

Due Tuesday, Nov **27**

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 7.27
2. Exercise 7.34
3. Exercise 7.39
4. Exercise 8.4 (Not  $\hat{\theta}_4$ . See the handout on results from Chapters 5 and 6.)
5. Exercise 8.5
6. Exercise 8.9
7. Exercise 8.20
8. Exercise 8.24
9. Suppose  $Y_1, Y_2, \dots, Y_n$  denote a random sample of size  $n$  from an exponentially distributed population with mean  $\theta$ . Show that the sample mean  $\hat{\theta} = \bar{Y}$  is an unbiased estimator of  $\theta$  and find its variance.
10. We want to estimate the fraction  $p$  of people in a population favoring certain presidential candidate. Let  $Y$  be the number of people favoring that candidate in a random sample of size  $n$ . Then  $Y$  has a binomial distribution. Show that  $\hat{\theta} = \frac{Y}{n}$  is an unbiased estimator of  $p$  and find its standard deviation (error).