

**Statistics 111 Homework 4 – Due in recitation on Friday, October 24th**

1. IPS Exercise 5.14, p. 332 [Web sites]
2. IPS Exercise 5.28, p.334 [College Admissions]
3. IPS Exercise 5.54, p.348 [Carpeting]
4. IPS Exercise 5.56, p.349 [Risks and Insurance]
5. IPS Exercise 5.68, p.351 [Common Last Names]
6. IPS Exercise 5.70, p.351 [Blossum genetics]
7. Is it more likely to observe eight or more heads in ten flips of a fair coin or to observe 16 heads or more in twenty flips?
8. In 1973, Charles Tart ran an experiment at UC Davis to test for ESP abilities. Tart used an electronic random number generator called the Aquarius with four “targets”. The machine randomly picked one of the four targets, and the subject guessed which target the machine had picked. Tart selected 15 subjects who had “previously shown clairvoyant abilities”. Each of the subjects made 500 guesses, for a total of 7500 guesses; of these, 2006 were correct — a proportion of .2675 correct guesses. Even if the subjects had no real ESP ability, we would expect them to be right in 1 out of 4 guesses. If the subjects have no real ESP ability, what is the probability that, just by random chance, they would guess at least .2675 of the answers correctly?
9. Ilsa is an avid bowler. She has an expected score of 160 with a standard deviation of 25. Assume that her scores are normally distributed and independent of each other. What are the probabilities that:
  - a. Her score in a game will be below 100?
  - b. Her mean score for a series of three games will be below 100?
10. Assume Ilsa is the same as in Question 7. Now suppose Rick is a poor bowler, averaging less than 100 per game. Would Rick have a better chance of beating Ilsa in a single game, or over an entire series of three games? Explain briefly.