1. Miller Lite and Bud Light dominate the U.S. market for light beer. Each of them can choose whether to advertise or not advertise. If one firm advertises and the other does not, the firm doing the advertising gets a larger share of the market and higher profits. If both firms advertise, their market shares remain the same as when neither advertises (the only difference is that both must pay the advertising cost). Their profits in millions of dollars are shown below.

		Bud Light: Advertise	Bud Light: Do not advertise
Miller Lite	Advertise	B: \$3 M: \$3	B: \$2 M: \$5
	Do not advertise	B: \$5 M: \$2	B: \$4 M: \$4

   a. Does Bud Light have a dominant strategy? What about Miller Lite? Explain.

   b. What is the Nash equilibrium of this game?

2. [Mankiw, p. 387, #6] You and a classmate are assigned a project on which you will receive one combined grade. You each want to receive a good grade, but you also want to avoid hard work. In particular, here is the situation:

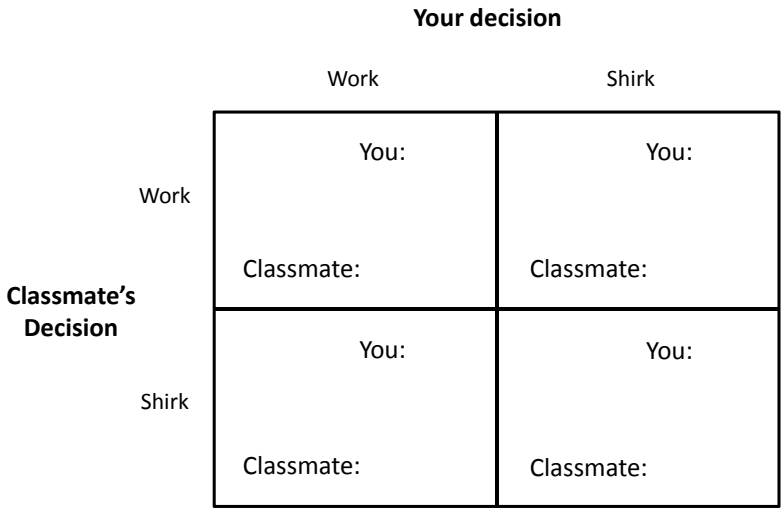
   i. If both of you work hard, you both get an A, which gives each of you 40 units of happiness.
   ii. If only one of you works hard, you both get a B, which gives each of you 30 units of happiness.
   iii. If neither of you works hard you both get a D, which gives each of you 10 units of happiness.
   iv. Working hard costs 25 units of happiness.

   a. Fill in the payoffs in the decision box on the next page.

   b. What is the likely outcome? Explain.

   c. If you get this classmate as your partner on a series of projects throughout the year, rather than only once, how might that change the outcome you predicted in part (b)?

   d. Another classmate cares more about good grades: He gets 50 units of happiness for a B, and 80 units of happiness from an A (he still only gets 10 units from a D). Working hard still costs 25 units of happiness. If this classmate were your partner (but your preferences were unchanged), how would your answers to parts (a) and (b) change? Which of the two classmates would you prefer as a partner? Would he also want you as a partner?



3. [Based on Mankiw, p. 388, #10] Use the Jack & Jill duopoly example we did in class to answer the following question. As a reminder, the demand schedule for water is given below.

Quantity (gallons)	Price	Total Revenue (and profit)
0	120	0
10	110	1,100
20	100	2,000
30	90	2,700
40	80	3,200
50	70	3,500
60	60	3,600
70	50	3,500
80	40	3,200
90	30	2,700
100	20	2,000
110	10	1,100
120	0	0

Suppose that Jack and Jill are at the duopoly's Nash Equilibrium (40 gallons each; 80 gallons total produced) when a third person, John, discovers a water source and joins the market as a third producer (he also has a zero marginal cost of production).

a. Jack and Jill propose that the three of them continue to produce a total of 80 gallons, splitting the market three ways. If John agrees to this, how much profit will he make?

b. After agreeing to the proposed deal, John is considering increasing his production by 10 gallons. If he does, and Jack and Jill stick to the agreement, how much profit will John make? What does this tell you about the proposed agreement?

c. What is the Nash equilibrium for this market with three producers? How does it compare to the Nash equilibrium with two producers?