ECO 610
Fall 2017
Problem Set #2

Name: KEY

1. (12 pts.) After taking trips to centrally planned economies in Cuba and North Korea, Lexington's mayor notices how thin each country's citizens seem to be. He convinces city council to try to improve social well-being in Lexington by combating obesity and reducing the caloric intake of its citizens. A citywide tax on carbonated soft drinks sweetened with sugar is implemented, raising the price of (for example) name-brand beverages like Coke and Pepsi from \$4 to \$5 for a 12-pack of 12 oz. cans. Grocery stores and other sellers experience a 35% decline in sales.
   a) Calculate own-price elasticity of demand for sugary soft drinks. Show your work.

$$\varepsilon_{x,P_x} = -\frac{\%\Delta Q_x}{\%\Delta P_x} = -\frac{-.35}{\frac{5-4}{\frac{1}{2}(5+4)}} = \frac{.35}{\frac{1}{4.5}} = 1.575$$

demand is elastic

   b) The cross-price elasticity of demand between sugary and diet soft drinks is 0.7. How much extra shelf-space will be allocated to diet carbonated beverages in grocery stores after the sugar tax is imposed? Explain how you get your answer.

$\varepsilon_{x,P_y} = \frac{\%\Delta Q_x}{\%\Delta P_y}$ where X = diet and Y = sugary soft drinks

$$0.7 = \frac{\%\Delta Q_x}{\frac{5-4}{\frac{1}{2}(5+4)}} \Rightarrow 0.7 = \frac{\%\Delta Q_x}{\frac{1}{4.5}}$$

change in shelf space = $\%\Delta Q_x = (.7) * (.22) = 15.6\%$

   c) The income elasticity of demand for sugary soft drinks is -0.2. Will this tax fall more heavily on low-income or high-income households? Briefly explain.

A negative income elasticity for sugary soft drinks means that quantity demanded falls as household rises. If low-income households drink more sugary soft drinks than middle and high-income households, then they will be hit harder by this new excise tax on sugary soft drinks than wealthier households.