
L2: Data Detectives Lab

Complete the following exercises with your small group. The goal of this lab is to investigate small “data mysteries” using calculations and reasoning. For each problem, do the calculations and then explain what the data are telling you.

1. What is a “typical” texting habit?

Below are the number of texts sent yesterday by 12 students:

15, 42, 37, 20, 18, 19, 56, 22, 21, 19, 300, 25

Central Question: What would you say is a “typical” number of texts a student sends?

- (a) Calculate the mean, median, and mode.

- (b) One student looks very different from the rest. Identify this possible outlier.

- (c) Recalculate the mean and median without the outlier.

- (d) Which measure of center tells the better story here, and why?

2. Who had the most unusual night of sleep?

Here are the hours of sleep for 10 students on a given night:

7, 6, 8, 5, 4, 9, 6, 8, 20, 7

Central Question: Which student's sleep stands out the most compared to the group?

- (a) Find the range of the data.

- (b) Calculate the mean and standard deviation.

- (c) Identify the most unusual value.

- (d) How many standard deviations away from the mean is the most unusual value?

- (e) What does this tell you about that student's sleep compared to the others?

3. Do math majors really study more?

Below are 8 students, their major, and their study hours per week:

Student	Major	Study Hours	Student	Major	Study Hours
A	Business	8	B	Math	15
C	Business	6	D	Math	18
E	English	12	F	English	10
G	Business	9	H	Math	20

Central Question: Is the stereotype that math majors study more actually true in this sample?

- (a) Count how many students are in each major.

- (b) Calculate the mean study hours for Business, Math, and English.

- (c) Compare the averages. Which group studies more in this dataset?

- (d) If you only reported the overall mean, ignoring majors, what information would be lost?

4. Create a Short Data Story

Choose one of the three data mysteries above. Write a short (3-4 sentence) data story explaining what happened. Your story should include:

- **A beginning:** What was the question or mystery?
- **A middle:** What calculations or comparisons helped you investigate?
- **An ending:** What conclusion did you reach from the data?

5. Wrap-Up Discussion

Answer the following questions with your group.

- (a) In which dataset did an outlier matter most?

- (b) How did breaking data into categories change the story we could tell?

- (c) What is one way data could be technically correct but still misleading?