

In Class-Exercise Solutions

1.

This can be explained by marginal benefit and scarcity. Scarcity can be simply taken as the availability of a good, skill, or service compared to what people demand. Marginal benefit is the additional satisfaction or gain someone gets from using or purchasing an additional unit of a particular good or service. People are willing to pay a higher price for goods with greater marginal benefit.

At the large quantity, the marginal benefit for water is very low (remember, marginal benefit decreases as consumption increases). In a typical situation, we are not willing to pay a lot of money for one more drink of water. Diamonds, however, are scarce. People usually do not have more than a few diamonds. At the small quantity, the marginal utility for diamond is very high. That means, adding a diamond to our collection is much higher than offering us one more drink of water.

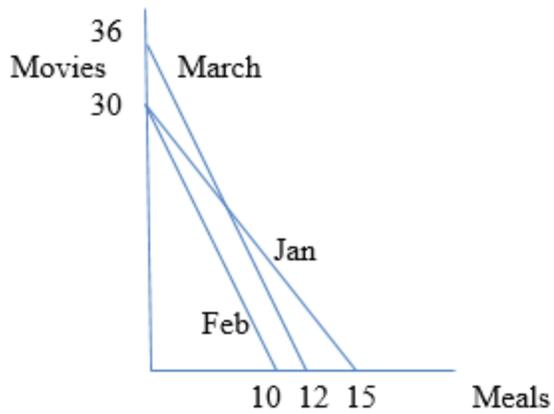
If one is dying of thirst or in an area with a shortage of water (e.g. desert), then the marginal benefit from another drink of water would be much higher than the additional satisfaction of owning a diamond. In that case, people are willing to pay a much higher price for water than diamond.

2.

Yes. The airline makes rational decisions based on the comparison between marginal costs and marginal benefits. In this case, the marginal benefit is \$250 for an additional ticket sold. The marginal cost is the cost of flying one more passenger, including opportunity cost and explicit cost. The explicit cost, such as the salaries paid to pilots and attendants and the fuel cost, will not change with the additional 50 passengers. The change in opportunity cost is also very trivial. The airline does not give up much, if anything, to sell tickets to the 50 passengers. Since the marginal cost is far less than the marginal benefit (\$250), the airline should sell the tickets to maximize its profits.

3.

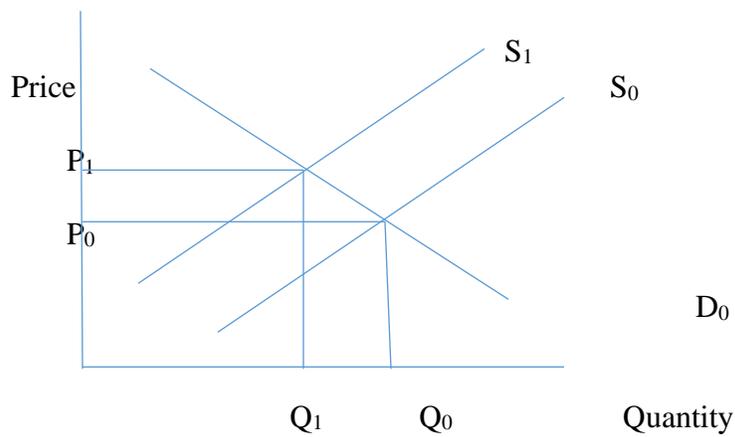
2017 Econ Bootcamp



Jan: Movies: $150/5=30$ (units); Meals: $150/10=15$ (units)
 Feb: Movies: $150/5=30$ (units); Meals: $150/(10+5)=10$ (units)
 Mar: Movies: $(150+30)/5=36$ (units); Meals: $180/15=12$ (units)

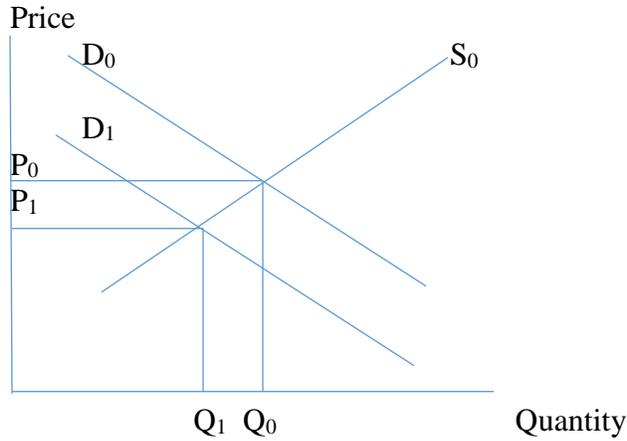
4.

a. Thanks to a frost, orange crop yields fall this year. Use the supply and demand graph to show what happens in the market for orange juice.



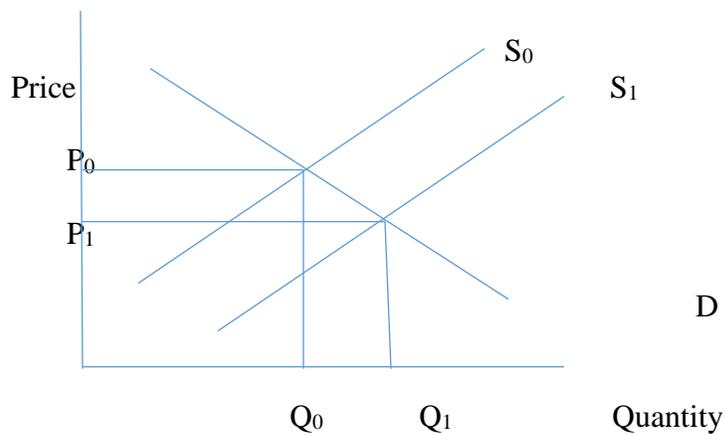
The supply of orange crop decreases, showed as the shift from S_0 to S_1 .
 Consequently, the price increases and the quantity decreases.

b. Researchers discover that apple juice has many previously unknown health benefits. What effect might this development have on the orange juice market? Use the graph to illustrate your answer.



Apple juice is a substitute for orange juice. When the demand for apple juice increases (because of the new discovered benefits), the demand for orange juice decreases. As a result, the price of orange juice decreases from P_0 to P_1 , and the quantity decreases from Q_0 to Q_1 .

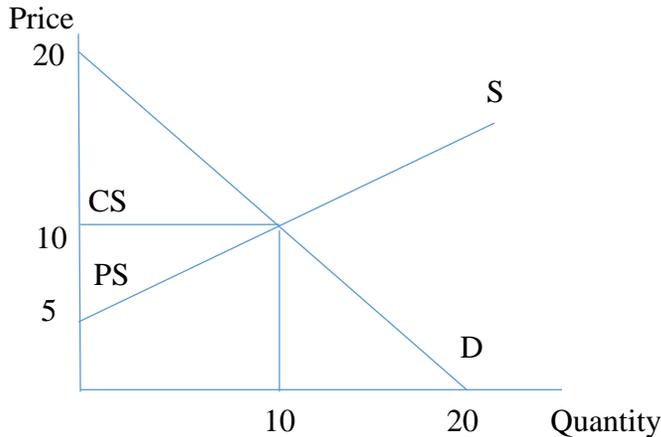
c. A new technology on pasteurization cuts the production cost for orange juice companies. Use the graph to show how this new technology impacts the orange juice market.



The supply of orange crop increases, showed as the shift from S_0 to S_1 . Consequently, the price goes down and the quantity increases.

5.

- a). Graph the supply and demand curves
- b). Find the equilibrium price and quantity
- c). Find the consumer and producer surpluses



Let $Q_D=Q_S$, we get $20-P=2P-10$.

Solving this equation, we get $P=10$. Plugging “10” into P in either of the original equations, we get $Q=10$. So, the equilibrium price is 10 and the equilibrium quantity is also 10.

Consumer surplus in this case is the area between the demand curve and the price, shown as the upper triangle. Mathematically, consumer surplus equals to $(10*10)/2=50$.

Producer surplus in this case is the area between the demand curve and the price, shown as the lower triangle. Mathematically, producer surplus equals to $(5*10)/2=25$.

The creation of Netflix has caused consumer demand for movie tickets to decrease. Demand for tickets is now $Q_D = 17-P$.

- a). What is the new equilibrium price and quantity?
- b). Graph the new supply and demand curves.
- c). What are the new consumer and producer surpluses?
- d). Are movie theaters now worse off? How about consumers?

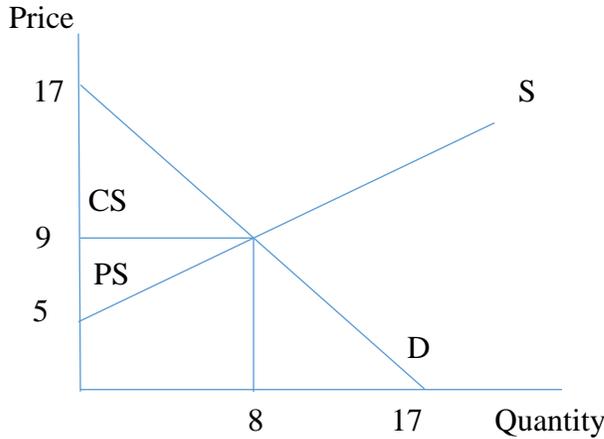
Similarly, let $Q_D=Q_S$, we get $17-P=2P-10$.

Solving this equation, we get $P=9$.

Plugging “9” into P in either of the original equations, we get $Q=8$ ($17-9=8$). So the equilibrium quantity equals to 8 and the equilibrium price equals to 9.

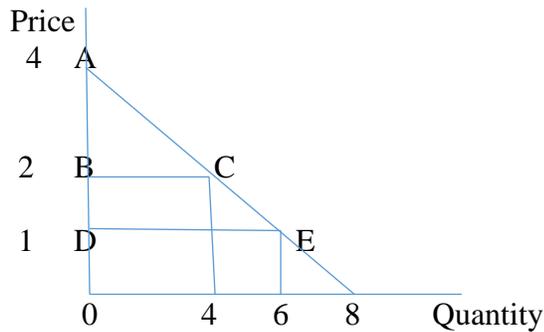
Consumer surplus in this case is the area between the demand curve and the price, shown as the upper triangle. Mathematically, consumer surplus equals to $(8*8)/2=32$.

Producer surplus in this case is the area between the demand curve and the price, shown as the lower triangle. Mathematically, producer surplus equals to $(4 \cdot 8) / 2 = 16$.



Hence, movie theaters are worse off since their producer surplus decreases from 25 to 16. Consumers in the movie theater market are also worse off, but they also benefit from the creation of Netflix.

6.



Let $Q=0$, we find the dot that makes $P=4$. Then, let $P=0$, we find the dot that makes $Q=8$. Connecting the two dots, we get the demand curve.

When the price equals to \$2, the consumer surplus is the area that between the new price and the demand curve, shown as the triangle ABC. The consumer surplus (triangle ABC) is $(2 \cdot 4) / 2 = 4$.

When the price equals to \$1, the consumer surplus is the triangle ADE, which equals to $(6 \cdot 3) / 2 = 9$. Therefore, the change in consumer surplus is 5. Karen loses 5 units of benefits when the price increases.