MICROECONOMIC PRINCIPLES
SPRING 2001
MIDTERM ONE -- Answers

February 16, 2001

Multiple Choice.   (2 points each) Circle the correct response and write one or two sentences to explain your choice. Use graphs as appropriate.

Table One

	Labor Hours Needed to Make 1 Pound of		Pounds Produced in 20 Hours	
	Meat	Potatoes	Meat	Potatoes
Farmer	10	5	2	4
Rancher	4	1	5	20

Questions 1 & 2 refer to Table One

1. The farmer has an absolute advantage in _____ and the rancher has the absolute advantage in _____.

a. meat, potatoes
b. potatoes, meat
c. meat, meat
d. both goods, neither good
e. neither good, both goods

e. The rancher can produce more meat and more potatoes with 20 hours of time than can the farmer. The rancher has the absolute advantage the production of both.

2. Refer to the table shown. The Farmer has the comparative advantage in _____ and the Rancher has the comparative advantage in _____.
a. meat, potatoes
b. potatoes, meat
c. meat, meat

d. both goods, neither good

e. neither good, both goods

b. The opportunity cost of potatoes in terms of meat in Table Two.

Table Two

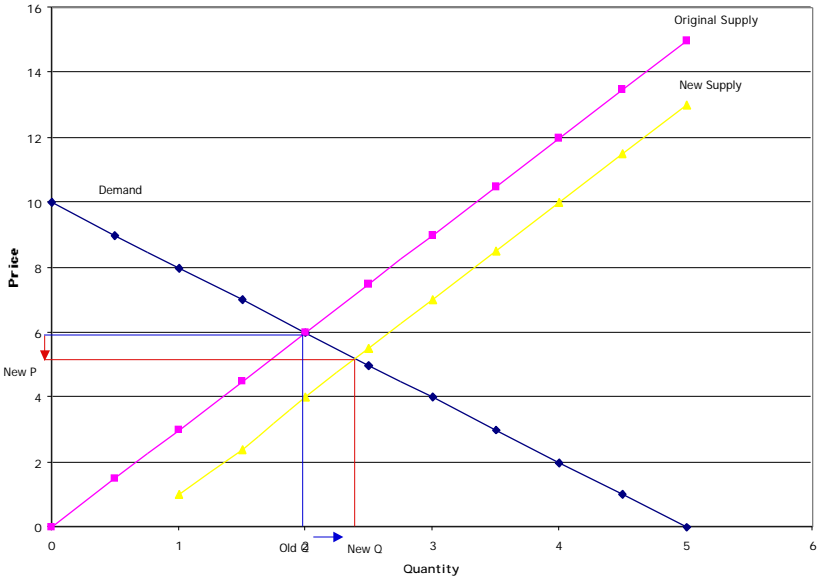|	Opportunity Cost of 1 lb of potatoes	Opportunity cost of 1 lb of meat
	lbs of Meat	lbs of Potatoes
Farmer	1/2	2
Rancher	1/4	4

The opportunity cost of potatoes is lower for the rancher than for the farmer. The rancher has the comparative advantage in potatoes; the farmer, meat.

Another way to think about this is to focus on the joint consumption possibility frontier. Suppose the farmer specializes in potatoes and the rancher in meat and they each work 20 hours. They would jointly have 5 lbs of meat and 4 lbs of potatoes. However, if the farmer focused on meat and the rancher produced both meat and potatoes, they could have 5 lbs of meat and 8 lbs of potatoes (the rancher devotes 8 hours to potato production) or 6 lbs of meat 4 lbs of potatoes (the rancher devotes 4 hours to potato production) or 5.5 lbs of meat and 6 lbs of potatoes (the rancher devotes 6 hours to potato production). Clearly, they can have more of both goods when the farmer specializes in meat and the rancher produces some potatoes.

3. A technological advancement

a. will shift the demand curve to the right and decrease the market price.

b. will shift the demand curve to the left and increase the market price.

c. will shift the supply curve to the right and increase the market price.

d. will shift the supply curve to the left and increase the market price.

e. will shift the supply curve the right and decrease the market price

e. A technological advancement reduces the cost of production. This shifts supply to the right. The increase in supply leads to a reduction in the market price (a movement down along the demand curve) and an increase in output.

16

Original Supply

14

New Supply

12

Demand

Price

10

8

6

New P

4

2

0

0   1   Old Q New Q   3   4   5   6

Quantity

4. Suppose that the incomes of buyers in a particular market for a normal good declines and there is also a reduction in input prices. What would we expect to occur in this market?

a. The equilibrium price would increase, but the impact on the amount sold in the market would be ambiguous.

b. The equilibrium price would decrease, but the impact on the amount sold in the market would be ambiguous.

c. Both equilibrium price and equilibrium quantity would increase.

d. Both equilibrium price an d equilibrium quantity would decrease.

e. Equilibrium quantity would increase, but the impact on equilibrium price would be ambiguous.

b. The reduction of buyers' income will reduce demand. The demand curve shifts down to the left. The reduction in input prices will shift supply out to the right. The decreased demand would lead to a lower price and output. The increased supply decreases price, but increases output. Hence, the combined effect is a decrease in price, but an ambiguous effect on output.

In this graph, the increase in Q resulting from the shift in supply is offset by the decrease in Q caused by the decreased demand so Q is unchanged.
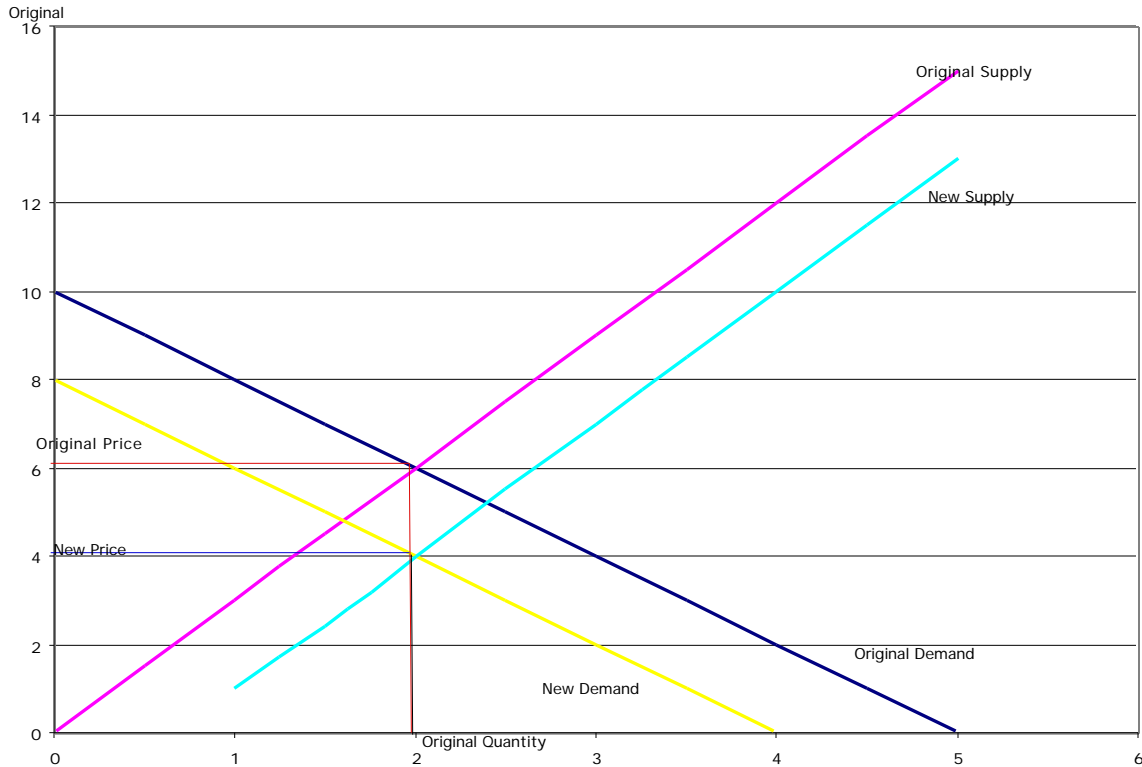
5. A higher price for batteries would tend to

a. increase the demand for flashlights.
b. decrease the demand for electricity.
c. increase the demand for electricity.
d. increase the demand for batteries.
e. increase the price of flashlights.

c.   Batteries and electricity are substitutes (not perfect substitutes, but substitutes nonetheless). A higher price for batteries would increase the demand for electricity.

(Flashlights are generally not sold with batteries. To receive credit for choosing (e), you must have a clear statement that batteries are an input into flashlights from the supplier's perspective and that a higher price of batteries would shift the supply of flashlights up to the right. The decreased supply results in a higher price.)

6. Alice says that she would buy one banana split a day regardless of the price. If she is telling the truth,

a. Alice's demand for banana splits is perfectly inelastic.

b. Alice's price elasticity of demand for banana splits is 1.

c. Alice's price elasticity of demand is infinite.

d. Alice's income elasticity of demand for banana splits is negative.

e. None of the above answers are correct.

a. Alice's consumption does not vary as the price varies so for any % Δ in Price, her % Δ in Quantity is zero. Hence, her elasticity of demand is 0 -- perfectly inelastic. Graphically, her demand is a vertical line at Q=1.

Perfectly Inelastic Demand
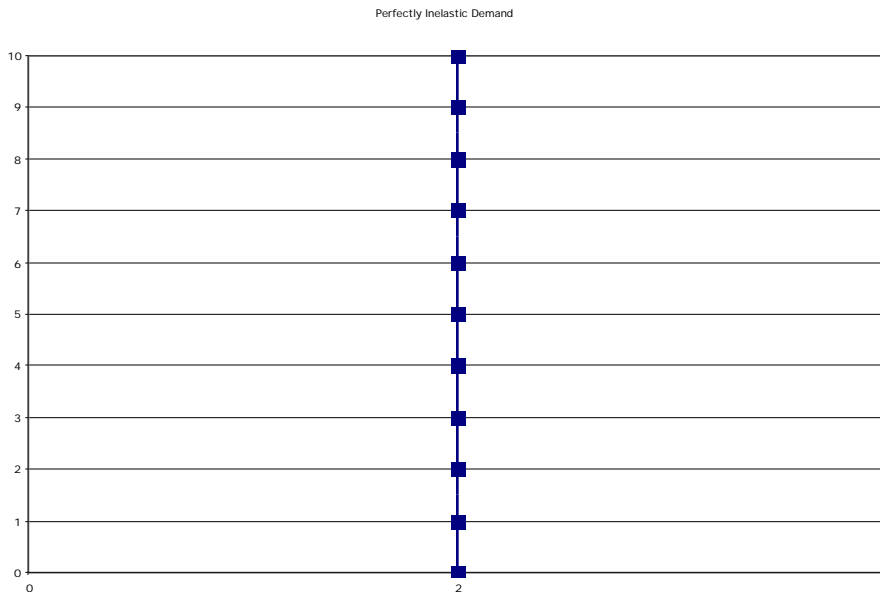
7. How does total revenue change as one moves down a linear demand curve?

a. It increases.

b. It decreases.

c. It first increases, then decreases.

d. It first decreases, then increases.

e. It is unaffected by a movement along the demand curve.

c. The elasticity of demand changes as one moves down a linear demand curve. Initially, demand is elastic. An X% decrease in price increases quantity by more than X% so total revenue (Price times Quantity) increases. At the point of unitary elasticity, an X% decrease in price

increases quantity by X% so total revenue is unchanged. Beyond that point, demand is inelastic. An X% decrease in price increases quantity by less than X% so total revenue decreases.

8. A binding price ceiling in the computer market will cause

a. an increase in the quantity supplied of commuters.
b. a surplus of computers.
c. a shortage of computers.
d. quantity demanded of computers to be equal to quantity supplied.
e. an increase in the demand for computers.

c. A binding price ceiling sets price below the market clearing price where Qd=Qs. This lower price increases Qd and decreases Qs so now Qd>Qs. This gap between Qd and Qs implies a shortage.
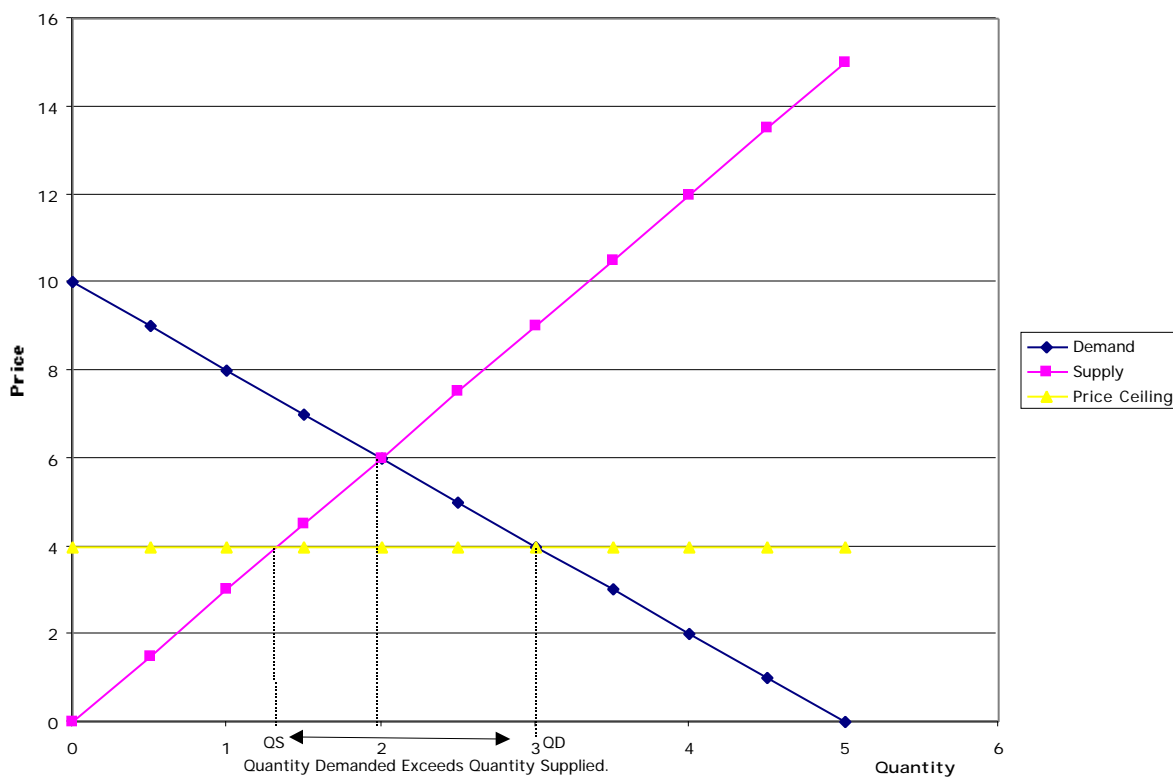
9. The burden of a tax on Good X is borne entirely by suppliers of Good X when

a. the demand for Good X is perfectly inelastic
b. the supply of Good X is perfectly inelastic

c. the supply of Good X is perfectly elastic

d. the supply of Good X is relatively inelastic and the demand for Good X is relatively elastic.

e. the supply of Good X is relatively elastic and the demand for Good X is relatively inelastic.

b. The burden of the tax will be borne entirely by suppliers when supply is perfectly inelastic. In this case, if suppliers try to pass the tax to consumers by increasing P above the market clearing price, quantity demanded will fall and there will be a surplus of the good. Competition will drive the price consumers pay back to its original level. Producers will have to pay the tax out of revenues.

(Suppliers bear a bigger burden than consumers when supply is relatively inelastic and demand relatively elastic, but the burden is still shared.)

Free Response

1. (24 pts) Suppose we are analyzing the market for hot chocolate. What will be the impact on the equilibrium price and quantity of each of the following events affecting the hot chocolate market? (Use graphs to illustrate.)

a. the price of coffee falls
Coffee and hot chocolate are substitutes. When the price of a substitute falls, demand decreases (Shifts down). Price and quantity fall.
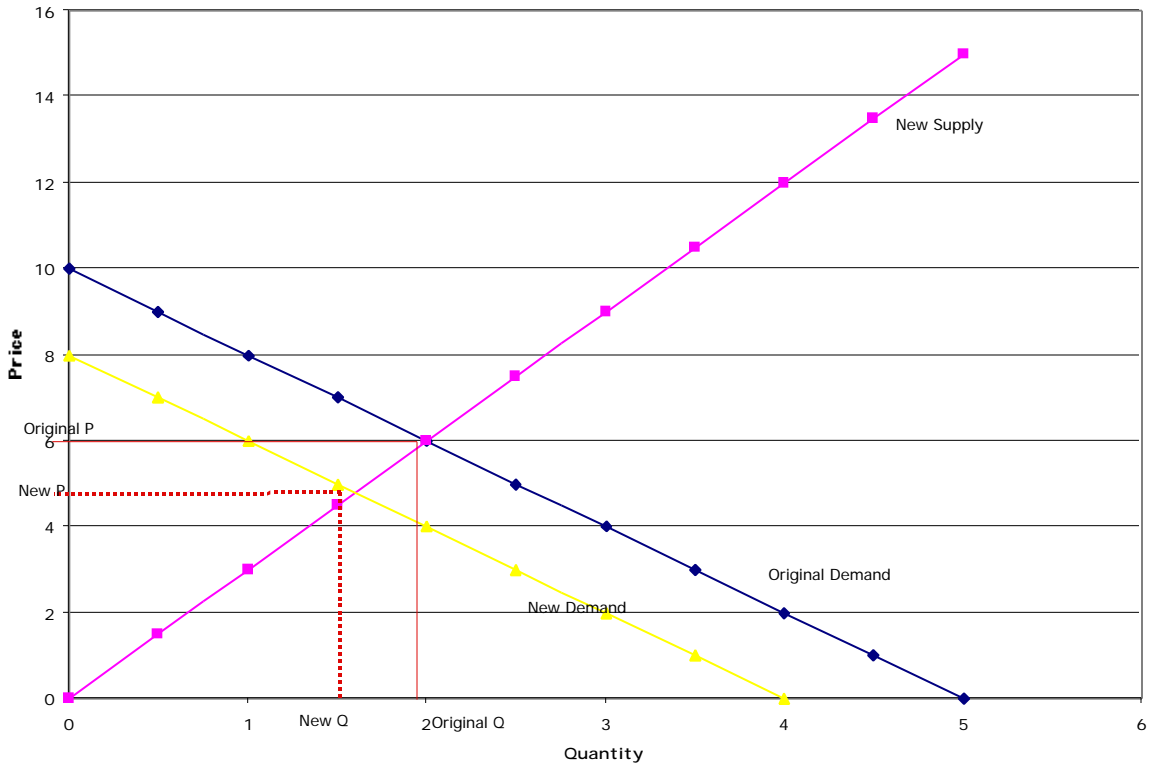
b. the price of whipped cream falls

Whipped cream is a complement for hot chocolate. When the price of a complement falls, demand increases. If we re-label the graph above, price and quantity increase from (New Q, New P) to (Original Q, Original P)

If you decided that whipped cream is an input, then you would increase supply. The price falls and quantity increases.
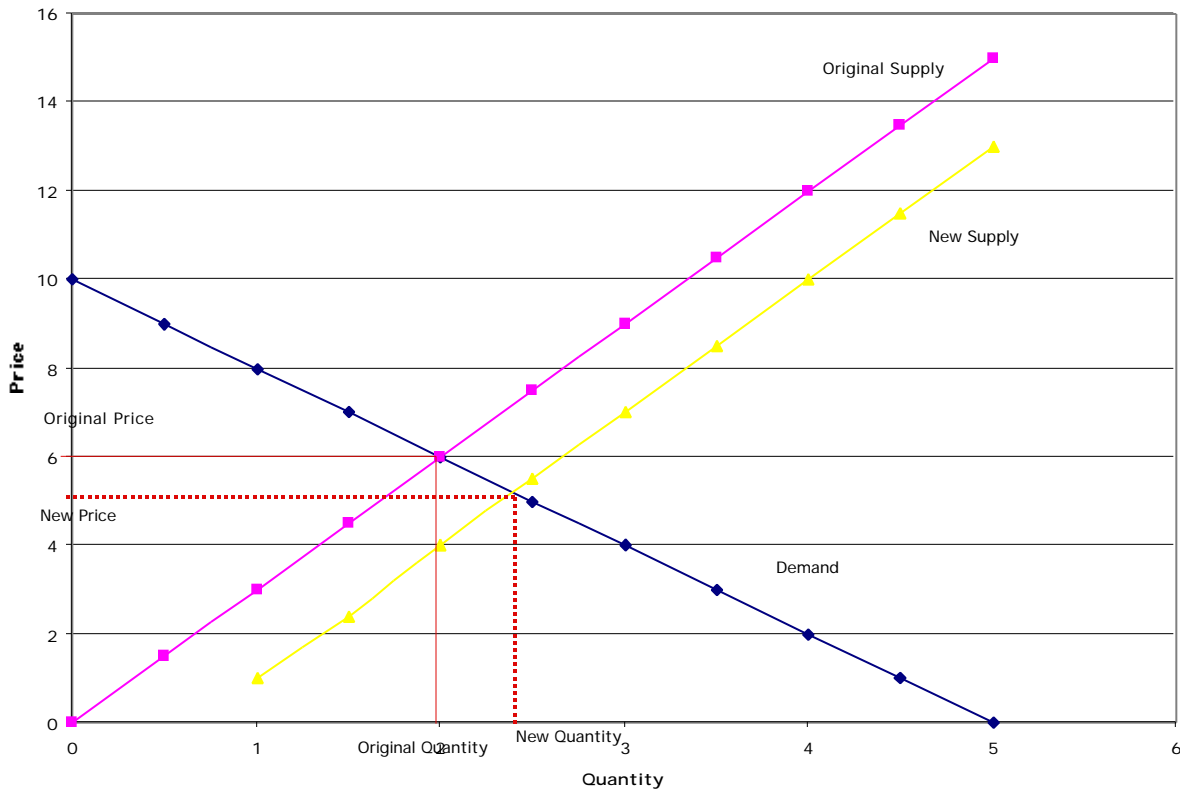
c. the price of cocoa beans increases

This is the reverse of the supply shift depicted above. Cocoa beans are an input into production of hot chocolate. An increase in price of cocoa beans will decrease supply (shift up). With decrease in supply price increases (from New Price to Original Price) and quantity decreases (From New Quantity to Original Quantity)

d. consumer income falls because of a recession

Demand will shift in to right. (See graph for a.) Price and quantity decrease.

e. the Surgeon General of the U.S. announces that hot chocolate cures acne

Demand will shift out to left. Reverse figure in part a. Price will increase from New Price to Original Price. Quantity will increase from New Quantity to Original Price.

f. a better method of harvesting cocoa beans is introduced
See figure for part b (whipped cream as input). Price will decrease; quantity will increase.

2. (8 pts) Using a demand-supply diagram, show how OPEC raising oil prices in the 1970s combined with a government imposed price ceiling on gasoline created a shortage of gasoline.

Initially the price ceiling on gasoline was not binding. Equilibrium price was below the price ceiling. OPEC raised oil prices in the 1970s. Oil is an input into gasoline. An increase in oil prices caused supply of gasoline to contract. Shift shifted up to the left. As a result, the equilibrium price increased. With the new equilibrium price the price constraint became binding. With a binding price ceiling, quantity demand will exceed quantity demanded. There is a shortage of gasoline.
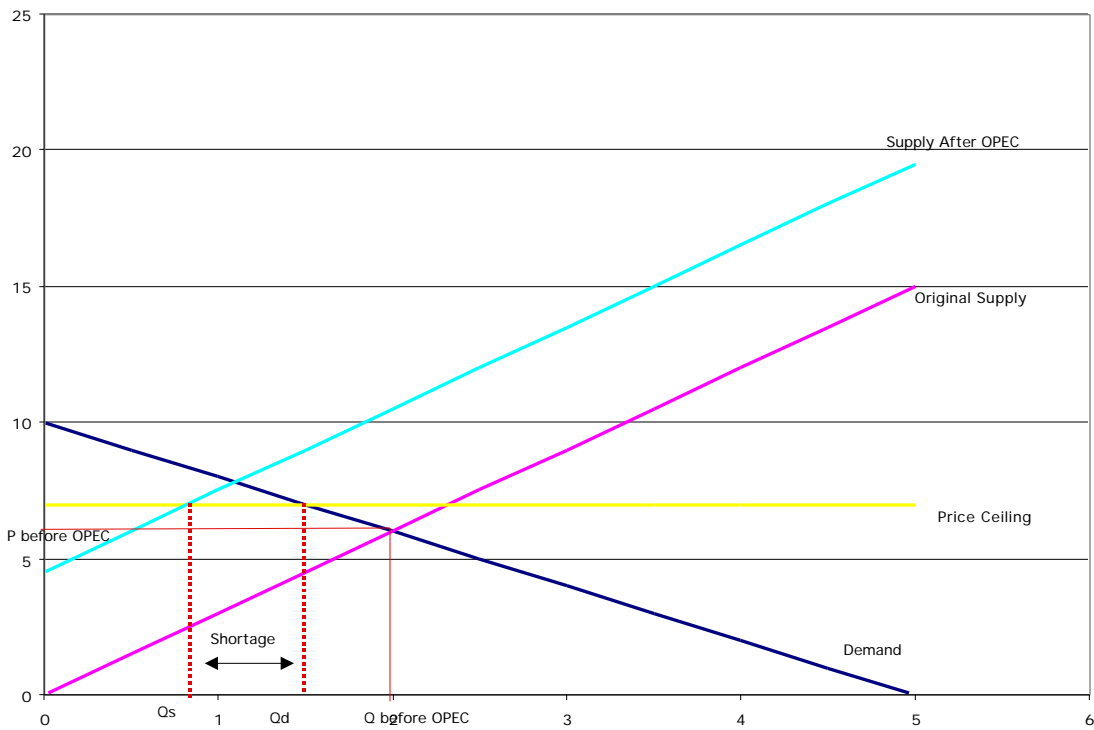

3. (16 pts) Draw a supply-demand diagram for chocolate. On the diagram, show the equilibrium before and after the imposition of a tax. Now identify areas corresponding to each of the following.

a. consumer surplus before the tax: ACJ

b. producer surplus before the tax: JCH

c. total surplus before the tax: ACH

d. consumer surplus after the tax: AKB

e. producer surplus after the tax: GFH

f. total surplus after the tax: AKB+: GFH+ KBFG
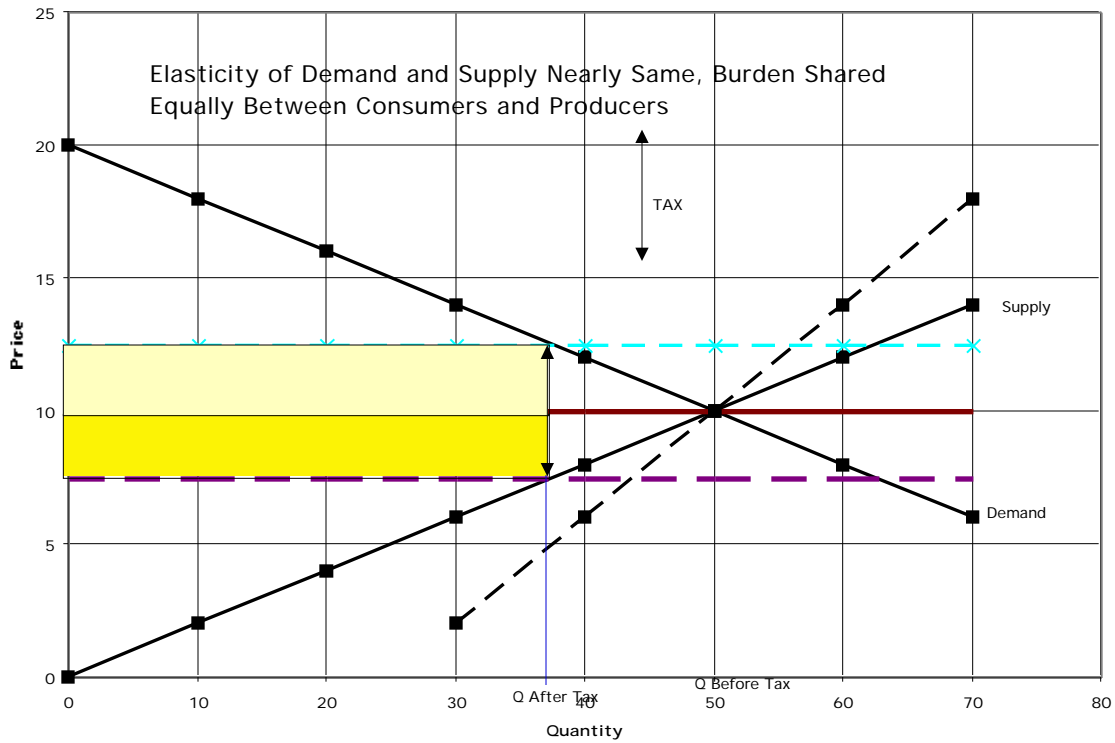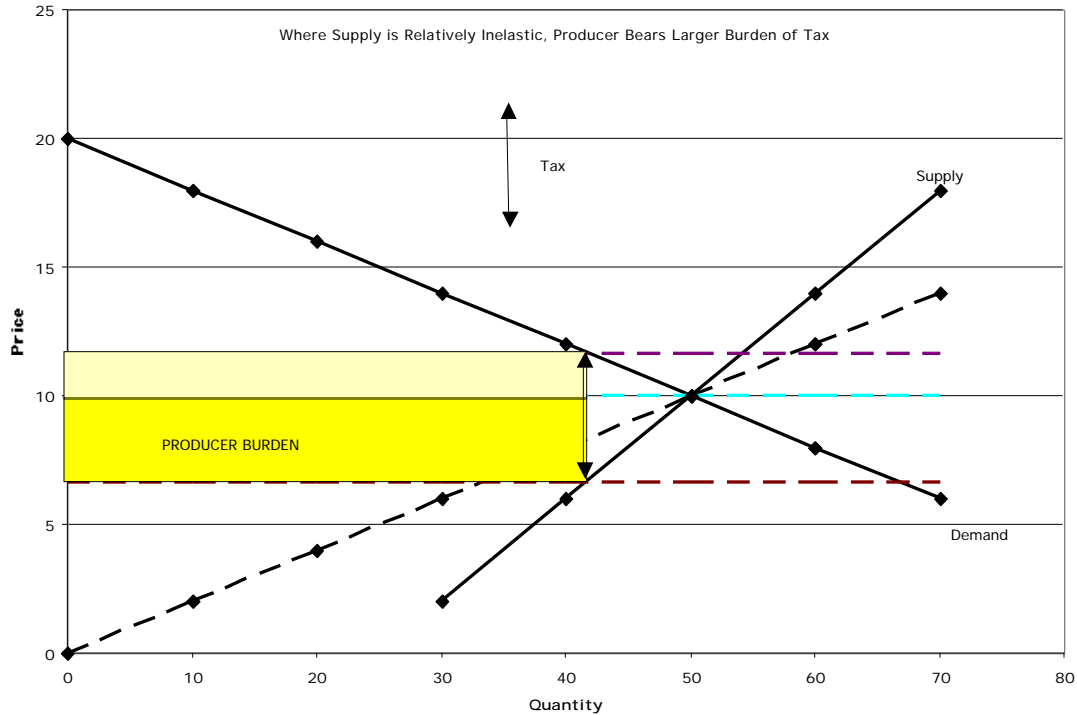
g. tax revenue: KBFG

h. deadweight loss: BCF
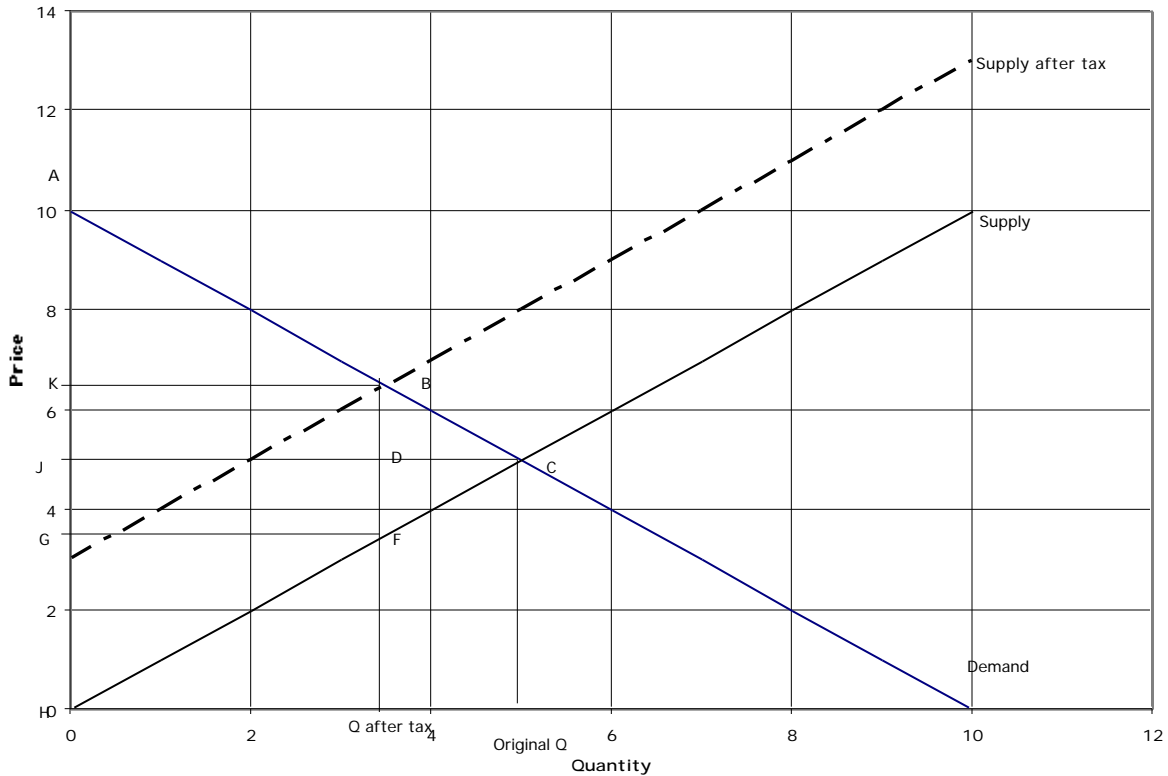
4. (8 pts) Suppose you are the manager of a theater. You currently charge the same admission price to all customers, regardless of age. You hire an economist to determine the price elasticity of demand for admissions by age, and he tells you that at the current price, demand by adults is inelastic and demand by children is elastic. If you want to increase your total revenue by adjusting admission prices, how should they be adjusted?

Since adults have inelastic demand, the theater can increase revenues by increasing the price for adults. An X% increase in price will reduce quantity demanded by less than X% and increase total revenue. The theater can charge a lower price for children. Since they have elastic demand, an X% decrease in price will increase quantity demanded by more than X% and hence, increase total revenue.

5. (10 pts) How does elasticity affect the burden of a tax? Justify your answer using supply-demand diagrams.

If supply is relatively inelastic, the supplier bears the larger burden. If demand is relatively inelastic, the consumers bear the larger burden. In these graphs, the elasticity of supply changes. It was also acceptable to change elasticity of demand.

Elasticity of Demand and Supply Nearly Same, Burden Shared Equally Between Consumers and Producers

Where Supply is Relatively Inelastic, Producer Bears Larger Burden of Tax

6. (16 pts) Some policy makers believe that a minimum wage has negligible effects on employment and will increase incomes of low skilled workers. Others believe that it will hurt the workers that it is designed to help. What the economic arguments employed to support these opposing views?

Points for Essay to Cover

- *Illustrate that a minimum wage, a price floor, leads to unemployment of workers. (ESSENTIAL)*
- *Discuss that the reduction in employment resulting from the minimum wage will depend on the elasticity of demand for labor. (ESSENTIAL)*
- *Cite arguments that minimum wage might not create unemployment because (a) worker productivity increases or (b) employers have market power*
- *Cite empirical studies or estimates of impact of minimum wage on employment.*
- *Discuss how an increase in the minimum wage might increase incomes of low skill workers and their families.*
- *Acknowledge that not all minimum wage workers live in poor families.*
- *Cite impact of minimum wage on small businesses*