

**Practice Questions #2**  
**Principles of Microeconomics**  
**Professor Hungerman**

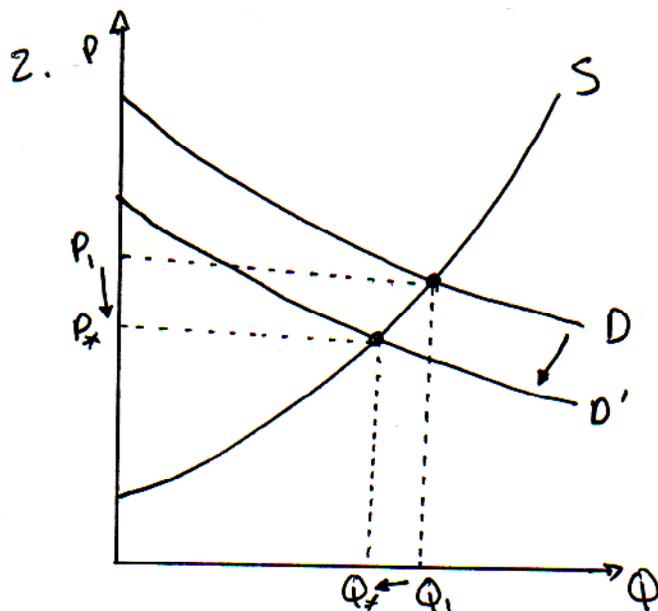
**Supply, Demand, and Equilibrium**

1. Your study friend Mr. Silly keeps saying that an increase in supply means you move the supply curve “upwards” on the standard graph of supply. Since Mr. Silly has a midterm coming, please explain to him what an increase in supply means, how this differs from an increase in quantity supplied, and why an increase in supply means the supply curve moves down and to the right.

*An increase in supply means that at any given price, the quantity of goods in services that producers are willing and able to provide has increased—that is, at any given price the quantity supplied has risen. On a standard graph, with prices on the y-axis and  $Q_s$  on the x-axis, this represents a rightward and downward shift in the supply curve. So Mr. Silly is being silly.*

*An alternate way to see a shift in supply is to ask: what is the minimum price we can offer suppliers to induce them to supply (say) two units of the good? As the supply increases, the minimum price we can offer to get two units of the good (or any other quantity) is lower than before. That is why you can say that an increase in supply is a downward shift in the supply curve*

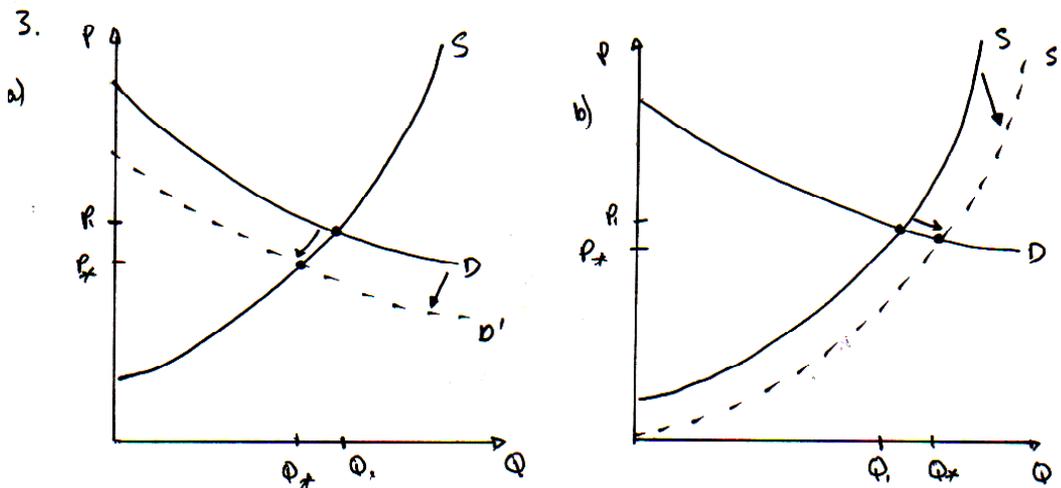
2. Suppose that Ramen soup is an inferior good. If your income rises, and holding all else equal, what will happen to the equilibrium quantity and price of Ramen soup? How does the supply of soup change?



Draw a picture of supply and demand. As income rises, demand for an inferior good will fall. Draw a new demand curve, down and to the left of the old curve. The equilibrium quantity (and price) of soup will be lower than before. The supply of soup does not change—there has been no shift in the supply curve.

Hopefully you read the question carefully when you answered it. Don't miss a question because you read it too fast and confuse different types of income effects or mistake a change in quantity supplied with a change in supply.

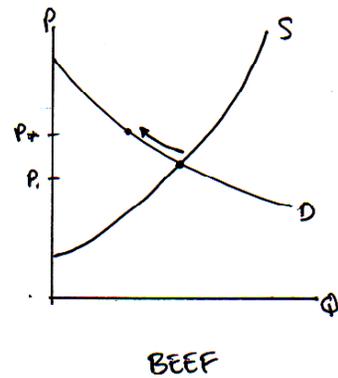
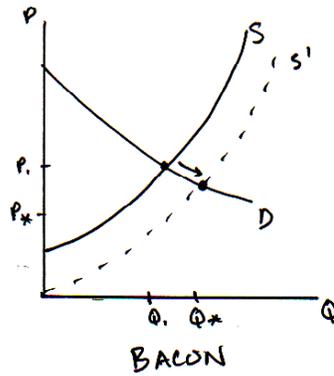
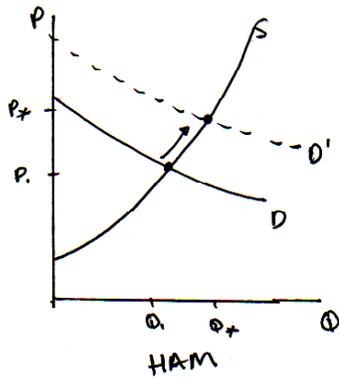
3. Suppose there is a shock in a market, so that either demand or supply shifts. You don't know which shifted, or how, all you know is that at the old equilibrium price there is now a surplus. What sort of shift in supply or demand would create a surplus? How will the equilibrium quantity change? How will equilibrium prices change?



A surplus could be created by an increase in supply, a decrease in demand, or both. (Check this by drawing out each of these scenarios). If there is a surplus, prices will fall as suppliers lower prices to induce demand. The new equilibrium price will be lower. We do not know what will happen to the equilibrium quantity—it depends on whether the surplus was created by a shift in supply, demand, or both.

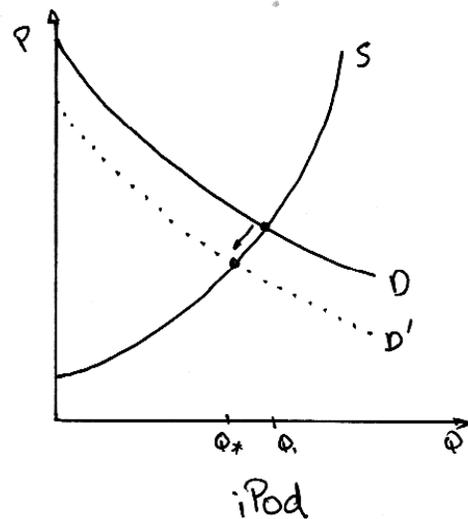
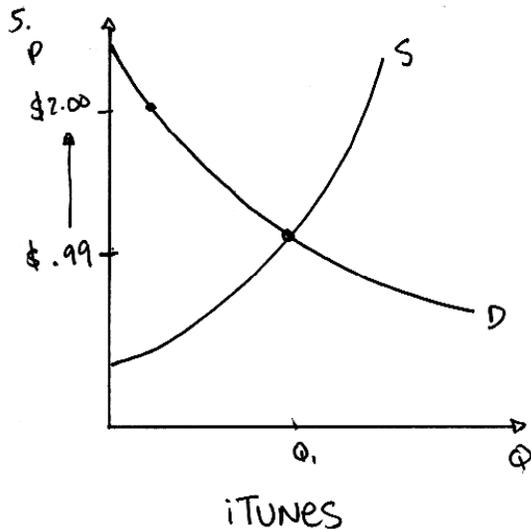
4. Consider two goods, ham and bacon, which are complements in production. Consider also a third good, beef; consumers consider Ham and Beef to be substitutes. Suppose that the price of beef rises. How will this affect demand for Ham? How will the effect on the equilibrium for Ham affect supply of bacon? What about the equilibrium in the bacon market—what will it look like now? (Assume demand for bacon does not change).

4.



As the price of beef rises, consumers will demand more ham (because consumers view the two goods as substitutes). Draw a picture of the ham market, and draw a new demand curve to illustrate the increase in demand. Note that equilibrium quantity and price for ham both increase. As the price for ham increases, the supply of bacon increases, because they are compliments in production. Draw a picture of the bacon equilibrium, and confirm to yourself that as supply changes in this market the equilibrium price will fall and the equilibrium quantity will rise.

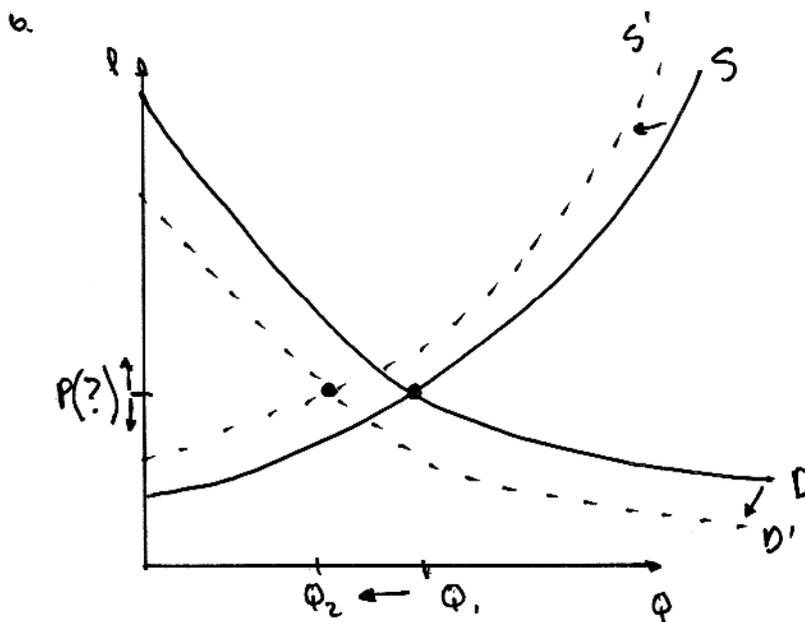
5. Suppose that iPods and iTunes are complements. Right now, iTunes can be bought for \$0.99. Suppose the price for iTunes increased to \$2. All else equal, what do you expect will happen to the equilibrium quantity of iPods sold? Will supply of iPods change? Will supply of iTunes change?



If the price of iTunes goes up, then the demand for iPods will fall, because the two goods are complements and that is the definition of complements. The equilibrium quantity and price of iPods sold will both fall; draw a graph to confirm this and make sure that you can explain why the price will fall in the new equilibrium. The SUPPLY of iPods DOES

*NOT CHANGE*—there is no shift in the supply curve (the *QUANTITY* supplied, however, falls). We know the price of iTunes changed, but we do not know if this was from a change in supply or change in demand or what. So we don't know if the supply of iTunes changed.

6. Suppose that after football season ends, both the supply and demand for Notre Dame T-shirts falls. At the new equilibrium, how will price have changed? How will the equilibrium quantity change? What has happened to the minimum price that producers need to be paid to produce t-shirts at the old equilibrium quantity? What has happened to the maximum price that consumers can face while still being willing and able to buy a quantity of t-shirts equal to the old equilibrium amount?



*Draw a picture of a fall in both supply and demand. We cannot tell if the new equilibrium price is higher or lower than the old price. The equilibrium quantity has fallen. The minimum price that producers need to be paid to supply the good at its old equilibrium level has increased (the supply curve has shifted upwards), and the maximum price that consumers can face while still demanding the old equilibrium quantity of t-shirts has fallen. Thus, the old equilibrium quantity is not sustainable—the minimum price sufficient to get suppliers to produce the old quantity is above the maximum price that consumers could face while still demanding the old quantity. Thus, the equilibrium quantity must fall.*

## Elasticity

1. Consider the following table. Calculate the total revenue for each price/quantity combination, and calculate the elasticity between each price/quantity combination. Verify whether or not we see the expected relationship between elasticity and the effect of a change in price on total revenue.

Price	Qd	Price Elasticity of Demand	Total Revenue
1	10	$1.5/9.5 = 0.16$	10
2	9	$2.5/8.5 = 0.29$	18
3	8	$3.5/7.5 = 0.47$	24
4	7	$5.5/6.5 = 0.69$	28
5	6	$5.5/5.5 = 1$	30
6	5	$6.5/4.5 = 1.44$	30
7	4	$7.5/3.5 = 2.14$	28
8	3	$8.5/2.5 = 3.40$	24
9	2	$9.5/1.5 = 6.33$	18
10	1		10

*Note that on the test, ratios (eg, 1.5/9.5 for the first elasticity) would be fine.*

2. Suppose someone tells you that the demand for drugs is inelastic. If a new anti-drug policy causes a decrease in the supply of drugs, what will be the effect on total revenue in the drug market? What will happen to demand in the drug market?

*As the supply of drugs falls, the equilibrium price rises and equilibrium quantity falls. Because demand is inelastic, the increase in price will dominate the relatively minor fall in demand, and total revenue in the drug market will rise. Demand in the drug market does not change—there is nothing in the problem that mentions a shift in the demand curve.*

3. Suppose someone tells you that a good is a superior, or normal, good. True or false: this means that the income elasticity of demand for that good is greater than unity.

*False—this does not mean that income elasticity is greater than unity. It does imply, however, that income elasticity is positive.*

4. Your study companion, Mr. Silly, has drawn a demand curve with a slope equal to negative one. Mr. Silly tells you this means that the elasticity of demand is constant along this demand curve. Is Mr. Silly correct?

*No, Mr. Silly is not! He is being silly. See the first question in this elasticity section of the problem set (the question with the big table), for an example of a constant-slope demand curve where elasticity is changing along the curve.*

5. Suppose you learned that the proportion of income devoted to food in the United States is much smaller than the proportion of income devoted to food in India. Based on this fact, would you expect consumers in India to have higher or lower price elasticities of demand for food?

*Since a larger proportion of income devoted to a good is associated with a greater price elasticity of demand for the good, we would expect that India has a greater price elasticity of demand for food based on what the problem says.*

6. Name a problem with using slope to measure how sensitive a demand curve is to changes in price.

*One problem is that slope is based on units of measurement, but it is difficult to make meaningful comparisons two different goods whose quantities are measured in totally different ways.*

7. Consider the market for whale boots. Suppose that demand in this market is perfectly elastic. Suppose that the costs of the factors of production of whale boots increase (eg., suppliers have to pay Whale-hunters more). What effect does this have on equilibrium prices and quantities?

*First, as usual, draw a picture of the market described in the problem. A perfectly elastic demand curve is a flat demand curve. As costs of F.O.P. increase, supply falls. Equilibrium quantities fall, but the equilibrium price is the same as before.*

