Homework due on Friday, October 4

Read Chapter 2 and section 3.2 of the book. Solve problem 2.2.32, 3.2.8, 3.2.10, 3.2.12 in the book and the following problems.

Problem 1. There are n studio appartments in a building. Some of the appartments are connected with each other by direct phone line. Prove that it is possible to assign to each appartment a female or a male in such a way that each person has direct connection with at least as many people of the opposite sex as he/she has with people the same sex.

Problem 2. Two rivers run parallel 2 miles appart. Two cities A and B lie between the rivers; each city is equidistant from the rivers and the cities are 3 miles appart. A scientist wishes to travel from A to B, collecting a sample of water from each river during his journey. What is the length of the shortest path he can follow. Justify your answer.