

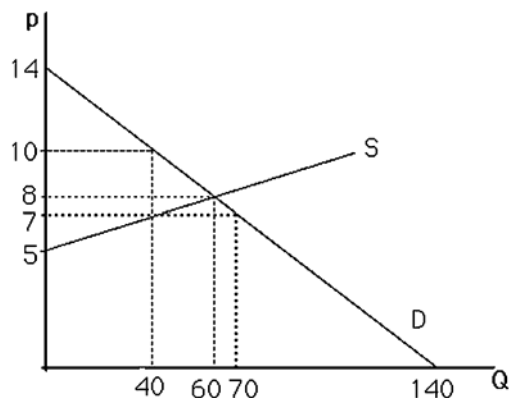
Name: _____

Last 4 digits of your Student ID Number: _____

ECON 100A FALL 2006
University of California, Berkeley
Answers for Problem Set 1

Question #	Answer	Points
1	B	3
2	B	3
3	D	0
4	A	3
5	B	3
6	C	3
7	B	3
8	A	3
9	C	3
10	B	3
Multiple Choice Total		27
11		8
12		31
13		10
14		14
15		10
Total Score		100

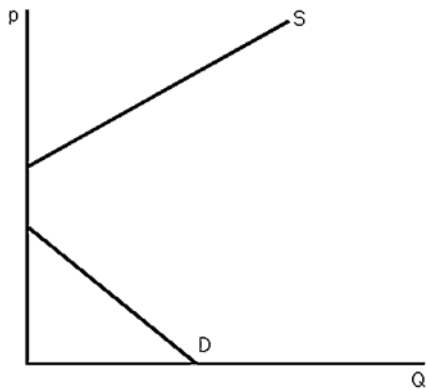
Multiple Choice: Showing your work is not necessary for multiple choice problems. Place all multiple choice answers in the table on the first page of the problem set. The first page should be stapled to the front of your problem set.



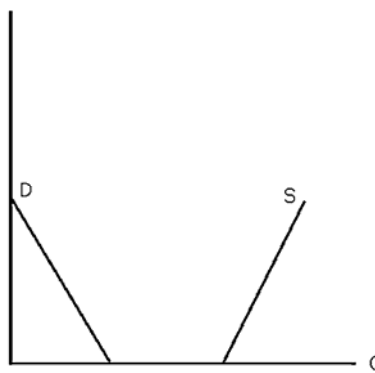
- 1) The figure above shows a graph of the market for pizzas in a large town. Suppose that concern over dietary habits has led the government to impose a restriction that limits suppliers to produce only 40 pizzas. As a result, for prices greater than \$7, the
 - (a) supply curve is unchanged.
 - (b) **supply curve is vertical.**
 - (c) demand curve becomes vertical.
 - (d) demand curve becomes horizontal.

- 2) The figure above shows a graph of the market for pizzas in a large town. As a result of concern over the affordability of pizza, the government restricts sellers from charging a price over \$7. As a result, the quantity of pizzas consumed will
 - (a) increase.
 - (b) **decrease.**
 - (c) remain unchanged.
 - (d) be indeterminable.

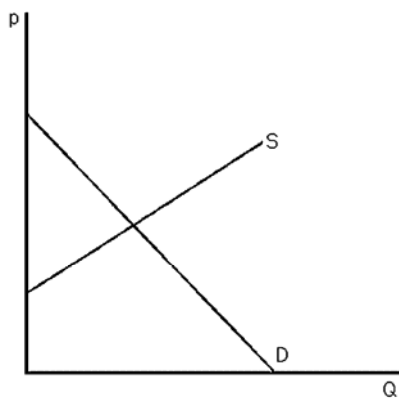
- 3) If pizza and tacos are substitutes, a decrease in the price of tacos would lead to a
 - (a) decrease in the demand curve for pizza.
 - (b) decrease in the quantity demanded of pizza.
 - (c) decrease in the price of pizza.
 - (d) **All of the above.**



Graph A



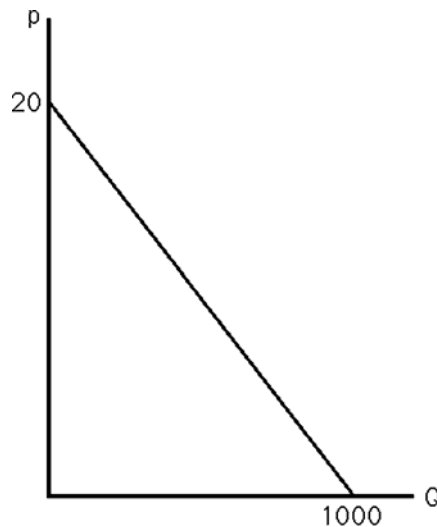
Graph B



Graph C

- 4) The figure above shows three different supply-and-demand graphs. Which graph best represents the market for vacations on Mars?
- (a) **graph A**
 - (b) graph B
 - (c) graph C
 - (d) None of the above.
- 5) The figure above shows three different supply-and-demand graphs. Which graph best represents the market for the air we are currently breathing?
- (a) graph A
 - (b) **graph B**
 - (c) graph C
 - (d) None of the above.

- 6) When two goods are substitutes, a shock that raises the price of one good causes the price of the other good to
- remain unchanged.
 - decrease.
 - increase.**
 - change in an unpredictable manner.



- 7) The figure above shows the demand curve for crude oil. If the market price is \$10 a barrel, what is the price elasticity of demand?
- .02
 - 1**
 - 10
 - 500
- 8) Which of the following is most likely to be true?
- Income elasticity of demand for fur coats exceeds that of oatmeal.**
 - Income elasticity of demand for oatmeal exceeds that of fur coats.
 - Income elasticity of demand for fur coats equals that of oatmeal.
 - It is not possible to make any prediction about relative income elasticities.
- 9) Suppose demand is given by $Q^d = 300 - 5P$ and supply is given by $Q^s = 10P$. If the government imposes a \$25 price floor the excess supply will be
- 25
 - 50
 - 75**
 - 100

- 10) Consider the demand curve $Q^d = 100P^{-2}$. If the price is 1, the elasticity of demand is
- (a) -0.50
 - (b) -2**
 - (c) -0.02
 - (d) -200

Problems to be Solved: Show your work in this section and circle your answers. Your work should be stapled to the first page of the problem set.

- 11) The nominal price of a 1990 laptop was \$3,500 and the CPI that year was 130.7. The nominal price of a laptop in 1998 was \$1,600 and the CPI that year was 163.0. What is the real price of a 1998 laptop in terms of 1990 dollars? By what percent has the real price of laptops changed?

$$\boxed{130.7(\$1,600)/163 = \$1,283. \text{ Percent decline in the real value of laptops: } -(\$1,283 - \$3,500)100/\$3,500 = \$2,217(100)/\$3,500=63.34\%}$$

- 12) The U.S. Department of Agriculture is interested in analyzing the domestic market for corn. The USDA's staff economists estimate the following equations for the demand and supply curves:

$$Q^D = 30,000 - 4,000P$$

$$Q^S = 2,000 + 2,500P$$

Quantities are measured in millions of bushels; prices are measured in dollars per bushel.

- (a) Graph the market demand and supply curves.
- (b) What are the free-market equilibrium price and quantity? Show this on your graph.

$$\boxed{P_E = 4.31; Q_E = 12,769.23}$$

- (c) The government now will support the price of corn by paying \$4.50 per bushel and it will purchase any excess production. What are the new price and quantity? Does this market clear? *Show this on your graph.*

$$\boxed{P_{\text{MIN}} = \$4.50, Q_{\text{MIN}}^D = 12,000; Q_{\text{MIN}}^S = 13,250; \text{Excess production is } 1,250. \text{ (The subscript MIN here refers to the minimum price mandated by the government.)}}$$

- (d) The government now will support the price of corn by paying \$4.70 per bushel and it will purchase any excess production. What are the new price and quantity? Does this market clear? *Show this on your graph.*

$$\boxed{P_{\text{MIN}} = \$4.70, Q_{\text{MIN}}^D = 11,200; Q_{\text{MIN}}^S = 13,750; \text{Excess production is } 2,030. \text{ (The subscript MIN here refers to the minimum price mandated by the government.)}}$$

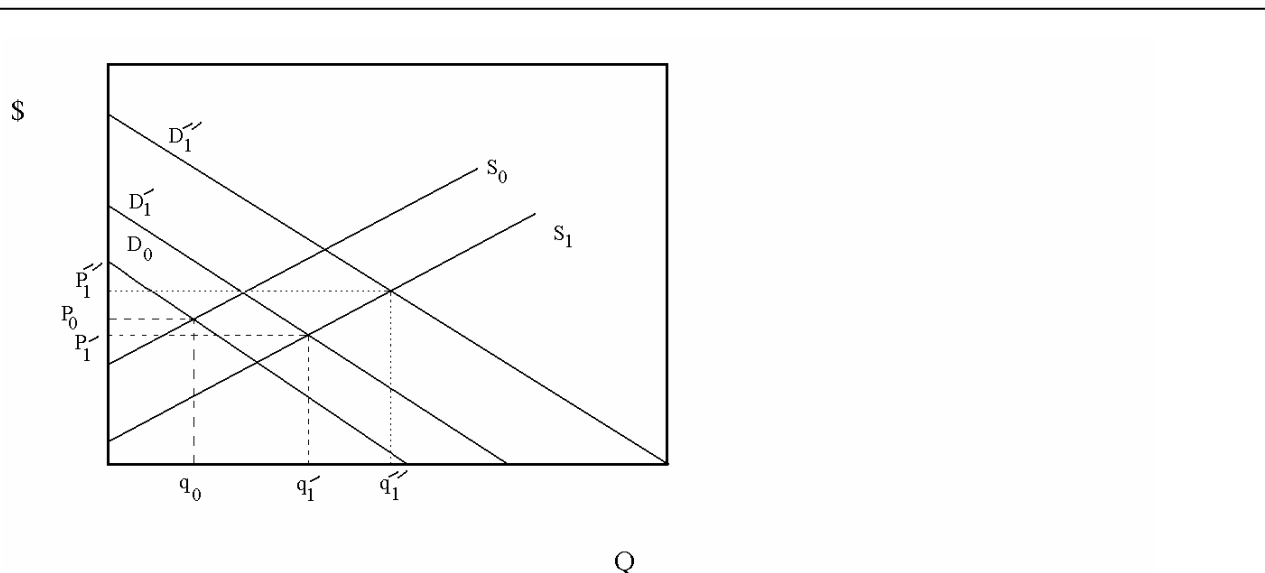
- (e) How much does government support per bushel in cases (c) and (d)? Calculate government expenses on support of corn farmers each case.

In (c) \$ 0.19 and government spending = $(\$4.50)(1250) = \5625 , in (d) \$0.39 and government spending = $(\$4.70)(2550) = \$11,985$

- (f) The government now will support the price of corn by paying \$4.00 per bushel and it will purchase any excess production. What are the new price and quantity? Does this market clear? *Show this on your graph.*

In this case, the free-market price exceeds the government minimum, hence the market price is now relevant. The answer here is that of part (b).

- 13) Suppose a new discovery in computer manufacturing has just made computer production cheaper. Also, the popularity and usefulness of computers continues to grow. Use Supply and Demand analysis to predict how these shocks will affect equilibrium price and quantity of computers. Is there enough information to determine if market prices will rise or fall? Why?



The increase in demand due to the usefulness of computers will shift the demand curve to the right. This effect alone on the market will influence the market price and quantity to rise. This is shown above by a movement from the original demand curve D_0 to a new demand curve such as D_1' or D_1'' . The reduction in the cost of producing computers will result in an increase in supply (a rightward shift of the supply curve). This effect alone on the market will influence the price of computers to fall while the quantity will increase. Note that the supply and demand effects on price work in opposite directions. If the supply effect dominates the demand effect, the equilibrium prices will fall. This is exhibited by the increase in demand to only D_1' . On this demand curve, the net effect is for prices to fall from P_0 to P_1' . On the other hand if the demand effect dominates, equilibrium prices will rise. This is exhibited by the increase in demand to D_1'' . On this demand curve, the net effect is for prices to rise from P_0 to P_1'' . As we don't know given the current information which effect dominates, we can't perfectly predict the change in price. The change in quantity is unambiguously increased.

14) Suppose the market demand and supply curves for a product is given by the following equations:

$$Q^D = 200 - 5P \quad (\text{demand})$$

$$Q^S = 10 + 5P \quad (\text{supply})$$

(a) Graph the demand and supply equation. What are the equilibrium price and quantity in this market?

Demand: $P = 40 - (1/5)Q$

Supply: $P = -2 + (1/5)Q$

$P_B = 19$

$Q_B = 105$

Now suppose that the new supply curve for the same product is given by (the demand curve remains the same):

$$Q^S = 5P.$$

(b) Graph the new supply curve on your graph in part (a). What are the equilibrium price and quantity in this market?

Demand: $P = 40 - (1/5)Q$

Supply: $P = (1/5)Q$

$P_B = 20$

$Q_B = 100$

(c) Which of the following event(s) are most consistent with the changes in the market as described in moving from part (a) to (b)?

- i. An increase in consumer income.
- ii. An increase in input prices.
- iii. A decrease in the price of a complementary good.
- iv. A decrease in the price of a substitute good.
- v. An increase in technology.
- vi. A decrease in technology.

Both ii) and vi) are consistent with decreases (shifts) in supply.

- 16) In 1998, Americans smoked 470 billion cigarettes, or 23.5 billion packs of cigarettes. The average retail price was \$2 per pack. Statistical studies have shown that the price elasticity of demand is -0.4, and the price elasticity of supply is 0.5. Using this information, derive linear demand and supply curves for the cigarette market.

$$Q^D = 32.9 - 4.7P, \text{ where } P \text{ is measured in dollars and } Q^D \text{ is measured in billion packs of cigarettes.}$$
$$Q^S = 11.75 + 5.875P, \text{ where } P \text{ is measured in dollars and } Q^S \text{ is measured in billion packs of cigarettes., see p. 47 - 49}$$

Let $Q^D = a - bP$ and $Q^S = c + dP$

$$E_D = b \cdot P / Q \rightarrow b = E_D \cdot Q / P = 0.4 \cdot 23.5 / 2 = 4.7$$
$$E_S = d \cdot P / Q \rightarrow d = E_S \cdot Q / P = 0.5 \cdot 23.5 / 2 = 5.875$$
$$a = 23.5 + 4.7 \cdot 2 = 32.9$$
$$c = 23.5 - 5.875 \cdot 2 = 11.75$$