1. Consider the market for space fuel on our planet Earth. Market demand and market supply curves for Earth residents are given by the following equations where P is the price per gallon of space fuel and Q is the quantity in millions of gallons of fuel:

Earth's Market Demand: $P = 80 - Q$

Earth's Market Supply: $P = 20 + 2Q$

a. Given the above information, find the equilibrium price and quantity in this market if the only producers and consumers are from Earth.

b. Plot the demand and supply graph with proper labels. Denote the consumer surplus and producer surplus in your graph.

c. Calculate the total surplus.

d. Explain why a market operates efficiently at the equilibrium point.

2. Suppose for the market of plushies the demand and supply equations are

$Qd = 50 - P$

$Qs = -10 + 0.5P$

If the government imposes a 6$ tax on the sellers of plushies what will new CS and PS of this market?

3. In the market for notebooks, the demand and supply equations are:

$Qd = 100 - 2P$

$Qs = =20 + 3P$

If the government imposes a $10 tax on the sellers of notebooks, calculate the following:

a. New equilibrium price buyers pay, price sellers receive, and quantity sold.
b. New Consumer Surplus (CS) and Producer Surplus (PS).
c. Tax Revenue, Deadweight Loss (DWL).