Guiding questions:

With answers

1. Click on “show estimates from linear regression”
2. In simple words, please explain what the following terms represent:
   1. Intercept: **Points earned if the student does not study at all**
   2. Effect estimate: **Points earned per hour studied**
   3. Standard error: **Reliability of the estimate [Larger SE = less reliable]**
   4. P-value: **Significance of the association**
3. Keeping everything else the same, increase the number of observations. What happens to the p-value? **Decreases**
4. Keeping everything else the same, play around with the effect estimates (2nd slider bar) and error amounts (3rd slider bar). Note what happens to the significance of the association as you change these terms.
5. Set the sliders as follows:
   1. 1st slider: 50
   2. 2nd slider: 1
   3. 3rd slider: 10
6. Check the box to add “teacher” as a confounding variable.
7. Do this a couple times, observing what happens to the p-value when a confounding variable is added. **Usually, the p-value is less significant if there’s confounding**.
8. Increase the average point difference between Mr. A and Mr. B’s classes. How does this affect your ability to detect a significant effect of studying hours on test scores? **Increasing the difference decreases the ability to detect a significant effect.**
9. Color by teacher to see how the data is confounded by teacher.