Part 1

1)
- Question: Lines 40-41 plot some log transformed data. The worksheet suggests you can run some alternative code, which I've labeled in the worksheet for you. What do the two pieces of code do differently? (You should tell me more than just highlighting the difference in code, but still should be able to answer this in a sentence or two.)
- Answer:

2) The worksheet script uses the dataframe health. The lab script uses the data frame subset, which is a subset of health without South Africa.

- Question: From the worksheet: Before moving on, think about how you should interpret the regression coefficient. That is, complete the sentence, "A $1000 increase in health expenditures leads to a _____ years increase in life expectancy."
- Answer: 1.6012

3)
- Question: For the same sentence above, "The result is (significant/not significant) at the 95% confidence level."
- Answer: significant

4)
- Question: In the models from lines 43-48: What was the R2 from linear-linear model? _____ What is the R2 from the linear-log model? _____
- Answer: .4474, .7421

5)
- Question: From the log-level transformed model: "A one-percent increase in health expenditures leads to a _____ years increase in life expectancy." For the log-log model: "A one-percent increase in health expenditures leads to a _____ percent increase in life expectancy."
- Answer: 4.026, 5.35

Part 2

7) Question: Run the suggested coded from the worksheet after line 13: plot(crab$W, lmodel$residuals, pch=19). Insert into your results here.

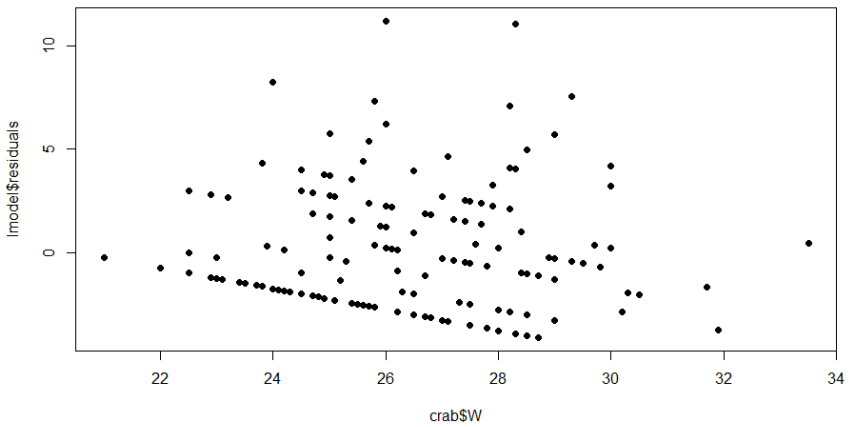

Figure 1

8)
- Question: After line 16 answer these questions from the worksheet:. In the meantime, focus on the estimated coefficient for carapace width (W), which equals _____; is the effect statistically significant?
- Answer: .16405; yes

9)
- Question: Report the results of *r.est* (If you use LaTeX, you can use lines 54 and 55 of the script to do this.)
- Answer: See Table 1

Table 1

	Estimate	Robust SE	Pr(>|z|)	LL	UL
(Intercept)	-3.305	0.840	0.0001	-4.952	-1.658
W	0.164	0.030	0.00000	0.104	0.224

10)
- Question: Pick a plot of your choice from the lab and insert it here.
- Answer:

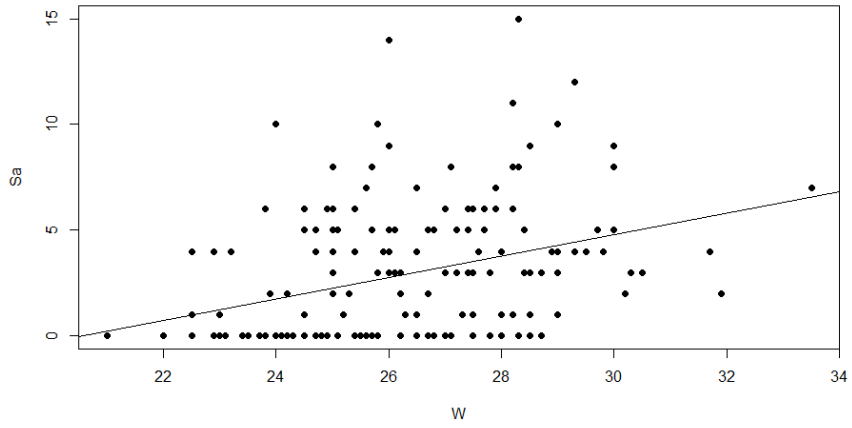

Figure 2

10. Print a hardcopy of this with your name and place it in my mailbox in the department office (1/2 point). Print it using LaTeX for the full point.

Extra Credit

- Question: In the *ggplot2* code in lines 10-24, the first plot uses OLS to fit a line to the data. The second plot automatically chooses the best method, based on some criteria set by the developers, to fit the data. Two questions: What method is used? (Hint: look in the console output for this) How do you specify the method as OLS, automatic, or something else? (Hint: Look in the code for the difference or check the documentation for *ggplot2*.)

- Answer: The method used in the second plot was "loess." We specify the method with the "method = " argument.

- **More information for you:** I gave some more information on this in the April 5 lab session. The slides are uploaded and the video is available in Teams/Stream. I also uploaded two papers on smoothing to the Resources folder. They are moderately difficult papers and an extension of the topic for this week's lectures and lab. They are worth a closer look when you are not worrying about semester projects and finals.