

Econ103_Midterm (Fall 2016)

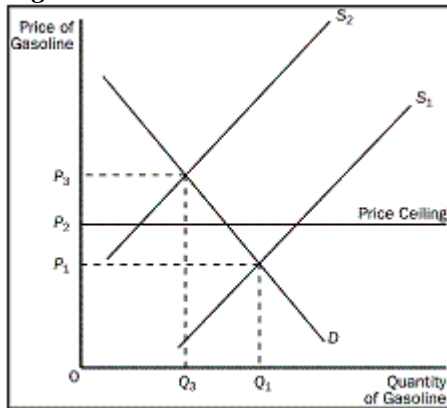
Total 50 Points.

Multiple Choice

Identify the choice that best completes the statement or answers the question. 1 point for each question. Total 15 pts.

- __c__ 1. Which of the following cause and effect events is in order for a seller?
- a. An input price rises, profit falls, the supply curve shifts right.
 - b. Technology improves, profit falls, the supply curve shifts left.
 - c. An input price falls, profit rises, the supply curve shifts right.
 - d. An input price rises, profit rises, the supply curve shifts left.
- __b__ 2. Complete the following: The smaller the price elasticity of demand the
- a. closer the price elasticity of demand will be to the slope of the curve.
 - b. steeper the demand curve will be through a given point..
 - c. more equal the price elasticity of demand will be to the slope of the curve.
 - d. flatter the demand curve will be through a given point.
- __d__ 3. What will happen to the equilibrium price and quantity of new cars if the price of gasoline falls, the price of steel falls, public transportation becomes more expensive and less comfortable, and the wages of auto workers decrease?
- a. price will rise and the effect on quantity is ambiguous
 - b. price will fall and the effect on quantity is ambiguous
 - c. quantity will fall and the effect on price is ambiguous
 - d. quantity will rise and the effect on price is ambiguous
- __b__ 4. What will result from a decrease in resource costs to firms in a market?
- a. a decrease in equilibrium price and a decrease in equilibrium quantity
 - b. a decrease in equilibrium price and an increase in equilibrium quantity
 - c. an increase in equilibrium price and an increase in equilibrium quantity
 - d. an increase in equilibrium price and no change in equilibrium quantity

Figure 6-6



- ___c___ 5. **Refer to Figure 6-6.** With a price ceiling present in this market, what will happen when the supply curve for gasoline shifts from S_1 to S_2 ?
- A surplus will occur at the new market price of P_2 .
 - The market price will stay at P_1 due to the price ceiling.
 - A shortage will occur at the price ceiling of P_2 .
 - The price will increase to P_3 .

Table 3-5

	Hours needed to make one unit of:		Amount produced in 2400 hours:	
	Cars	Airplanes	Cars	Airplanes
Canada	40	160	60	15
Japan	50	150	48	16

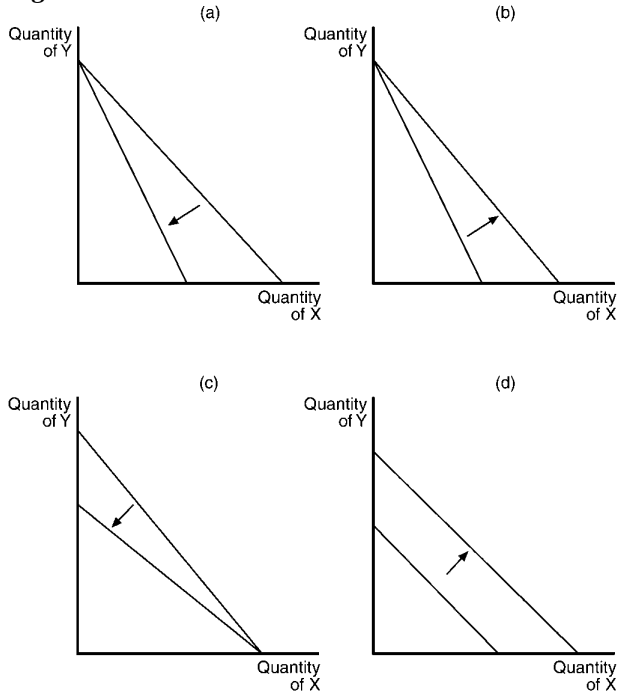
- ___d___ 6. **Refer to Table 3-5.** If Canada and Japan specialize and trade based on their comparative advantages, what product will Japan export to Canada?
- Japan should buy both products from Canada.
 - both airplanes and cars
 - Cars
 - Airplanes
- ___c___ 7. Suppose that the incomes of buyers in a particular market for a normal good decrease and there is also an increase in input prices. What would we expect to occur in this market?
- Equilibrium quantity would increase, but the impact on equilibrium price would be ambiguous.
 - The equilibrium price would increase, but the impact on the amount sold in the market would be ambiguous.
 - Equilibrium quantity would decrease, but the impact on equilibrium price would be ambiguous.
 - The equilibrium price would decrease, but the impact on the amount sold in the market would be ambiguous.

Table 3-2

	Labor Hours Needed to Make 1 kilogram of:	
	Meat	Potatoes
Farmer	5	2
Rancher	4	1

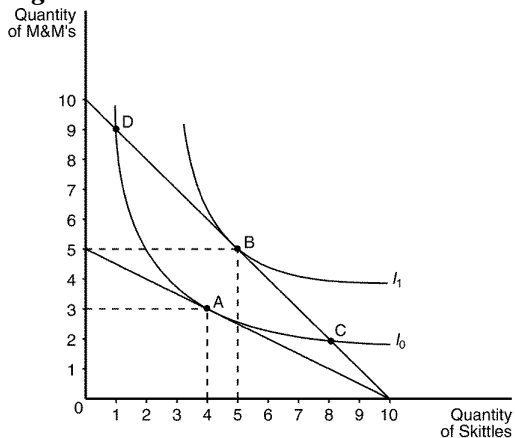
- a c 8. **Refer to Table 3-62.** Which of the following is correct?
- The Farmer has an absolute advantage in neither good, and the Rancher has an absolute advantage in both goods.
 - The Farmer has a comparative advantage in potatoes, and the Rancher has a comparative advantage in neither good.
 - The Farmer has a comparative advantage in meat, and the Rancher has a comparative advantage in potatoes.
 - The Farmer has a comparative advantage in potatoes, and the Rancher has a comparative advantage in meat.
- c 9. If a tax is imposed on a market with inelastic demand and elastic supply, how is the burden of the tax distributed?
- It is impossible to determine how the burden of the tax will be shared.
 - Sellers will bear most of the burden of the tax.
 - Buyers will bear most of the burden of the tax.
 - The burden of the tax will be shared equally between buyers and sellers.
- a 10. **Market demand** is given as $Q_d = 200 - 3P$. Market supply is given as $Q_s = 2P + 100$. In a perfectly competitive equilibrium, what will be price and quantity traded in the market?
- price will be \$20 and quantity will be 140
 - price will be \$60 and quantity will be 20
 - price will be \$120 and quantity will be 340
 - price will be \$140 and quantity will be 20
- a 11. What can we say about a consumption bundle selected by an optimizing consumer?
- Utility is maximized subject to budget constraints.
 - Utility is maximized and indifference curves are linear.
 - Utility is maximized and prices are minimized.
 - Income is maximized and prices are minimized.

Figure 21-2



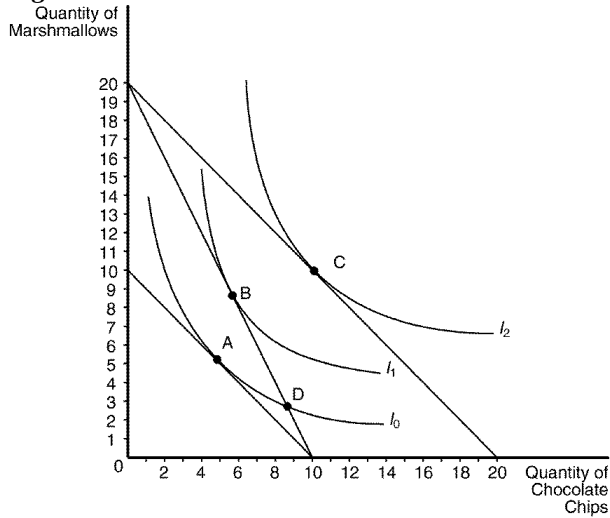
- ___d___ 12. **Refer to Figure 21-2.** Which of the graphs in the figure reflects an increase in consumer's income (holding other variables constant)?
- graph (a)
 - graph (b)
 - graph (c)
 - graph (d)

Figure 21-7



- ___b___ 13. **Refer to Figure 21-7.** Assume that the consumer depicted in the figure has an income of \$20. The price of Skittles is \$2 and the price of M&M's is \$2. This consumer will choose to optimize by consuming
- bundle A.
 - bundle B.
 - bundle C.
 - bundle D.

Figure 21-10



- ___c___ 14. **Refer to Figure 21-10.** If point B is the consumer's optimum and the price of Chocolate Chips is \$3 per bag, what is the price of a bag of Marshmallows?
- \$3
 - \$6
 - \$1.50
 - None of the above are correct.

Scenario 21-1

Fred has recently graduated from college with a degree in journalism and economics. He has decided to pursue a career as a freelance journalist writing for business newspapers and magazines. Fred is typically awake for 112 hours each week (he sleeps an average of 8 hours each day). For each hour Fred spends writing, he can earn \$75.

- ___a___ 15. **Refer to Scenario 21-1.** What is the implicit price that Fred pays for the satisfaction derived from playing an hour of volleyball?
- \$75
 - \$37.50
 - 0
 - There is not sufficient information to answer this question.

Short Answer (30 points)

1. Suppose we are analyzing the market for hot chocolate. Graphically illustrate the impact each of the following would have on demand or supply. Also show how equilibrium price and quantity have changed. (total 5 points)
 - a. The price of tea, a substitute for hot chocolate, falls. (1 point)
 - b. The price of cocoa beans, an input used to make hot chocolate, decreases. (1 point)
 - c. A better method of harvesting cocoa beans is introduced. (1 point)
 - d. The Canadian Medical Association announces that hot chocolate cures acne. (1 point)
 - e. Producers expect the price of hot chocolate to increase next month. (1 point)

Answer:

- a. The demand curve shifts leftward (demand is lower).
 - b. The supply curve shifts rightward (supply is higher).
 - c. The supply curve shifts rightward (supply is higher).
 - d. The demand curve shifts rightward (demand is higher).
 - e. The supply curve may shift leftward, or stay the same. If the supplier cannot produce, then he will save the goods and sell them next month. Then the current supply decreases. If the supplier is a manufacturer, then he can produce more for the future and doesn't have to cut the current supply. In this case the event may not change the current supply.
2. The demand function for cheese cakes is $Q_d = 80 - \frac{1}{2}P$, and the supply function is $P = 5 + 3Q_s$. (total 10 points)
 - a. What are the equilibrium price and quantity? (4 points)

Now suppose a subsidy of \$5 is given to consumers for each unit of pizza they consume.

- b. What are the new equilibrium price and quantity? (2 points)
 - c. Do consumers take all the subsidy? If not, what percentage of the subsidy do consumers actually receive? (4 points)

Answer:

- a. In equilibrium $Q_d = Q_s = Q$. So $160 - 2Q = 5 + 3Q \Rightarrow Q = 31$. $P = 5 + 3 * 31 = 98$.
 - b. Now the demand function becomes $Q_d = 80 - \frac{1}{2}(P - 5) \Leftrightarrow P = 165 - 2Q_d$. In the new equilibrium $Q_d = Q_s = Q$. So $165 - 2Q = 5 + 3Q \Rightarrow Q = 32$. $P = 5 + 3 * 32 = 101$.
 - c. No. Without the subsidy consumers pay \$98 for each cake, and now they pay \$101. Although they receive \$5 from the government, they pay \$3 more for each cake. So only \$2 benefits them. The suppliers receive the other \$3 by increasing the price. That is, consumers only receive $\frac{2}{5} = 40\%$ of the subsidy.
3. Mary doesn't like working but enjoy the leisure time. If she works, she earns a wage of \$10/hour and she can use the income to buy all the goods she need to consume. Assume the price of the goods she consumes is equal to \$1 and the quantity is C . Denote by N her leisure hours. Assume her maximum working hours is 8 hours a day. (total 5 points)
 - a. Write down her budget constraint. (2 points)

- b. Illustrate your answers above in a graph. (Clearly label the values of the two points on the two axes and the slope.) (3 points)

Answer:

- Budget constraint: $C + 10N = 80$
- It is a straight line with the point on vertical axis equal to 80, and the point on the horizontal axis equal to 8.
(If you use 24 hours as the maximum of N , the maximum of C is still 80 and the budget line is shown in Figure 3b_2.)

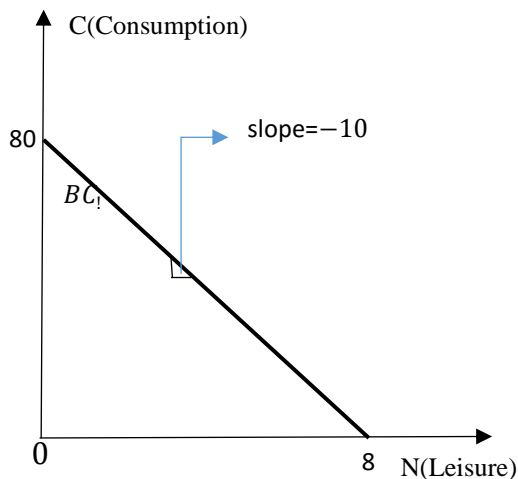


Figure 3b

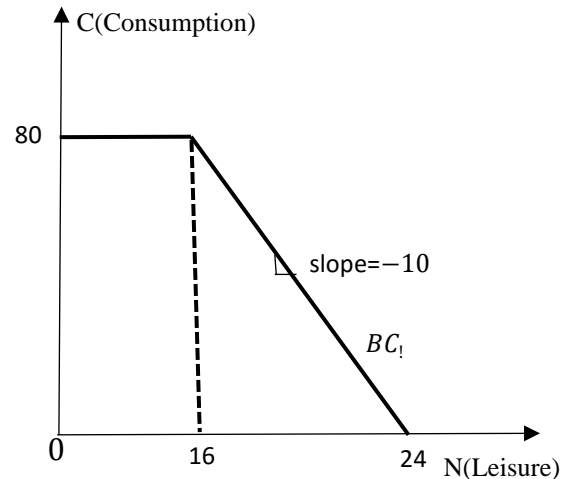


Figure 3b_2

4. Steve's utility function is $U = \sqrt{BC}$, where B = bottles of beer per week and C = cups of coffee per week. Here, $MU_B = \frac{\sqrt{C}}{2\sqrt{B}}$ and $MU_C = \frac{\sqrt{B}}{2\sqrt{C}}$. Steve spends \$60 each week on beer and coffee. The price of a bottle of beer is \$1, and the price of a cup of coffee is \$3. (total 15 points)
- What is his marginal rate of substitution if beer is on the vertical axis and coffee is on the horizontal axis? (1 point)
 - What is Steve's budget constraint function? (1 point)
 - How many bottles of beer and how many cups of coffee does Steve consume to maximize his utility? (4 points)

Now a new tax raises the price of a bottle of beer to \$2.

- What is his new optimal bundle? (2 points)
- If there is no income effect, what is his optimal bundle as a result of substitution effect? (2 points)
- Is beer normal good or inferior good? You must show it to get any point. (2 points)
- Illustrate your answers above in a graph. (Clearly label the substitution and income effects) (3 points)

Answer:

$$a. \quad MRS = \frac{MU_C}{MU_B} = \frac{\frac{\sqrt{B}}{2\sqrt{C}}}{\frac{\sqrt{C}}{2\sqrt{B}}} = \frac{B}{C}$$

- b. Budget constraint: $B + 3C = 60$
- c. Assume the optimal point is A. Then at A: $MRS = \text{slope of budget line} \Leftrightarrow \frac{B}{C} = \frac{3}{1} \Rightarrow B = 3C$. Also from the budget constraint function: $B + 3C = 60 \Rightarrow 3C + 3C = 60 \Rightarrow C = 10$. Then $B = 3C = 30$. So at A we have $C = 10, B = 30$.
- d. Assume the optimal bundle is the point E. Now the new budget constraint is: $2B + 3C = 60$. We also have at E: $MRS = \text{slope of new budget line} \Leftrightarrow \frac{B}{C} = \frac{3}{2} \Rightarrow 2B = 3C$. From the budget constraint function: $2B + 3C = 60 \Rightarrow 3C + 3C = 60 \Rightarrow C = 10$. Then $B = 15$.
- e. Suppose the optimal bundle is F. At F we have his utility at F is equal to his utility at A. That is, $\sqrt{BC} = \sqrt{300} \Rightarrow BC = 300$ (1). At F we also have $MRS = \text{slope of the new budget line}$. So we have $\frac{B}{C} = \frac{3}{2} \Rightarrow 2B = 3C$ (2). From both equations (1) and (2), we can get: $C = 10\sqrt{2}, B = 15\sqrt{2}$.
- f. The move from F to E is a result of income effect only. Since the beer price is higher, the income is lower, but from F to E his consumption in beer is lower (from $15\sqrt{2}$ to 15). This shows that beer is normal good.
- g. See below.

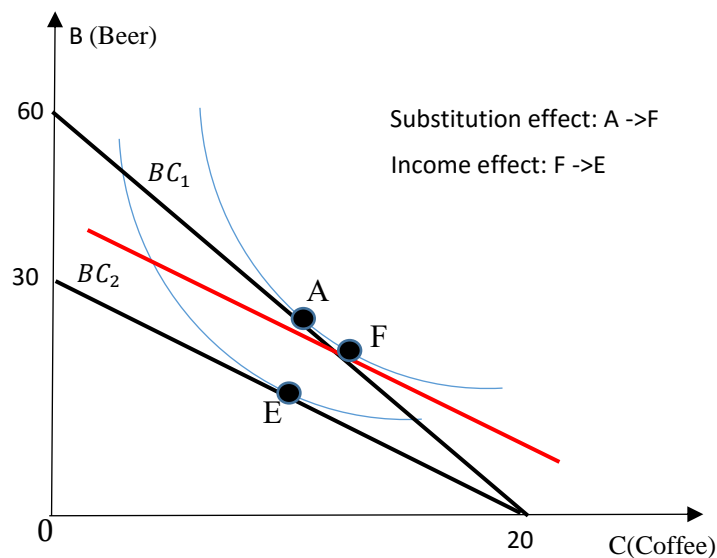


Figure 4.g