Economics 102
Spring 2014
Homework #1
Due 2/12/14

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Please remember the section number for the section **you are registered,** because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

1. In the country of Shangri-La, the only type of business is the production of mountain climbing ropes. The total production of the country in each year is given by:

Year	Ropes Produced
2010	500
2011	750
2012	1000
2013	900

Answer the following questions about the production of mountain climbing ropes.
a. What is the percentage change in ropes produced between 2010 and 2011? What is the percentage change between 2011 and 2012? Are they the same? Why or why not?
b. What is the percentage change between 2012 and 2013?
c. How many ropes must Shangri-La produce in 2014 if they want to increase production by 15% from what it was in 2013?

2. Find the y-intercepts and x-intercepts of the following linear demand curves where P is the price per unit and Q is the quantity of output. Then graph each of these demand curves on a separate graph. Measure Price (P) on the vertical axis and measure Quantity (Q) on the horizontal axis.
a. $P=20-0.5Q$
b. $P=5$
c. $2.5Q+5P=100$
d. $Q=100$

3. Suppose Econ 102 consists of 5 problem sets each of them accounting for 10% of the final grade, one midterm that counts 20% and an exam that counts the remaining 30%. Assume the

scores on each assignment, midterm, and exam could range from 0-100. The table below presents the corresponding scores for 3 students in the class.

	Melissa	Michael	Serena
Problem set 1 (10%)	70	100	
Problem set 2 (10%)	80	40	50
Problem set 3 (10%)	80	40	50
Problem set 4 (10%)	90	50	60
Problem set 5 (10%)	50	50	40
Midterm (20%)	90	80	50
Exam (30%)	80	80	50
Class grade			

a. Compute the final class grade for Melissa.

b. What is the average score on Problem Set 2? Compute your answer to two places past the decimal.

c. What is Serena's score on problem set 1 if her class grade at the end of the semester is 50?

4. Assume Parkview and Glenview are two countries. Both countries produce books and pizzas. Suppose that these two countries only use labor to produce these two goods (this is just a simplifying assumption to make our work easier). Parkview is a large country that has 500 hours of labor available while the smaller Glenview only has 200 hours of labor available. The following table tells you how many hours of labor are needed in each country to produce one book or one pizza.

	Hours of Labor Needed to Produce One Book	Hours of Labor Needed to Produce One Pizza
Parkview	2 hours of labor	2 hours of labor
Glenview	4 hours of labor	5 hours of labor

a. Using the given information in the above table and in the introduction, draw the production-possibility frontiers (PPF) for both Parkview and Glenview (on two separate graphs). Measure the number of books produced on the Y axis and the number of pizzas produced on the X axis.
b. What is Parkview's opportunity cost of producing one book?
c. What is Parkview's opportunity cost of producing one pizza?
d. What is Glenview's opportunity cost of producing one book?
e. What is Glenview's opportunity cost of producing one pizza?
f. Which country has the absolute advantage in producing books?
g. Which country has the absolute advantage in producing pizzas?
h. Which country has the comparative advantage in producing books?
i. Which country has the comparative advantage in producing pizzas?
j. What range of trading prices would be acceptable to both countries in terms of books for one pizza?

k. What range of trading prices would be acceptable to both countries in terms of pizzas for 5 books?
l. Suppose now that the two countries agree to team up and combine their production. Draw the combined PPF for the two countries. Write an equation for each segment of the combined PPF and clearly identity the range for that segment. In your equations P should stand for the quantity of pizzas and B should stand for the quantity of books.

5. Suppose that there are two individuals, Emily and Mitchell, and these two individuals only produce belts and shirts. We will assume that the only input required to produce these two goods is labor. Both individuals have linear PPFs. You are given the following information about the amount of labor that is needed by each individual to produce belts and shirts.

	Hours of Labor Needed to Produce One Belt	Hours of Labor Needed to Produce One Shirt
Emily	5 hours of labor	2 hours of labor
Mitchell	10 hours of labor	50 hours of labor

You are also given the following information about the current level of production of belts and shirts. You should assume that both individuals are producing at an efficient level of production: that is, they are both producing at points that are on their PPFs.

	Current Level of Belt Production	Current Level of Shirt Production
Emily	320	200
Mitchell	50	30

a. Given the above information, how many hours of labor is Emily devoting to the production of belts? Explain in words how you found your answer (please use complete sentences and make an effort to express this idea clearly, yet concisely).
b. Given the above information, how many hours of labor does Emily have available to devote to the production of belts and shirts? Explain in words how you found your answer (please use complete sentences and make an effort to express this idea clearly, yet concisely).
c. Given the above information, how many hours of labor is Mitchell devoting to the production of shirts? Explain in words how you found your answer (please use complete sentences and make an effort to express this idea clearly, yet concisely).
d. Given the above information, how many hours of labor does Mitchell have available to devote to the production of belts and shirts? Explain in words how you found your answer (please use complete sentences and make an effort to express this idea clearly, yet concisely).
e. If Emily only produces belts, what is the maximum amount of belts she can produce given the amount of labor she has available? Explain in words how you found your answer.
f. If Emily only produces shirts, what is the maximum amount of shirts she can produce given the amount of labor she has available? Explain in words how you found your answer.
g. If Mitchell only produces belts, what is the maximum amount of belts he can produce given the amount of labor he has available? Explain in words how you found your answer.

h. If Mitchell only produces shirts, what is the maximum amount of shirts he can produce given the amount of labor he has available? Explain in words how you found your answer.
i. Which individual has the comparative advantage in the production of belts? Explain your answer.
j. Which individual has the comparative advantage in the production of shirts? Explain your answer.
k. In order to increase the overall production of belts and shirts from the current level of production, what would you suggest that Mitchell and Emily do? Assume that they are willing to trade with one another.
l. What will be the acceptable range of trading prices for 10 shirts in terms of belts?
m. What will be the acceptable range of trading prices for 100 belts in terms of shirts?

6. Let's return to Emily and Mitchell and their situation described in problem 5.
a. Emily (and you after your analysis in problem 4) recognizes that she can produce more shirts and more belts than Mitchell. So she decides to no longer interact with Mitchell and simply produce shirts and belts in isolation from him. Given that Emily and Mitchell are no longer trading is it possible for Emily to produce 100 shirts and 560 belts? Explain your answer. In your answer, write an equation for Emily's PPF and then use this equation to help prove your answer.
b. If Emily and Mitchell specialize and trade with one another is it possible for them to produce 100 shirts and 560 belts. In your answer make reference to the joint PPF for these two individuals.
c. After Emily makes her decision suppose that Mitchell comes to Emily and proposes that he will produce 200 belts while Emily produces 200 belts and 500 shirts. Then Mitchell will give Emily 100 belts in exchange for 250 shirts. Is this a reasonable price for trade for these two individuals? Explain your answer. If this trade occurs, how many shirts and belts will Emily have and how many shirts and belts will Mitchell have?

7. Suppose the price of a mixer is $100 in 2001. The annual growth rate of the price of a mixer is 10%. Given this information, please answer the following questions:
a. What is the price of a mixer in 2004 if the price of mixer consistently grows at an annual rate of 10% from 2001 to 2004?
b. Suppose the price keeps increasing from 2001 onwards at the same constant annual rate. Compare the total growth rates from 2001 to 2007, g_1 , and that from 2001 to 2004, g_2. Is $g_1$the same as, or smaller, or larger than 2*g_2?