NOTES FOR THE WEEK OF OCT 30 TO NOV 6

NOTE 1: As announced in the syllabus, my office hours on Mon, Nov 6 are 1-2:30, *not* the usual 3-4:30.
NOTE 2: The material for this week requires practice with solving problems. Practice, practice, practice!
Remember that exercises with numbers in **bold** have answers in the back of the book, so they are good for
practice even if they are not assigned. The practice problems in CyberStats Units B2 and B3 should be
helpful as well because they give you immediate feedback.

This week we start learn *probability* ideas and rules, some of which we will use for the rest of the course.
Sections 7.1 and 7.2: To study probability, you first need to understand what it is! That's not as simple as
it sounds, and philosophers still consider this question. There are two main interpretations of probability –
relative frequency and *personal probability* (called *subjective probability* in CyberStats). There are two
methods for determining relative frequency probabilities. These are listed in a summary box on page 237.

Sections 7.3 and 7.4: You need to be able to compute probabilities as well. There are four basic rules for
doing so, and they require you to understand certain terminology, covered in ***Section 7.3***. There is a
summary of the terms you need to know on pages 242-243. Pay particular attention to the definitions of
mutually exclusive (*disjoint*) events, and *independent* events. Students often confuse these two definitions,
but they are describing very different relationships. The summary on page 249 may help you sort it all
out. Also, please note the special notation for "conditional probability" – memorize this notation: $P(B|A)$.
It is read "P of B given A" and is called "the conditional probability of B given A." It's the probability
that event or outcome B happens, *conditional* on the fact that another event or outcome A has happened,
or will happen. It has nothing to do with dividing B by A. Sometimes students get confused between this
notation and the notation for division, B/A. ***Section 7.4*** covers the four basic rules for computing
probabilities. Remember that "OR" requires adding (Rule 2) while "AND" requires multiplying (Rule 3).

Computing probabilities is somewhat of a learned skill, and **Section 7.5** provides some strategies. If
conditional probabilities are involved, the two tools on pages 255-257 will be very helpful – more so than
the rules and formulas in Section 7.4. Tree diagrams (pages 256-257) are extremely useful! For
probability computations that don't involve conditional probabilities, Rules 1, 2 and 3b, summarized on
pages250-251 (with the other rules) will be helpful. (Note that CyberStats numbers the rules differently.)
Remember, the best way to learn to compute probabilities is to get lots of practice.

Section 7.7 is based on what psychologists have learned about how poor human intuition is when
probability is involved. The lessons in that section will be useful for your everyday life.

Reading and Study Assignment for this week:

Book Chapter or CyberStats Unit	Focus on:
Chapter 7: Probability *Skip Section 7.6*	All but Section 7.6, but especially topics in assigned exercises, and above notes.
Unit B1: Probability Concepts	Self-assess quiz
Unit B2: Probability Rules	Self-assess quiz
Unit B3: Conditional Probability and Independence	Self-assess quiz

Interactivities to play with:
Unit B1: *Basics Practice 1* –Take an extrasensory perception (ESP) test, to illustrate long-run probability.
Unit B3: *Exercises 2* and *Warnings* (same interactivity) – Uses a Venn Diagram to illustrate probability
concepts and rules.
Exercises to hand in: Chapter 7: #6, 7, 16, 20, 22, 30, 34, 36*, 54, 64, 69, 73, 77
*Hint: A tree diagram is useful for this problem.