Homework 1, due Mon 07/16. (24 points each, 120 points total)

1. A group of n people play a round-robin tournament (i.e., everybody plays one game against all other players). Prove by induction that it is always possible to label the players as $P_1, P_2, P_3, \ldots, P_n$ in such a way that P_1 defeated P_2, P_2 defeated P_3, ..., and P_{n-1} defeated P_n.
2. A set X of $n+1$ numbers is chosen from the integers 1 through $2n$ (inclusively). Using the pigeonhole principle, show that no matter how X was chosen, there must be two elements $a, b \in X$ such that a divides b. *Hint:* there are exactly n odd integers between 1 and $2n$.
3. Page 54, Exercise 2.2.4 parts b and c.
4. Page 54, Exercise 2.2.5 parts a, b and d.
5. Page 54, Exercise 2.2.8 parts a and b.

Homework 2, due Mon 07/23. (24 points each, 120 points total)

1. Page 66, Exercise 2.3.2.
2. Page 67, Exercise 2.3.4.
3. Page 89, Exercise 3.1.1 parts b and c.
4. Page 129, Exercise 4.1.1 parts d and f.
5. Page 130, Exercise 4.1.2 part g.

Homework 3, due Mon 07/30. (24 points each, 120 points total)

1. Page 147, Exercise 4.2.6 part a.
2. Page 180, Exercise 5.1.1 part d.
3. Page 180, Exercise 5.1.4 parts a and b.
4. Page 181, Exercise 5.1.7 parts a and b.
5. Page 236, Exercise 6.2.3 part a.

Homework 4, due Mon 08/06. (24 points each, 120 points total)

1. Page 236, Exercise 6.2.3 part b.
2. Page 246, Exercise 6.3.5 parts a and b.
3. Page 251, Exercise 6.4.2 part b.
4. Page 271, Exercise 7.1.3.
5. Page 280, Exercise 7.2.1 parts b, c and e.

Homework 5, due Mon 08/13. (24 points each, 120 points total)

1. Page 292, Exercise 7.3.2 parts a and b.
2. Page 316, Exercise 8.1.1 parts b and c.
3. Page 328, Exercise 8.2.2 part b.
4. Page 382, Exercise 9.2.6 parts b and d.
5. Page 391, Exercise 9.3.4 part b.