Introduction to Statistics
Activity 1.3c **Name:**

Meditation and Exam Performance

A university wellness center wants to know whether short guided "micro-meditation" breaks can improve students' exam performance. They recruit 120 first-year students enrolled in the same introductory psychology course. Before the first midterm, the wellness center randomly assigns students to one of two groups:

- Group A (60 students): Before each of the three class sessions leading up to the midterm, these students participate in a 5-minute guided meditation audio recording.
- Group B (60 students): In each of those same class sessions, these students do not receive the meditation session.

All students then take the same midterm exam under identical conditions. The researchers compare average midterm exam scores between the two groups. To ensure fairness, the professor teaching the class does not know which students are in which group. After the exam, the wellness center also records background information from each student, including:

- Amount of sleep the night before the exam
- Stress level (self-reported on a 1–10 scale)
- Whether they regularly meditate outside class
- Whether they studied more or less than usual for this exam

a) Identify the explanatory and response variables in this study.

b) Is this study a controlled experiment or an observational study? Explain.

c) Does this study make use of a comparison group? Explain.

d) Identify a lurking variable. Why is it a lurking variable?

e) Are there any confounding variables? If so, identify one. If not, why not?

f) Does this study make use of random assignment? Explain.

g) Once the study is completed, does its design allow you to make a cause-and-effect conclusion about the effect of meditation on exam performance? Why or why not?