STA 102 Spring 2002
Chapter 12 Solutions to Suggested Even Problems

2,4 not shown

6.
a) For $F_{3,30}$, 0.5% if the area under the curve lies to the right of F=5.24.
b) Since 5% of the area under the curve lies to the right of F=2.92, 95% lies to the left of this value.
c) The value F=3.59 cuts off the upper 2.5% of the distribution.
d) The value F=7.05 cuts off the upper 0.1%.

8.
a) Estimated variance within-groups = 1.75
Mean = 5.58
Estimated variance between-groups = 19.06
F = 10.89
P-value < 0.001
Reject the null hypothesis.
b) We conclude that mean LDL cholesterol level is not the same for each of the four groups.
c) The four populations must be at least approx. normally distributed and their variances must all be the same. Also, we're assuming independence of observations (through randomization).
d) We have concluded that the means differ in some way. To determine which means are different from one another, we need to used a multiple comparison procedure like the Bonferonni method.

10.
a) Age measurements are independent and have a fairly symmetric distribution, the s.d.'s of the the age values for the three centers are fairly close together, suggesting that the variances of the populations might be similar. It seems reasonable to use the one-way analysis of variance.
b) Sample mean ages: 62.5, 63.3, and 60.8 years
Sample standard deviations: 8.7, 7.8, and 8.0 years
c) Between groups estimate of variance = 33.31
d) Within groups estimate of variance = 67.10
e) Test Statistic: F=0.50. P-value= 0.6108. We fail to reject the null hypothesis and conclude that there is no evidence of an age difference among the three medical centers.