Problem Set 2 (Chapter 3)

1) Suppose that the low-fat milk market is in equilibrium. Show the effects of the following shocks on equilibrium price and quantity.

   a) Suppose that with the period of low rainfall extending dairies raise their expected price of low fat milk next year.

   ![Graph showing the effect of low rainfall on the low-fat milk market]

   Low-fat milk market is in initial equilibrium at the point where the supply curve (blue one) and the demand curve (red one) intersect. Due to the low rainfall, supply of low-fat milk will fall causing supply curve to shift to the left. The new equilibrium occurs at the point where the new supply curve (green one) intersects the demand curve (red one). Therefore, the lower supply leads to a rise in the equilibrium price and a fall in the equilibrium quantity.

   b) Doctors strongly suggest the consumption of low-fat milk

   ![Graph showing the effect of doctor's suggestion on the low-fat milk market]

   When doctors suggest more consumption of low-fat milk, the demand for low-fat milk increases causing the demand curve to shift to the right. The new equilibrium is at the point where the supply curve (blue one) intersects the new
demand curve (green one). Therefore, the higher demand increases both the equilibrium price and the equilibrium quantity.

2) Predict the effects of the following events on the equilibrium price and quantity of gasoline.

a) The price of crude oil rises.

This will lead to an increase in the production costs of gasoline, which will accordingly lead to a decrease in the supply of gasoline. Therefore, the equilibrium price will rise and the equilibrium quantity will fall.

b) The price of a car rises.

This will lead to a decrease in the quantity of cars demanded. Cars and gasoline are complementary goods. Therefore, the demand for gasoline will fall leading to a decrease in both the price and the quantity.

c) All speed limits on motorways are abolished.

This situation has no effect on the gasoline market.

d) Robots cut car production costs.

The decrease in the production costs of cars will lead to an increase in the supply of cars causing the price of cars to fall. Since car and gasoline are complementary goods, the demand for gasoline will rise. When demand for gasoline increases, both the price and the quantity increase.

3) The figure below shows supply and demand curves for pencils.
a) What is the equilibrium price and quantity? How can you tell?

Equilibrium in a market occurs when quantity demanded is equal to quantity supplied. Therefore, the market is in equilibrium at the point where supply curve and demand curve intersect, with the corresponding equilibrium price of 6 pounds and the equilibrium quantity of 300 pencils.

b) If the current price is 8.00 pounds, is there a shortage or a surplus? How large is the shortage or surplus? Show all your work.

When the price is 8.00 pounds, there is a surplus (excess supply) of 200 (400-200) pencils. Surplus exists when quantity supplied is greater than quantity demanded at the current price.

c) Explain how market forces act to eliminate disequilibrium when the price is 8.00 pounds.

When there is a surplus in the market, the price is likely to fall because buyers do not wish to buy as much as sellers want to sell. As the price falls, quantity demanded increases and quantity supplied decreases. This process goes on until the two quantities are equalized.

d) If the current price is 2.00 pounds, is there a surplus or a shortage? How large is the surplus or the shortage? Will the price remain at 2.00 pounds? Why or why not? Show all your work.

When the price is 2.00 pounds, there is a shortage of 400 (500-100) pencils. When there is a shortage in the market, the price is likely to rise because sellers do not wish to sell as much as buyers want to purchase. As the price rises, quantity demanded decreases and quantity supplied increases. This process goes on until the two quantities are equalized.