1. (1 point) List the author, title, and publication company and year of an alternative statistics book that you can use this semester as a complement to your other resources.

2. (1 point) List a book or website or other resource that you can consult for help with R.

3. (1 point) I am asking you to find a dataset that you want to work with this semester. This dataset might be part of an existing published research or be a dataset that you downloaded from an organization (i.e. the World Bank or Pew). Briefly describe the dataset and where you found it.

4. Let A = {1,5,10} and B= {1,2,3,4,5,6,7,8,9,10}
   (a) (1 point) Is $A \subset B, B \subset A$, both, or neither.
   (b) (1 point) What is $A \cup B$?
   (c) (1 point) What is $A \cap B$?
   (d) (1 point) Partition B into two sets, A and everything else. Call this everything else C. Define C.
   (e) (1 point) What is $A \cup C$?
   (f) (1 point) What is $A \cap C$?

5. Solve the following problems:
   (a) (1 point) $x^1 =?$
   (b) (1 point) $\sum_{x=1}^{4} x =?$
   (c) (1 point) $4!$
   (d) (2 points) Solve for x: $15x + 45 - 6x = 36$

6. Suppose you have a survey sample of 432 Democrats and 312 Republicans.
   (a) (1 point) What is the ratio of Republicans to Democrats
   (b) (1 point) What is the proportion of Republicans?
   (c) (1 point) What is the percentage of Republicans?

7. Simplify the following equations:
   (a) (1 point) $xz + yz$
   (b) (1 point) $mn + ln + pn$
   (c) (1 point) $z * y * x - 2 * y * x$
   (d) (1 point) $(z + x) * y * \frac{1}{z}$
   (e) (2 points) $(b * b * b) * c^{-3}$

(f) (2 points) Write as one term $ln(3x) - 2ln(x+2)$

(g) (3 points) Rewrite the following after taking the log of both sides of the question

$$y = a * x_1^{B_1} * \frac{x_2^{B_2}}{x_3^{B_3}}$$

(h) (1 point) Is the equation from your last answer a linear function?

8. In class we went over the OLS example of women in government and military spending. For this homework, I included part of the dataset (military_women.dta) that is associated with that analysis. From that dataset answer the following questions:

   (a) (1 point) What is the unit of observation?

   (b) (1 point) What is the temporal scope of the analysis

   (c) (1 point) What are the cases being analyzed

9. In the military_women.dta dataset there are three main variables: Military Spending, Women Executive Leaders, and the Women in Legislatures (%). I would like you to provide some descriptive information.

   (a) (2 points) For each variable, tell me if they are continuous (or ratio), interval, ordinal, or categorical.

   (b) (2 points) For each variable, provide some indicator of the typical observation.

   (c) (2 points) For each variable, provide some indicator of dispersion.

   (d) (2 points) For one of the variables, construct of graph that provide some descriptive information.

10. Below are some OLS results for the following empirical model:

$$\text{Military Spending} = \alpha + \beta_1 \text{Female Leader} + \beta_2 \text{Women in Legislatures} + \epsilon \quad (1)$$

   (a) (2 points) Identify the dependent and independent variables in this analysis.

   (b) (3 points) Interpret the results for each independent variable.

   (c) (3 points) Why might someone be suspicious of any *causal* empirical claims inferred from the OLS results below?

Table 1: OLS Model Examining Military Spending

| | (1) |
|---|---|
| Female Leader | 0.2718* |
| | (0.101) |
| Women in Legisl. (%) | -0.0569* |
| | (0.007) |
| Constant | 3.3136* |
| | (0.137) |

$R^2$ = 0.12; $*p < 0.05$
Standard Errors in Parentheses