

Stat 3011 First Midterm Exam (Computer Part) October 19, 2000

The exam is open book, open web pages. You may use the computer, a calculator, or pencil and paper to get answers, but it is expected that you will use the computer. Show all your work:

- For simple computer commands, you may just write the command you used and the result it gave on this test form.
- For complicated commands or plots, make a printout and attach the printout to the test form (we'll provide a stapler).

No credit for numbers with no indication of where they came from!

An on-line version of the test is at the URL

<http://leech.stat.umn.edu/geyer/t1>

1. [15 pts.] Suppose a random variable X has a normal distribution with mean 250 and standard deviation 50.
 - (a) Find the probability that X is greater than 325.
 - (b) Find the probability that X is between 200 and 275.
 - (c) Find the the 35th percentile of the distribution of X
2. [20 pts.] The file

<http://leech.stat.umn.edu/geyer/t1>

contains a single variable named `fred` for which measurements on 200 individuals are recorded.

- (a) Draw some sort of plot that shows you the shape of the distribution of the data. (Hand in this plot. Be sure to **put your name on the plot** before sending it to the printer. Either put your name in quotes as one command or add the optional argument `main="Your name here"` to any plot command.)

- (b) Describe the shape of the distribution. Is it symmetric or skewed? If skewed, which way? Is it unimodal or multimodal? Are there any outliers?
 - (c) Find the mean.
 - (d) Find the median.
 - (e) Find the standard deviation.
 - (f) Find the interquartile range.
 - (g) If you had to pick one measure of center and one measure of spread from the four numbers just calculated, which would you pick? Explain. Make it clear which is the measure of center and which is the measure of spread.
3. [15 pts.] The distribution of ACT composite scores for all students taking the test in the year 2000 was normal with mean 21.0 and standard deviation 4.7. Suppose you had a composite score of 31.
- (a) What fraction of the students taking the test did you do better than?
 - (b) What fraction did you do worse than?