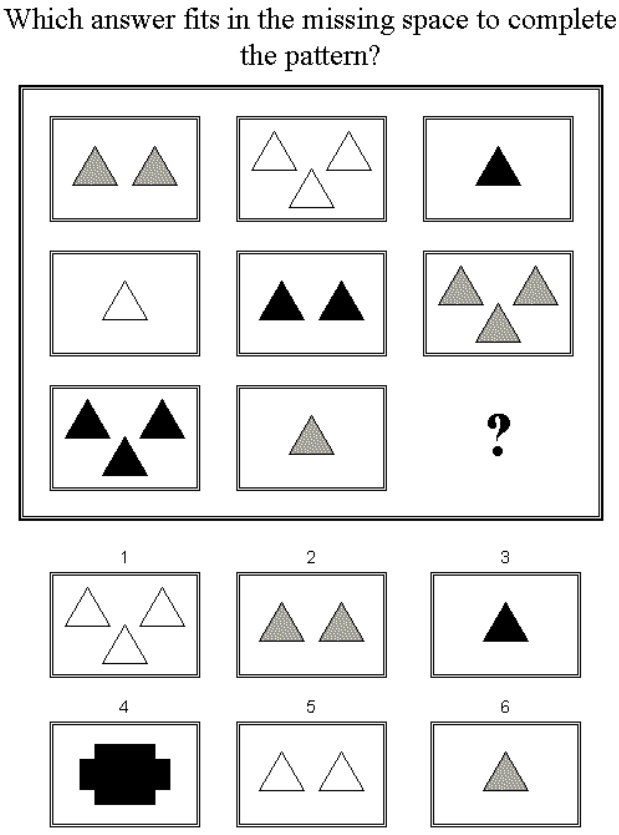
Psychology 105, First Homework Assignment

Available 2/4/2021; due 2/11/2021

In our early classes, we have reviewed some simple ideas about variables and their shapes. Specifically, we discussed the idea of a *distribution* and saw how some aspects of the shape of a distribution can be revealed by descriptive statistics and graphics. In addition, we saw how to use R to calculate descriptive statistics and to perform some graphical procedures.

On February 4, we will see how to take a sample from the Statlab data set. Your first step for this assignment is to take your own sample of 50 cases from the Statlab data and save it in a .csv (comma separated values) format using the function write.csv(). (This will all be demonstrated in class on February 4.)

One of the variables in the Statlab data set is "CTRA," which consists of Raven's Progressive Matrices scores. This test is an instrument that purports to measure non-verbal intelligence. A typical item looks something like this:



(If you are interested in trying the test yourself, you will find an on-line version here: https://psycho-tests.com/test/raven-matrixes-test.) The reported scores are number correct out

of 60 items. In a 1995 norming of the test, the median score for typical 10-year-olds was 36, and the first and third quartiles were 28 and 41.

Your task is to discuss the distribution of the Raven scores in your sample. Use R to calculate any descriptive statistics you think are relevant and to produce graphs. Include your code so that we can help figure out what went wrong if you are unsuccessful at any stage.

Begin by including your best effort at a perfect histogram of your sample. Here are some things to keep in mind: aspect ratio, appropriate grouping, breakpoints that match the grouping, placing value labels at the midpoints of the histobars, axes that do not float in midair, a base line for the histogram to sit on, reasonable title and axis labels ("CTRA" is not very informative).

Once you have produced the histogram, comment on what you see, focusing on basic aspects of shape: central tendency, variability, symmetry, and modality. Then support your observation with appropriate descriptive statistics. It should take no more than one page to discuss the distribution, not including your software code and output.

A common error in this sort of assignment is to focus too much on successfully getting output. Granted, it is important that you demonstrate an ability to use the software. However, the most important step in investigating a distribution is the *interpretation* of such output. Concentrate on deciding what statistics help you understand important aspects of the shape of the distribution, and on communicating that understanding.

When you are finished, submit both your homework (as a Word or pdf file) and your data (as a csv file) using Catcourses. Keep your data set, as you will be using it in future assignments.