TUTORIAL 3
DEMAND AND SUPPLY

1. Good X is produced in a competitive market using input A. Explain what would happen to the supply of good X in each of the following situations:
a. The price of input A increases.
b. An excise tax of $1 is imposed on good X.
c. A technological change reduces the cost of producing additional units of good X.

2. The demand for good X is given by

$$Q_x^d = 1{,}200 - 1/2\ P_x + 1/4\ P_y - 8P_z + 1/10\ M$$

Research shows that the prices of related goods are given by P_y= $5,900 and P_z= $90, while the average income of individuals consuming this product is M= $55,000.
a. Indicate whether goods Y and Z are substitutes or complements for good X.
b. Is X an inferior or a normal good?
c. How many units of good X will be purchased when Px $4,910? **(5000)**

3. Suppose demand and supply are given by Q^d= 50 - P and Q^s= 1/2P - 10.
a. What are the equilibrium quantity and price in this market? **(P=40, Q=10)**
b. Determine the quantity demanded, the quantity supplied, and the magnitude of the surplus if a price floor of $42 is imposed in this market. **(Qd= 8, Qs= 11, Surplus=3)**
c. Determine the quantity demanded, the quantity supplied, and the magnitude of the shortage if a price ceiling of $30 is imposed in this market. Also, determine the full economic price paid by consumers. **(Qd= 20, Qs= 5, Shortage=15, full economic price=45)**

4. Suppose demand and supply are given by

$$Q_x^d = 7 - 1/2\ P_x \text{ and } Q_x^s = 1/4\ P_x - 1/2$$

a. Determine the equilibrium price and quantity. Show the equilibrium graphically.**(P=10, Q=2)**
b. Suppose a $6 excise tax is imposed on the good. Determine the new equilibrium price and quantity. **(P=12, Q=1)**
c. How much tax revenue does the government earn with the $6 tax? **(Revenue=6)**

5. Suppose the market supply and demand curves for wheat are as follows:

P_s =0.02Q and P_d =3-0.01Q (Price in $, quantity in millions of bushels)

The government is considering two possible price support policies, A or B

- **A.** The government buys enough wheat so that a market price of $2.20 is maintained. Wheat bought by the government is stored, destroys or given away abroad. How much wheat does the government buy, how much is domestically consumed and what is the cost to the government of this policy? **(Cost=66, Government will buy 30 units, Domestically consumed=80 units)**
- B. The government subsidizes wheat by $x per bushel and buys no wheat itself. Calculate the subsidy needed if the farmers are to receive $2.20 per bushel at the new equilibrium. Under this policy how much wheat will consumers buy? How much will the government have to pay out?**(Cost=33, Q=110)**