Problem Set #2 (answer key)
ECNS 204
Due Monday, Sept. 7th by 10am
Submit to shared Dropbox folder or email to TA at alectruax@gmail.com

_____Name

1.) Listen to the following University of Chicago Pandemic Economics podcast, "How to Price a Vaccine?" (a link is also up on the course webpage)
https://bfi.uchicago.edu/podcast/episode-16-how-to-price-a-vaccine/

Summarize the podcast and describe how economists would recommend pricing a COVID-19 vaccine. What are some of the practical hurdles that must be overcome for a vaccine to be priced appropriately and distributed globally?

Guidelines:
-One to two pages typed (going over two pages will result in loss of points)
-Double spaced
-Size 12 Times New Roman font
-Failure to follow any of these guidelines will result in loss of points

2.) On a recent trip to Bozeman, Penny stopped off at Dave's Sushi for lunch because she heard that the average quality of the King salmon sushi rolls served at Dave's was higher than that of most restaurants in the Pacific Northwest. She found this rumor to be quite peculiar seeing that King salmon do not live in Montana. However, after eating at Dave's Penny agreed that the quality of salmon was higher than that of most Seattle restaurants she had previously eaten at. Give an economic explanation for this observation that is supported by a simple numerical example.

Shipping the Good Apples Out problem.

Suppose we have two types of sushi: High Quality (HQ) and Low Quality (LQ).

Let's also suppose the price of HQ sushi is $12/roll and the price of LQ sushi is $6/roll.

In Seattle, the relative cost of buying one HQ sushi roll is forgoing the opportunity to buy two LQ sushi rolls (b/c $12/$6 = 2).

However, if you are Dave's sushi and you are having your salmon shipped to you from Seattle, then you must incur a shipping cost. Let's say the shipping price for salmon is equivalent to $3/roll. Now, we see that this decreases the relative cost of buying HQ sushi from the perspective of Dave's. The relative cost of buying one HQ sushi roll is forgoing the opportunity to buy 1.67 LQ sushi rolls (b/c $15/$9 = 1.67). As a result, the proportion of HQ sushi to LQ sushi at Dave's will be higher than in places like Seattle where no fixed shipping cost is incurred.

3.) The elasticity of demand for coffee is estimated to be -0.16. If the quantity demanded was 4 billion lbs. per year when the price is $3.60 per lb., how much coffee would be demanded at $2.40 per lb.? Make sure to show your work. No work, no points. (Silberberg and Ellis 6th ed., Ch. 3, #19)

This is a 33 percent price decrease. Let x = percent increase in coffee consumption. Assuming the elasticity does not change in this price range, -0.16 = -x/.33. Thus, x = .0528. The increase in coffee consumption is therefore (-.0528)(4 billion) = 211,200,000. Coffee consumption becomes 4,211,200,000 lbs.

4.) a.) The elasticity of demand for 16 centimeter-in-length Black Diamond ice screws is -1.5. If the quantity demanded is 5,000 ice screws per year when the price is $60 per ice screw, then how much would the price per ice screw be if the quantity demanded was 7,500 ice screws per year?
Recall, our formula for elasticity of demand

$\varepsilon = \%\Delta Q/\%\Delta P$

→ $-1.5 = [(7{,}500 - 5{,}000)/5{,}000]/(\Delta P/60)$
→ $-1.5 = (2{,}500/5{,}000)*(60/\Delta P)$
→ $\Delta P = (0.5*60)/-1.5$
→ $\Delta P = -\$20$
→ $P = \$40$ per ice screw

b.) Are generic 16 centimeter-in-length ice screws more elastic or more inelastic than 16 centimeter-in-length Black Diamond ice screws?

Less substitutes available for generic ice screws...so, generic ice screws would have a more inelastic demand.

5.) Aron spends his entire income on hamburgers and pizza. His demand for hamburgers is inelastic. If the price of hamburgers increases, what happens to the amount of pizzas he buys? When there are only two goods, can you state a rule about the effect of a change in the price of one good on the amount of the other good purchased? (Hint: You must consider the elasticity of demand of the good whose price has changed.) (Silberberg and Ellis 6th ed., Ch. 3, #25).
Since his demand is inelastic, when the price of hamburgers increases, Aron spends more on hamburgers than previously. Since his income hasn't changed, he buys fewer pizzas. With only two goods, if the price of a good with inelastic demand changes, the quantity of the other good consumed moves in the opposite direction of the price change. The opposite is true if the demand is elastic.