

**EXAMINATION 2 VERSION B**  
**"Applications of Supply and Demand"**  
**October 10, 2018**

**INSTRUCTIONS:** This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, cell phones, and wireless devices are NOT permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values for each question are noted in brackets. Maximum total points are 100.

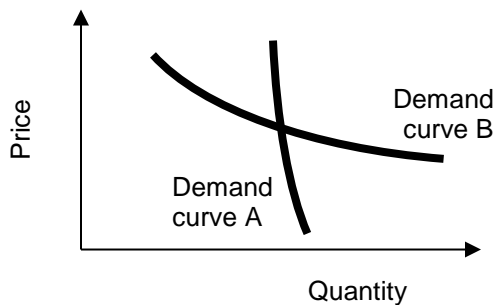
**I. Multiple choice:** Please circle the one best answer to each question. [1 pt each, 16 pts total]

(1) The units of measure for the price elasticity of demand for electricity are

- a. kilowatt-hours per dollar.
- b. dollars per kilowatt-hour.
- c. percent.
- d. None of the above.

(2) Which demand curve below is *less* elastic?

- a. Demand curve A.
- b. Demand curve B.
- c. Both have the same elasticity because they pass through the same point.
- d. Cannot be determined from information given.



(3) It takes time for consumers to adjust their lifestyles to changes in prices. Therefore, the long-run demand for gasoline is

- a. just as elastic as the short-run demand.
- b. more elastic than the short-run demand.
- c. less elastic than the short-run demand.
- d. Elasticity of demand is not related to time for adjustment.

(4) A good that has no close substitutes will likely have a price elasticity of demand that is

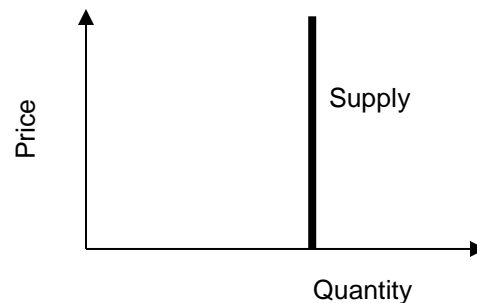
- a. small, in absolute value.
- b. large, in absolute value.
- c. zero.
- d. infinite.
- e. cannot be determined.

(5) Assuming that hotel rooms and air travel are complements, then the cross-price elasticity of demand for hotel rooms with respect to the price of air travel must be

- a. positive
- b. negative.
- c. zero.
- d. cannot be determined from information given.

(6) The supply curve in the graph below is

- a. perfectly elastic.
- b. perfectly inelastic.
- c. unitary elastic.
- d. Cannot be determined from information given.



(7) There are always winners and losers in every country as a result of international trade in any product, but the country as a whole benefits from international trade if

- a. the domestic price is higher than the world price.
- b. the world price is higher than the domestic price.
- c. neither (a) nor (b).
- d. either (a) or (b).

(8) To be a *Pareto improvement*, a change in the economy must result in

- a. winners but no losers.
- b. gains to winners that exceed any losses to losers.
- c. at least some winners.
- d. cost savings for the government.
- e. a rise in wages, salaries, and other compensation.

(9) Arbitrageurs buy low and sell high because they want to

- a. make a profit.
- b. enforce the Law of One Price.
- c. keep markets orderly.
- d. ensure that all consumers face a fair price.
- e. All of the above.

(10) Suppose the price of pumpkins in Des Moines is \$4 and the cost of shipping a pumpkin between Des Moines and Omaha is \$3. Markets are *out of equilibrium* if the price of pumpkins in Omaha is

- a. \$2.
- b. \$5.
- c. \$6.
- d. \$10.

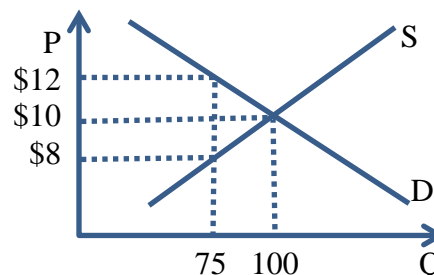
(11) Suppose the futures price of corn for delivery next March is \$5, but you believe that the spot price will be \$8 next March. If you are correct, you can make money by

- a. selling corn futures now and selling corn on the spot market in March.
- b. buying corn futures now and selling corn on the spot market in March.
- c. selling corn futures now and buying corn on the spot market in March.
- d. buying corn futures now and buying corn on the spot market in March.

(12) Which of the following government controls on a competitive market cause the quantity traded to *decrease*?

- a. price floor (legal minimum price).
- b. price ceiling (legal maximum price).
- c. quota on sellers.
- d. quota on buyers.
- e. all of the above.
- f. none of the above.

(13) Consider the market for pizzas depicted in the graph below.



Suppose a law is passed prohibiting sellers from selling more than 75 pizzas. With this quota, the price of pizzas will be

- a. \$4.
- b. \$8.
- c. \$10.
- d. \$12.
- e. Cannot be determined from information given.

(14) Iowa's sales tax rate is 6%. This is an example of

- a. an *ad valorem* tax.
- b. an excise or per-unit tax.
- c. a price control.
- d. a subsidy.

(15) Suppose the price elasticity of supply for apartment rentals is 0.3 and the price elasticity of demand is -2.0. If the city imposes a tax on apartment rentals,

- a. sellers (landlords) will pay most of the tax.
- b. buyers (renters) will pay most of the tax.
- c. sellers and buyers will each pay half of the tax.
- d. Answer depends on which side is legally required to remit the tax to the government.

(16) If the government provides a subsidy on vitamins, who will likely enjoy the benefit of the subsidy?

- a. Buyers.
- b. Sellers.
- c. Both of the above.
- d. None of the above.

**II. Problems:** Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Calculating elasticities: 2 pts] Suppose that if the price of movie tickets is \$6, the average person goes to the movies 12 times per year. If the price is \$10, the average person goes 4 times per year. Compute the price elasticity of demand for movie tickets using the “arc-elasticity” formula.

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(2) [Using price elasticity of demand: 10 pts] Suppose the cable TV company *raises* its price by 5%. Suppose the price elasticity of demand for cable TV service is -1.4. Assume everything else affecting demand for cable TV service remains constant.

- a. According to the information above, is demand for cable TV service *elastic*, *inelastic*, or *unitary-elastic*?
- b. As the price rises, will the number of cable TV customers *increase*, *decrease*, or remain *constant*?
- c. ... by approximately how much?
- d. Will the total revenue received by cable TV company *increase*, *decrease*, or remain *constant*?
- e. ... by approximately how much?

%
%

(3) [Using income elasticity of demand: 8 pts] Consider the demand for clothing. Suppose income *rises* by 10%. Assume the income elasticity of demand for clothing is 0.8. Assume the price of clothing does not change.

- a. According to the information above, is clothing a *luxury or superior good*, a *necessary good*, or an *inferior good*?
- b. Will the clothing purchased *increase*, *decrease* or remain *constant* ?
- c. ... by about how much?
- d. Will consumer spending on clothing, as a fraction of a consumer's total budget, *increase*, *decrease*, or remain *constant*?

%

(4) [Effects of international trade: 6 pts] Country X and Country Y both have markets for petroleum. Supply and demand schedules for the two countries are given below, in millions of barrels.

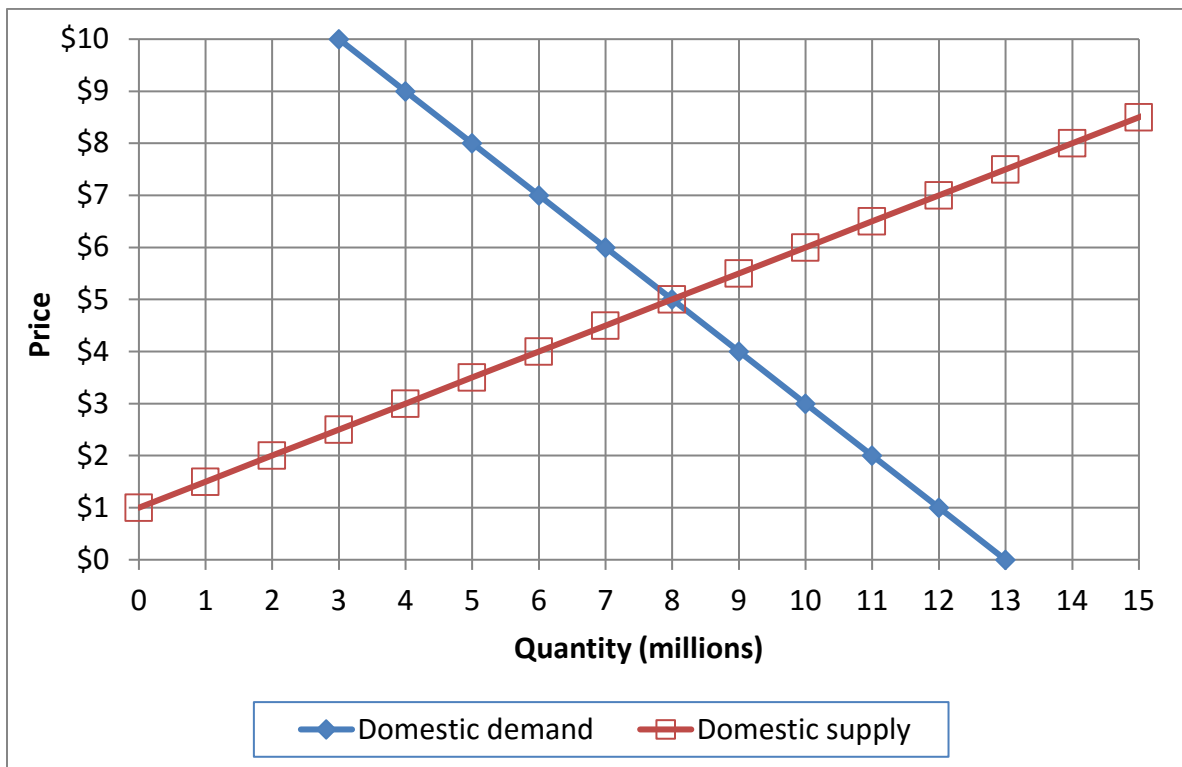
Price	Country X		Country Y	
	Quantity demanded	Quantity supplied	Quantity demanded	Quantity supplied
\$10	19	5	9	3
\$20	18	6	8	5
\$30	17	7	7	7
\$40	16	8	6	9
\$50	15	9	5	11
\$60	14	10	4	13
\$70	13	11	3	15
\$80	12	12	2	17
\$90	11	13	1	19

Suppose Country X and Country Y engage in international trade.

- a. Compute the equilibrium international price with trade.
- b. Which country exports petroleum?
- c. How much petroleum does that country export?

\$	per barrel
million barrels	

(5) [Welfare effects of international trade: 18 pts] Domestic supply and demand for screwdrivers in a particular country are given by the following diagram.



a. At first, international trade in screwdrivers is not permitted. Find the equilibrium price without international trade.

\$	
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Then this industry is opened to international trade and the international price of screwdrivers turns out to be **\$ 3**.

b. Will this country now *export* or *import* screwdrivers?

c. How many?

d. Does consumer surplus in this country *increase or decrease* from international trade in screwdrivers?

e. By how much?

f. Does producer surplus in this country *increase or decrease* from international trade in screwdrivers?

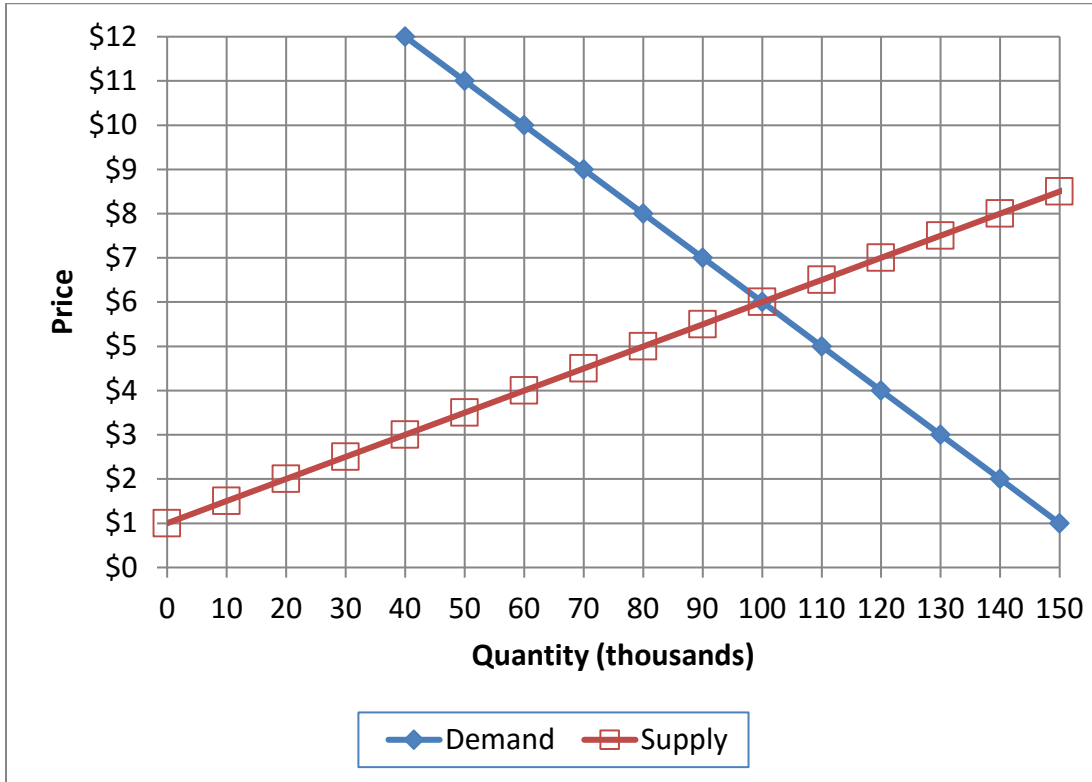
g. By how much?

h. Does total social welfare in this country *increase or decrease* from international trade in screwdrivers?

i. By how much?

	million
\$	million
\$	million
\$	million

(6) [Welfare analysis of market controls: 18 pts] The following graph shows the market for flashlights.



a. Find the equilibrium price without government intervention.

\$
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Suppose the government imposes a price ceiling (or legal maximum price) of \$4. No flashlights may be sold for a price more than the price ceiling.

b. How many flashlights will actually be sold?

thousand
thousand

c. Will there be *excess demand*, *excess supply*, or *neither*?

d. How much?

e. Does producer surplus *increase*, *decrease*, or *remain constant* because of the price ceiling, as compared to the market without government intervention?

f. By how much?

\$	thousand
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g. Does consumer surplus *increase*, *decrease*, or *remain constant* because of the price ceiling, as compared to the market without government intervention? (Assume optimistically that flashlights are purchased by those consumers who value flashlights the most.)

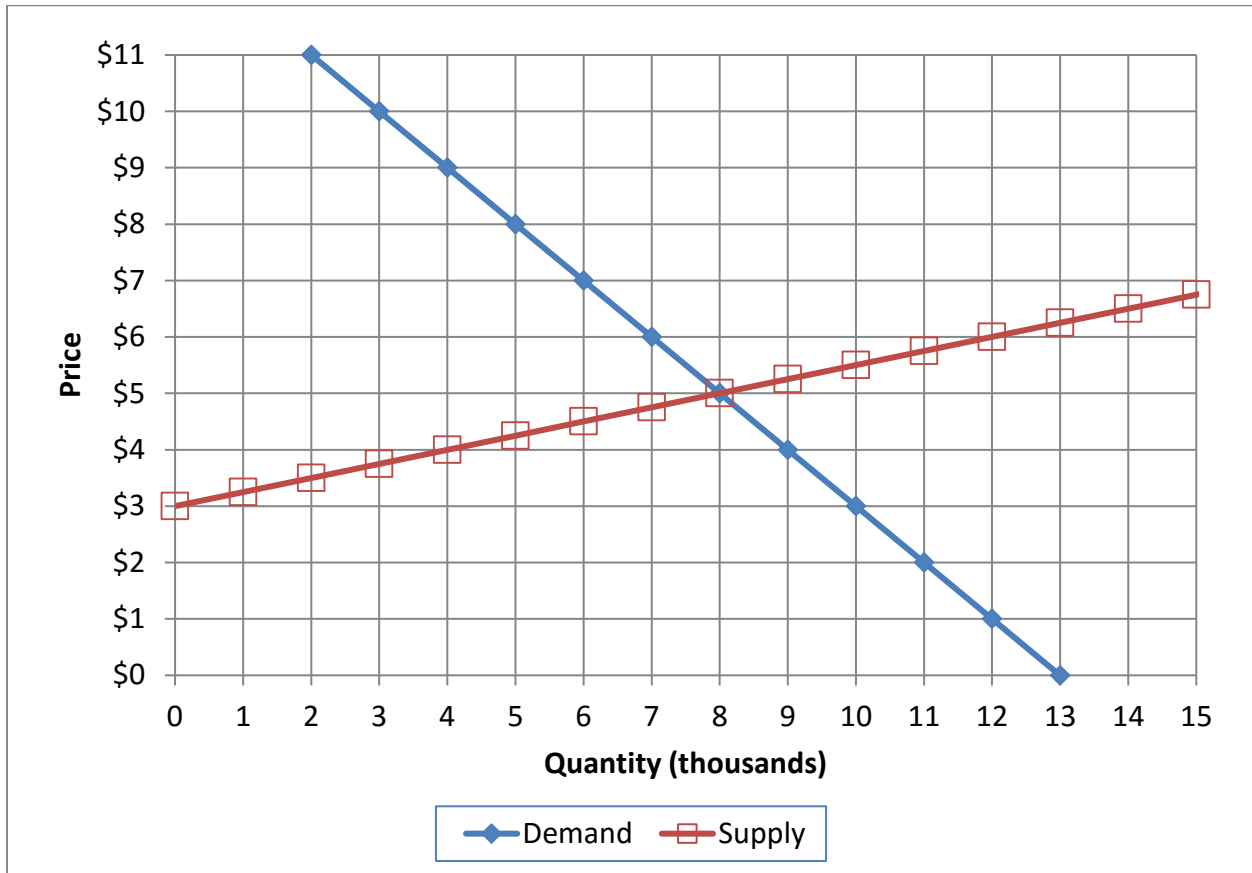
h. By how much?

\$	thousand
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i. Compute the deadweight social loss caused by the price ceiling.

\$	thousand
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(7) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for leaf rakes.



Suppose the government imposes an excise **subsidy of \$ 5** per rake.

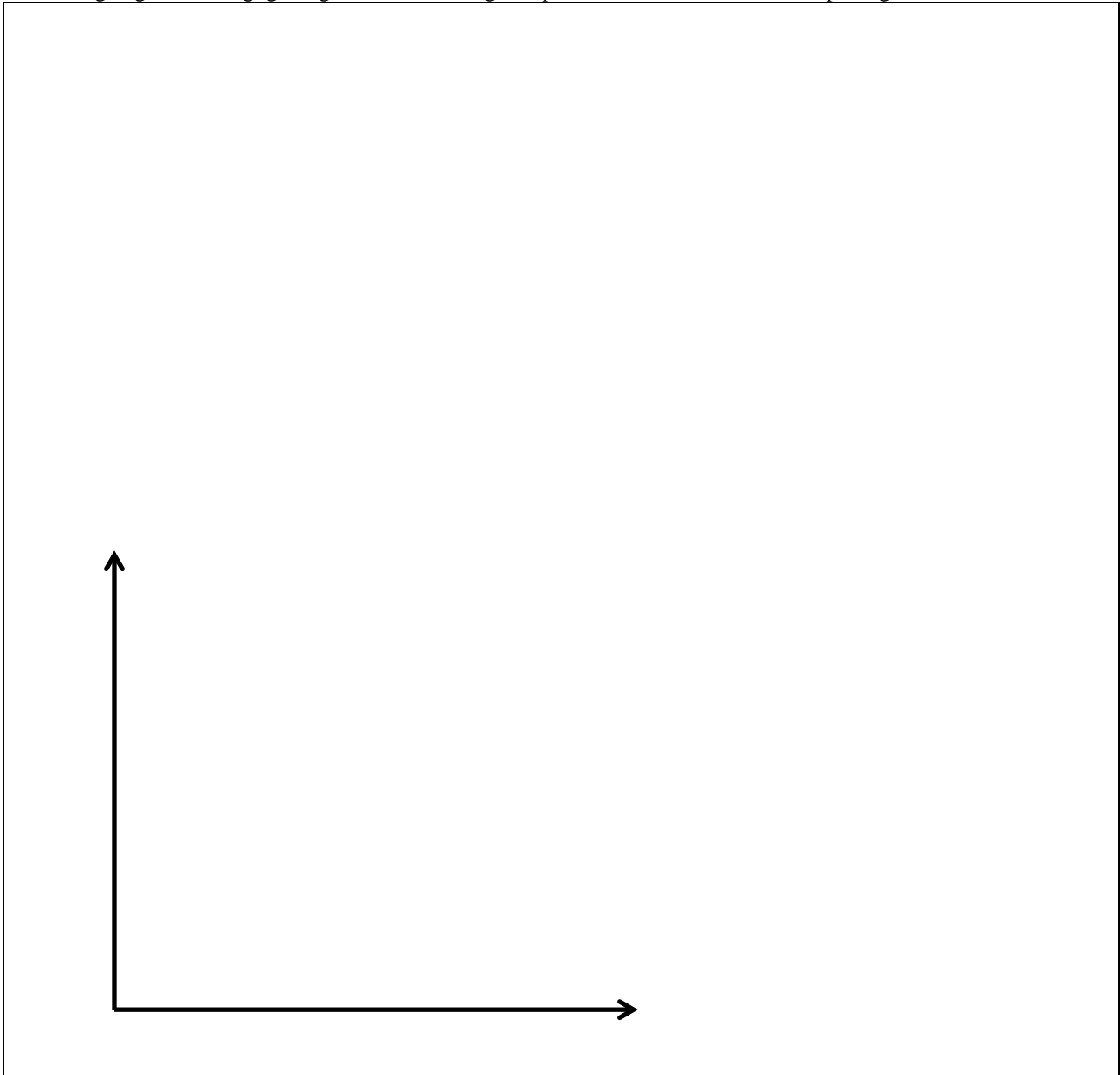
- Compute the equilibrium quantity sold.
- Compute the equilibrium total price received by sellers (including the subsidy).
- Compute the equilibrium net price paid by buyers (excluding the subsidy).
- Does producer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Does consumer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Compute the direct cost of the subsidy to the government—that is, the amount that the government will have to pay buyers and sellers.
- Compute the deadweight social loss caused by the subsidy.

	thousand rakes
\$	per rake
\$	per rake
\$	thousand
\$	thousand
\$	thousand
\$	thousand

**III. Critical thinking:** Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

- (1) At the request of the U.S. government, the government of Japan restricted exports of cars to the United States in the early 1980s. It set export quotas for the major Japanese car companies. What was the likely effect on the price of Japanese-made cars in the United States of these quotas on sellers? Justify your answer with a supply-and-demand graph of the U.S. market for Japanese-made cars. Who (if anyone) was the winner from these quotas? Who (if anyone) was the loser?
- (2) Consider the following statement. "It is unfair that *consumers* must pay the tax on gasoline. The producers of gasoline are big, rich corporations. It would be fairer if the tax were paid by gasoline *producers*." Does it matter who pays the tax? Justify your answer with a supply-and-demand graph.

Please circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.



[end of exam]