Problem 1 – Estimate Vs. Actual Time

When Brian dropped his watch to the bottom of the lake, he had to hold his breath long enough to dive down nearly 20 feet, locate the watch, grab it, and swim back to the surface. Could you hold your breath long enough to retrieve the watch? Which of your classmates are best suited for this task? Use this activity to help you explore the answers to these questions.

1. How long do you think Brian would need to retrieve the watch? _____

2. How long do you think you could hold your breath in seconds? _____

3. What are your actual three trials? Trial 1: _____ Trial 2: _____ Trial 3: _____

4. Create a scatter plot of the estimates (Question 2) as the *x*-coordinate and the *longest* actual trial (Question 3) as the *y*-coordinate. The plot should have one point per student.

    To do this, enter the *x*-coordinates in **L1** and the *y*-coordinates in **L2**. Press LIST for L1 and L2. If there are already values in the lists, move to the top of the list and press CLEAR ENTER.

    Then, set up a stat **Plot1** as shown at the right.

    Draw your scatter plot at the right.
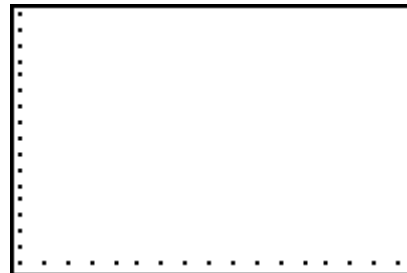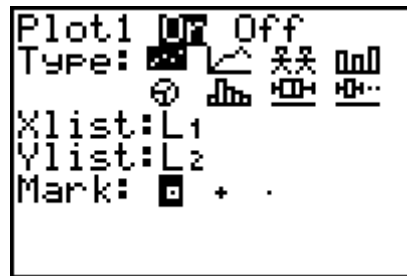
5. With your partner, determine what the scatter plot tells you about the estimates made and the actual times people could hold their breaths. Summarize your observations.

    _____

    _____

    _____

6. What do you think the graph would look like if each person estimated the time they could hold their breath *exactly*? _____

    _____

    _____

Problem 2 – X-Y Line

7. Copy L2 into L3. Go to the top of L3 and press 2nd LIST 2 ENTER. Then, set up **Plot2** as you did in Question 4 but graph L2 versus L3. When you press GRAPH, what do you notice? _____

    _____

8. Draw your new scatter plot at the right.

9. Turn Plot1 back on. Press TRACE and move to one of the points in Plot1 above the points in Plot2. What does this point above Plot2 tell you? _____

_____

_____

10. Now, press TRACE and move to one of the points in Plot1 below the points in Plot2. What does this point below Plot2 tell you? _____

_____

11. Overall, is there a trend in the data? _____

_____

12. In Brian's watch situation, which student would be best to help and why?

_____

_____

Problem 3 – Box Plots

13. Now, create a box plot of the estimated data and the actual data. Change Plot1 to select the ⊡ symbol for the plot type and L1 (estimated data). Draw your box plots at the right. Use L2 for Plot 2.

14. What does the box plot for the estimates tell you? Press TRACE to explore the graph. _____

_____

_____
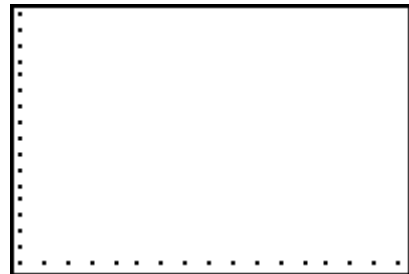
15. What does the box plot for the actual data tell you? _____

_____

16. What do the box plots show about how the estimates compare to the actual data?

_____

_____

17. Thinking about Brian's watch situation again, which data show(s) the student(s) in your class that would be best to attempt the rescue? Why?

_____

_____

_____