In-Class Activity 1.A Statistics vs. Mathematics – What Is the Difference?

This class is a community of learners. Having shared goals strengthens communities. Our shared goal for this course is to maximize the learning experience for everyone. Therefore, much of the work in the course is done collaboratively, where you will work in pairs or small groups to discuss, plan, and execute activities in the curriculum. Engaging in these activities will help you become a critical thinker and provide you with a space to share and learn from each other's experiences.

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1) Your instructor will show you a video entitled *Why Statistics?* As you watch this video, record some notes regarding why we study statistics.

Objectives for the activity

You will begin to understand:

☐ Some of the fundamental differences between statistical thinking and mathematical thinking.

☐ The statistical process as an investigative process.

☐ How working together builds a positive learning community.

You will be able to:

☐ Identify some key elements of statistical thinking.

☐ Describe the importance of statistical literacy.

Next, you will work in groups to complete the following questions. Quickly introduce yourselves to the members in your group by telling them your first and last name, along with your desired career pathway. Determine which students in the group will serve in the following roles: note-taker, reporter, and timekeeper.

2) In the video, one of the statisticians from the United Statistics Bureau discussed how analyzing statistics is like a microscope that allows us to see things that are just too big for our eyes to take in. Let's continue to explore this idea.

Part A: Use the table below to record estimates of the number of hours of sleep you were able to get for each night.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Part B: Write 293 in expanded notation.

Part C: Compare your answers for Parts A and B with the other members in your group. Discuss how they are the same, how they are different, and possible reasons why they are the same or different.

In Part A, the information you recorded in the table are data! The sleep times are not all the same, as they changed from person to person and even from night to night. You also may have identified some reasons that impacted the amount of sleep each student was able to get each night. You discovered that the data varied from student to student. It is highly probable that there were no students who had the exact same answers in their tables.

Part D: Consider the number of movies college students watch during freshmen year. If you asked 100 freshmen on your campus this question, do you expect to get the exact same answer for each student?

3) In statistics, we want to ask investigative questions.

Part A: Do you think you would find any studies on the number of hearts that humans have?

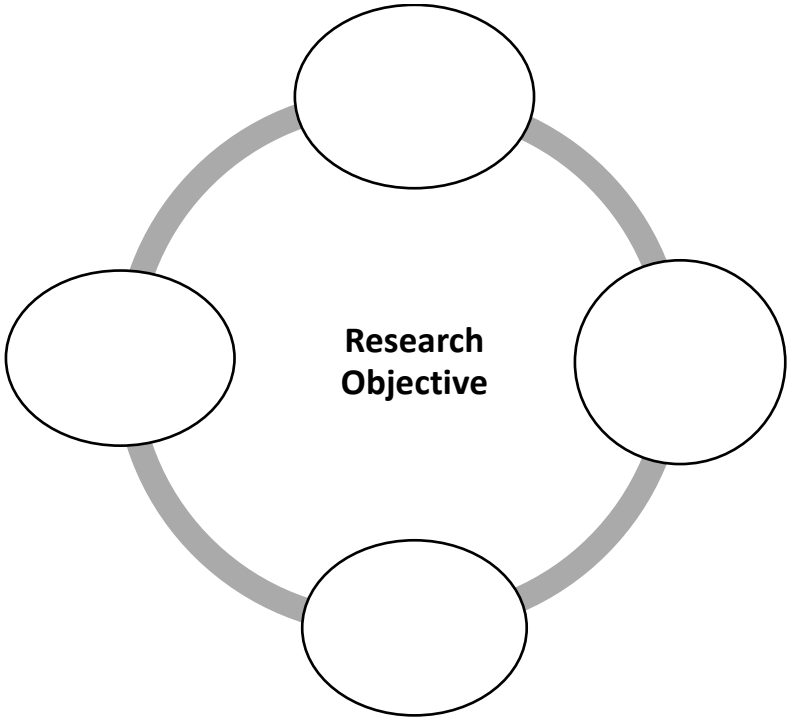
Part B: What is an investigative question that you could ask regarding the data you recorded in Question 2, Part A?

Part C: What additional information would you need to collect if you wanted to know why college students do not get enough sleep each night?

4) Identify at least one difference between mathematics and statistics.

The statistical process is an investigative process. It is also a repetitive or cyclical process. Analyzing the results of one study can often lead researchers to consider other research questions and then conduct additional research. Thinking more carefully about how the data were collected may also lead researchers to consider ways to improve the data collection process.

5) Complete the following diagram to illustrate the statistical process.



6) Why do you think statistics and statistical literacy are important?