

Your name (first name, then last name): \_\_\_\_\_

Your TA's name: \_\_\_\_\_

SUNY-Binghamton Economics 160, Principles of Microeconomics, Christopher Hanes  
Problem set 8 Game Theory

This problem set is some examples of 2x2 games.

1) *Players:* ruling class in China                      ruling class in Japan

Each country is controlled by businessmen in import-competing industries. Tariffs can make these businessmen better off (even though they reduce total surplus).

*Strategies:* tariffs    free trade

*Outcomes:* producer surplus for each ruling class.

		China	
		Free trade	Tariffs
Japan	Free trade	(1) 25 25	(2) 30 10
	Tariffs	(3) 10 30	(4) 20 20

a) What is dominant strategy for  
China? \_\_\_\_\_ (free trade or tariffs) Japan? \_\_\_\_\_ (free trade or tariffs)

b) Which boxes are Nash equilibria? \_\_\_\_\_ (1, 2, 3, or 4, or some combination)

2) *Players:* two companies, Coca-cola (or as we say in Atlanta, Co-cola) and Pepsi. Each company must choose the size of its advertising budget.

*Strategies:* high budget    low budget

*Outcomes:* profit for each company.

		Coke	
		High	Low
Pepsi	High	(1) 20 30	(2) 0 70
	Low	(3) 30 0	(4) 40 50

Which boxes are Nash equilibria? \_\_\_\_\_ (1, 2, 3, or 4, or some combination)

3) *Players*: you and a classmate who have been assigned a group project. It is the night before the project is due. Each of you must decide whether to work on the project, or party.

*Strategies*: work party

*Outcomes*: Each of you wants to maximize his or her own happiness. If you both work, you both get an A. If you both party, you both get a D. If one parties and the other works, you both get a B. Partying increases happiness by 15 units. Studying *per se* adds zero units to happiness. Happiness is also affected by your grade. An A gives 40 units of happiness to each of you; a B gives 30 units happiness to each; a D gives 10 units of happiness. Fill out the table below with *total* happiness for each of you.

		You	
		Work	Party
Classmate	Work	①	②
	Party	③	④

Which boxes are Nash equilibria? \_\_\_\_\_ (1, 2, 3 or 4, or some combination)

4) *Players*: two companies IBM Rand. These two firms produce identical mainframe computers.

*Strategies*: charge high price charge low price

*Outcomes*: profit for each company

		IBM	
		Low	High
Rand	Low	① 16    16	② 15    20
	High	③ 20    15	④ 18    18

① or ④

a) Which outcome is best for the firms' shareholders? \_\_\_\_\_ (1, \_\_\_\_\_ or 4)

b) Which boxes are Nash equilibria? \_\_\_\_\_ (1, 2, 3 or 4, or some combination)