This homework is split in two independent parts. First, solve these two questions from Ferguson's lecture notes:

1. Exercise 1 from Section 3.5 of Part III;

2. Exercises 2 and 4 from Section 4.5 of Part III.

Then, solve the following project:

To encourage team spirit among schoolboys who compete as individuals, a high school has instituted a long-jumping competition for teams of two or three. The rules of the competition stipulate that each team can make up to 12 jumps, of which six count officially towards the final outcome – the best three jumps of each individual in a 2-man team, or the best two jumps of each individual in a 3-man team. Furthermore, a local business has agreed to pay a dollar per foot for each official foot jumped in excess of 15 feet. So unless – which is unlikely – nobody jumps more than 15 feet, winning the competition is the same thing as maximizing dollar uptake. But the existence of prize money brings the added problem of distributing the money fairly among the team.

Let's suppose that young Jed, young Ned and young Ted competed as a team in this year's competition. They agreed to take four jumps each, and their best three jumps are recorded (in feet) in Table 1(a); Obviously, Jed had a bad day. The dollar equivalents of these jumps are recorded in Table 1(b). We see at once that Jed, Ned and Ted have earned themselves the grand sum of $3 + 1 + 5 + 3 + 4 + 4 = 21$ dollars. How should they divvy it up?

	J	N	T
First Jump	18	20	19
Second Jump	16	18	19
Third Jump	15	18	18

(a) Team's best jumps (in feet)

	J	N	T
First Jump	3	5	4
Second Jump	1	3	4
Third Jump	0	3	3

(b) Monetary values (dollars)

Figure 1: Tables.

Hand in an individual hand written report and be prepared to fully justify it.

You may discuss the solution process with your colleagues but the actual solving should be truly yours.