variable?

14. If I was interested in knowing if older boys were more likely to be delinquent than younger boys, what would be my independent variable and what would be my dependent variable?

15. What is the level of measurement for the following variables?

1. age measured as the number of years old someone is measured as the following:

under 10 years old or younger

10–29 years old

30–59 years old

60 years old or older

1. whether someone went to a public, private, or parochial elementary school
2. number of prior convictions measured as the actual number of convictions
3. number of prior convictions measured as the following:

none

1–2 convictions

3–4 convictions

5–6 convictions

7 or more convictions

1. Number of months sentenced to prison in actual months.
2. Type of weapon used in committing a murder: gun, knife, club or other blunt instrument, hands, some other means.

16. Calculate the rate of hate crimes for the following cities:

# of Hate Crimes Population Rate per 100,000

Boston, MA 234 6,453,442

Columbus, OH 112 1,132,475

Montgomery, AL 100 425,185

Los Angeles, CA 198 8,453,809

Chicago, IL 202 9,535,000

New York, NY 255 10,435,333

17. In which city are you most likely to become the victim of a hate crime? In which city are you least likely to become the victim of a hate crime?

18. Here is a frequency distribution of the number of executions in several U.S. states in the past 5 years.

State # of executions p %

Alabama 6

Virginia 13

Texas 52

Maryland 1

Louisiana 8

Oklahoma 24

Total

Calculate the total number of executions in these states and fill in the column of proportions and percentages.

19. What percentage of the total number of executions were done in Texas?20. What proportion of the total number of executions were done in Virginia?

21. How many executions were done in Oklahoma?