

Name: _____

Spring 2004

First Year Seminar

Midterm

There are a total of four questions on this exam. Note that on questions four and five, you have your choice of essays. This is a timed exam; you will have 80 minutes for the whole exam.

1. **[10 points]** (Calculation) The scores on Professor Carlson's astronomy exam are given by the following:
72, 81, 24, 81, 51, 96, 99, 72, 84
Find the mean and the median for these numbers.
2. **[25 points]** A deck of 52 ordinary playing cards is shuffled into random order. A psychic is seated so that he cannot view the cards. As an experimenter turns over the cards, the psychic makes a prediction of the suit of each card (spade, heart, diamond, or club). The experimenter records the predictions of the psychic, the actual suit of the cards, and how often the psychic is correct.
 - (a) **[4 points]** (Short answer) Assuming the psychic is simply guessing, how often will the psychic be able to predict the suit of the card?
 - (b) **[10 points]** (Calculation) As the experimenter runs through the whole deck of 52 cards, how many cards would you expect the psychic, by chance, to guess right? What is the standard deviation of this number?
 - (c) **[11 points]** (Calculation and short answer) Suppose the psychic actually gets 18 correct. Is this more or less than would be expected by chance? What is the z value for this experiment? Assuming the psychic didn't cheat, would you conclude that the psychic has extraordinary abilities, or that she just got lucky?
3. **[20 points]** (one or two sentences each) For each of the following terms, give a short definition or explanation of what they mean.
 - (a) **[5 points]** Placebo
 - (b) **[5 points]** Control group
 - (c) **[10 points]** Blind and double blind experiments
4. **[20 points]** (Short Essays) Choose one of the following two topics and write a short essay (about two paragraphs) about it.
 - (a) Explain how optical illusions and difficulties in judging size and distance can contribute to UFO reports.
 - (b) A friend tells you that they went to a chiropractor to help them with their allergies. After six months, their allergies were better. Formulate multiple hypotheses about why their allergies might have improved.

5. **[25 points]** (Essay) Write a medium essay (two or three paragraphs) on one of the following alien-abduction related topics:
- (a) How the unreliability and malleability of memory affects the reliability of alien abduction reports
 - (b) How alien abductions in modern times are similar to the phenomenon of demonic possession in the Middle Ages
 - (c) How research methods of researchers like John Mack and/or Bud Hopkins is flawed, and can introduce bias into their research