

EXAMINATION 1 VERSION C
"Competitive Supply and Demand"
February 16, 2015

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards 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, 14 pts total]

- (1) When we assume that people do the best they can with what they have, we are assuming that people are
- “rational.”
 - “in equilibrium.”
 - “competitive.”
 - “positive.”

- (2) Suppose that your top activity choices this evening are to go to a concert or to have dinner with friends, but you do not have time for both. Then missing the concert would be your _____ of having dinner with friends.
- marginal cost.
 - equilibrium cost.
 - sunk cost.
 - opportunity cost.

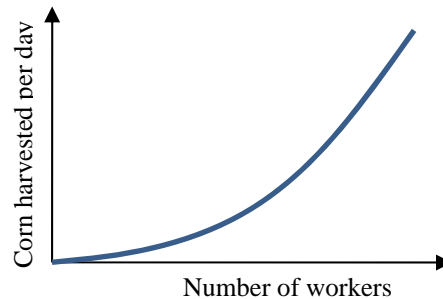
- (3) The *marginal benefit* of candy bars is
- the benefit of the first candy bar eaten.
 - the benefit of the last candy bar eaten.
 - the total benefit of all candy bars eaten.
 - the average benefit of all candy bars eaten.

- (4) In economics, an *equilibrium* is a situation where
- inflation equals zero percent.
 - economic growth is zero.
 - costs equal benefits.
 - no one wants to change their behavior.

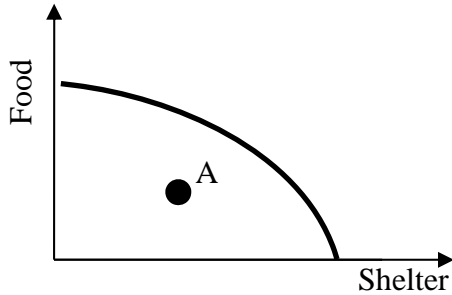
- (5) Suppose internet service in Cheyenne costs \$35 per month, but in Denver it costs \$65 per month. The percent difference in price, computed using the *midpoint method*, equals.

- 30 %.
- 35 %.
- 46.2 %.
- 60 %.
- 65 %.
- 85.7 %.

- (6) Consider the production function shown below. As more labor is used, the marginal product of labor
- decreases.
 - increases.
 - first increases, then decreases.
 - remains constant.



- (7) The graph below shows the production possibility curve for some country. The combination of outputs represented by point A
- is feasible and efficient.
 - is feasible but not efficient.
 - is infeasible.
 - cannot be determined from information given.



- (8) Farm A can produce 200 units of corn or 100 units of soybeans. Farm B can produce 300 units of corn or 300 units of soybeans. Which farm has a comparative advantage in corn?
- Farm A.
 - Farm B.
 - Both farms.
 - Neither farm.
- (9) Barter is an unpopular method of trading because it
- is often illegal.
 - causes both parties to lose.
 - is subject to higher taxes.
 - requires that each party be able to offer a good that the other wants.
 - all of the above.

- (10) The *law of one price* means that
- all buyers will pay roughly the same price.
 - the prices of different goods—like cell phones and bicycles—will gradually converge to each other.
 - each buyer will pay her or his own price.
 - each buyer will pay only once for a good.
- (11) The *law of demand* means that
- the quantity that buyers want to buy is negatively related to the price.
 - demand curves are necessarily straight lines.
 - buyers will pay whatever price is necessary to purchase the good.
 - the number of buyers must equal the number of sellers.
- (12) If the price of fast food rises, and nothing else affecting the demand for fast food changes, then this will cause
- the demand curve for fast food to shift left.
 - the demand curve for fast food to shift right.
 - the demand curve for fast food will rotate clockwise until it becomes upward-sloping.
 - a movement along the demand curve for fast food.
- (13) A fall in the price of chips will shift the demand for salsa to the right, assuming chips and salsa are
- complementary goods.
 - substitute goods.
 - normal goods.
 - inferior goods.
- (14) In February, the price of roses rises and the quantity sold increases. This could be caused by a
- rightward shift in the demand for roses.
 - rightward shift in the supply of roses.
 - leftward shift in the demand for roses.
 - leftward shift in the supply of roses.

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.

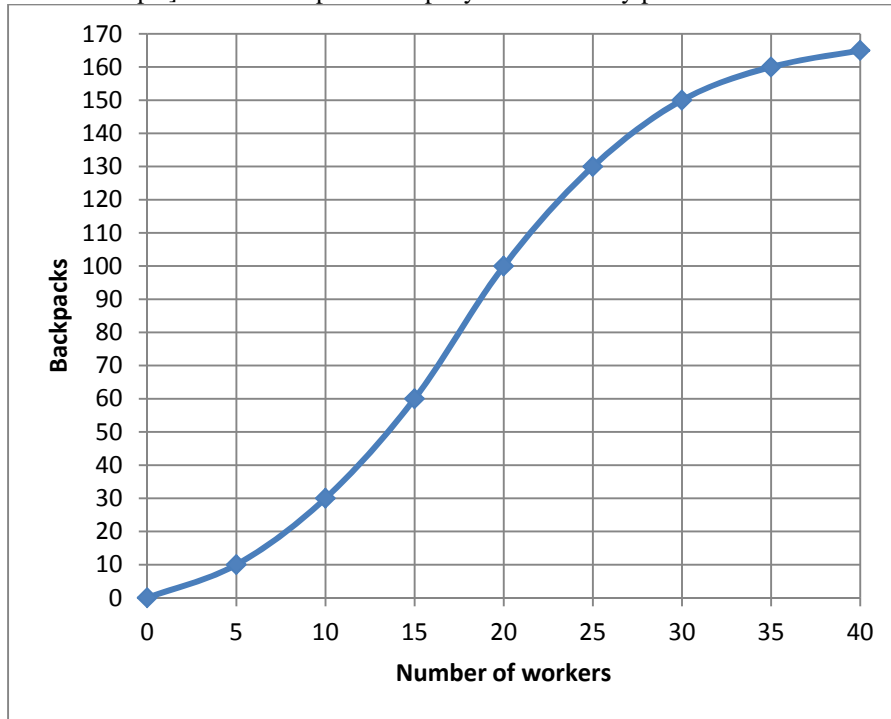
(1) [Percent change of product: 4 pts] A consumer's spending on gasoline equals the price per gallon times the number of gallons purchased. Suppose the price increases by 8 percent and the gallons purchased decreases by 6 percent.

a. Does spending on gasoline *increase* or *decrease*?

	%

b. By approximately how much?

(2) [Production functions: 8 pts] Acme Backpack Company has the hourly production function shown below.



a. If the company employs 5 workers, what is their *average product*?

backpacks per worker

b. If the company employs 20 workers, what is their *average product*?

backpacks per worker

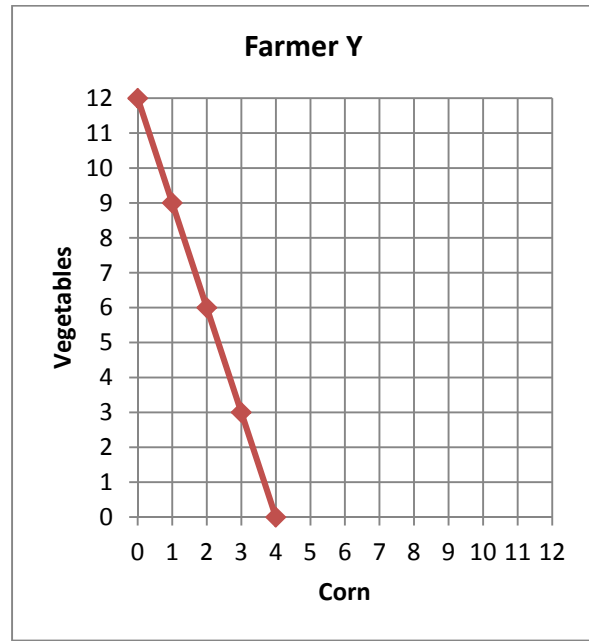
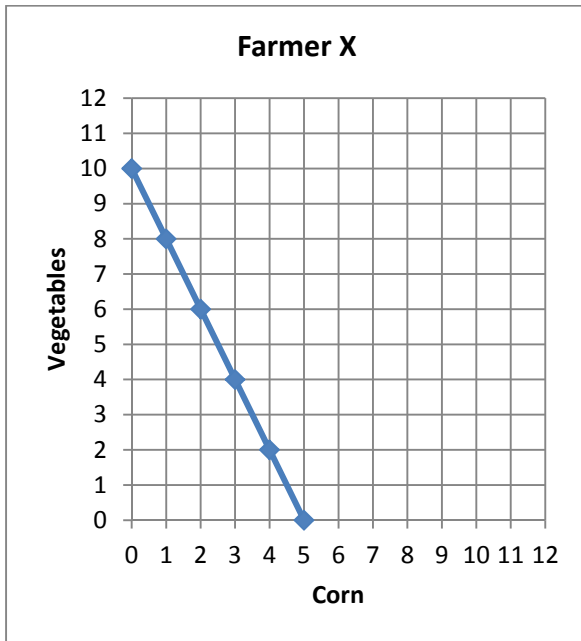
c. What is the *marginal product* of workers, as the number of workers increases from 5 to 10?

backpacks per worker

d. What is the marginal product of workers, as the number of workers increases from 20 to 25?

backpacks per worker

(3) [Comparative advantage, gains from trade: 17 pts] Farmer X and Farmer Y both can grow vegetables and corn. They each face a tradeoff between these two crops because their land is limited. Their production possibility curves are shown below.



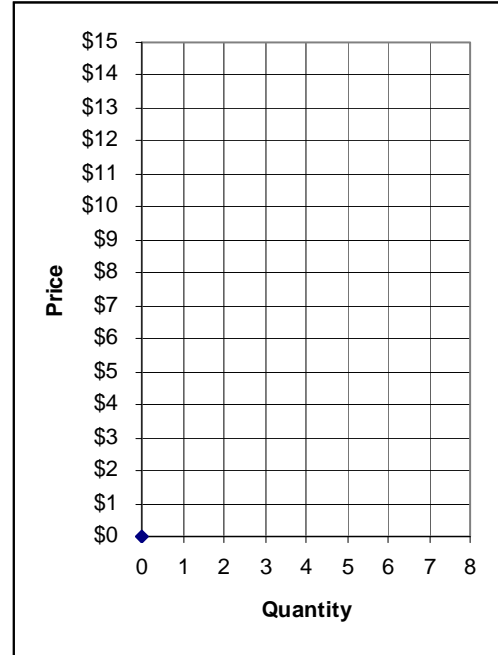
- [2 pts] What is Farmer X's opportunity cost of a unit of vegetables?
- [2 pts] What is Farmer Y's opportunity cost of a unit of vegetables?
- [2 pts] What is Farmer X's opportunity cost of a unit of corn?
- [2 pts] What is Farmer Y's opportunity cost of a unit of corn?
- [2 pts] Which farmer has a comparative advantage in growing vegetables?
- [2 pts] Which farmer has a comparative advantage in growing corn?

units of corn
units of corn
units of vegetables
units of vegetables

- [3 pts] Fill in the blanks: *Both* farmers can consume combinations of vegetables and corn *outside* their individual production possibility curves if _____ gives **five** units of vegetables to _____, who gives _____ units of corn in return.
- [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each farmer, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(4) [Market equilibrium: 12 pts] Suppose seven buyers and seven sellers engage in a market similar to the exercise we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their personal surplus (or “gains from trade”). Surplus for each buyer equals the buyer's value of the good minus the price paid. Surplus for each seller equals the price received minus the seller's cost of the good. Surplus of persons who do not trade are zero. Buyers' values and sellers' costs are given in the following table.

Buyer	Value	Seller	Cost
Bob	\$12	Sue	\$ 1
Barb	\$11	Steve	\$ 2
Ben	\$10	Sam	\$ 3
Bailey	\$ 9	Sven	\$ 4
Brian	\$ 6	Sarina	\$ 8
Brittany	\$ 5	Sam	\$10
Brandon	\$ 4	Sophia	\$12



Suppose with some experience, the market settles on a single price. All trades are made at that price. (You can use the graph at right for scratch work.)

- a. If the price were \$4, would there be *excess demand*, *excess supply*, or *neither*?

Now consider the market equilibrium.

- b. What is the equilibrium price? Give an answer to the nearest whole dollar.
- c. How many units of the good will be sold in this market?
- d. Compute the total revenue received by sellers (which equals the total spending by buyers).
- e. Compute the combined total surplus (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!)
- f. Who enjoys higher surplus in this particular market, the *buyers* or the *sellers*? Or is buyers' total surplus *equal* to sellers' total surplus?

\$	
	units
\$	
\$	

(5) [Shifts in demand and supply: 15 pts] Analyze each of the following markets according to the accompanying imaginary scenario.

a. Consider the market for **plastic**. Suppose the price of petroleum falls. (Most plastic is made from petroleum.)

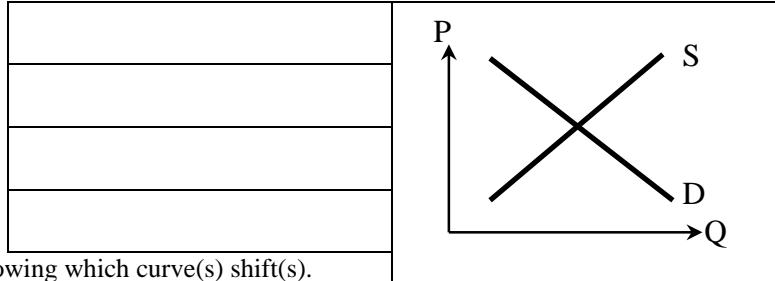
Does demand shift *left*, *shift right*, or remain *unchanged* ?

Does supply shift *left*, *shift right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



b. Consider the market for **hotel rooms**: A recession lowers consumers' incomes.

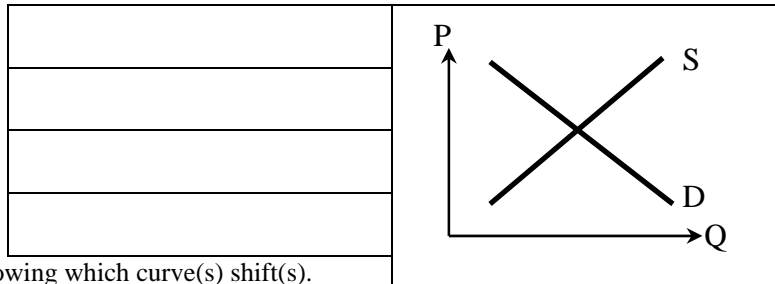
Does demand shift *left*, *shift right*, or remain *unchanged* ?

Does supply shift *left*, *shift right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



c. Consider the market for **natural gas**: Suppose new technologies lower the cost of producing natural gas. Simultaneously, the price of coal rises.

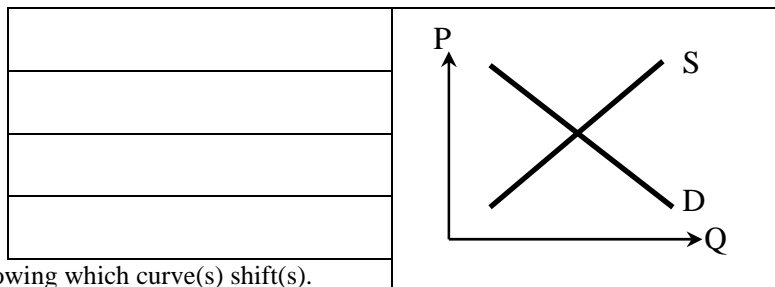
Does demand shift *left*, *shift right*, or remain *unchanged* ?

Does supply shift *left*, *shift right*, or remain *unchanged* ?

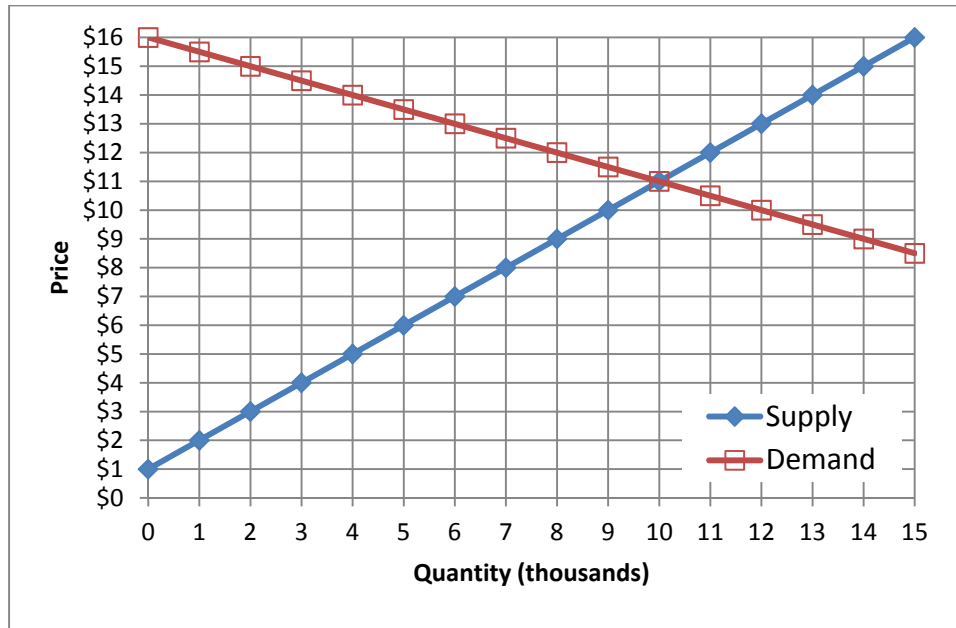
Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



(6) [Consumer surplus, producer surplus: 22 pts] The market for watermelons is depicted in the graph below.



Suppose the price in this market were \$9 for some reason.

- a. Would there be *excess demand*, *excess supply*, or *neither*?
- b. How much?
- c. Would the price tend to *rise*, *fall*, or remain *constant*?

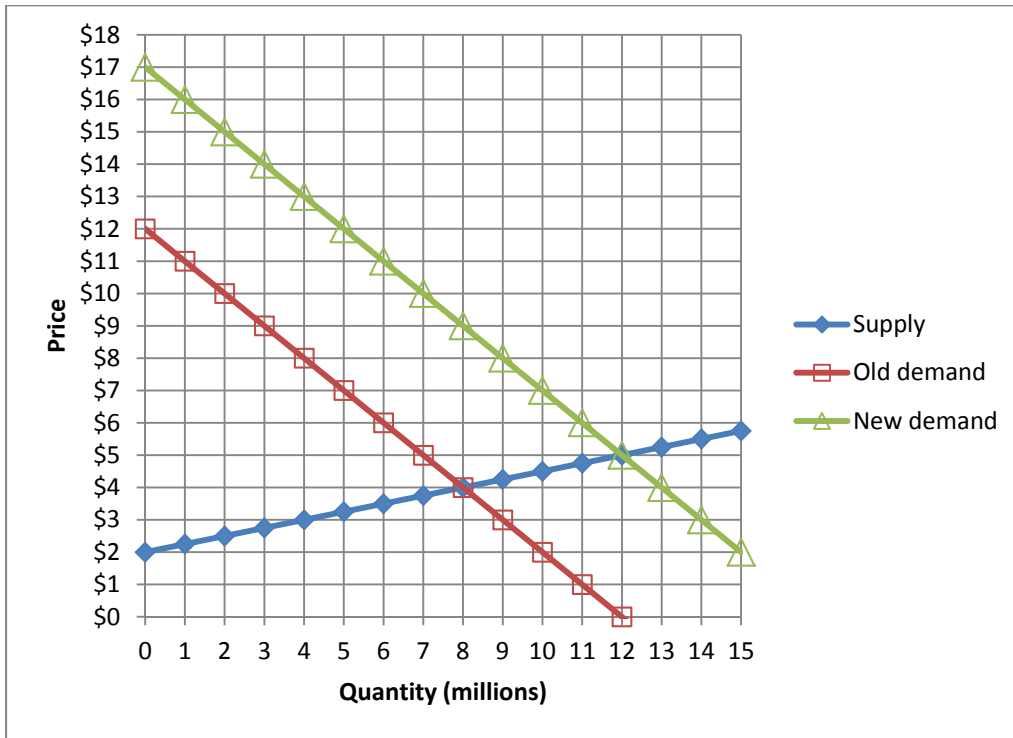
thousand

Now suppose the market is in equilibrium.

- d. Give the equilibrium price.
- e. Give the equilibrium quantity.
- f. How much are consumers willing to pay for the 6 thousandth watermelon?
- g. How much consumer surplus do they enjoy for the 6 thousandth watermelon?
- h. What is the marginal cost to producers of the 2 thousandth watermelon?
- i. How much producer surplus do they enjoy for the 2 thousandth watermelon?
- j. Compute total consumer surplus.
- k. Compute total producer surplus.

\$
thousand
\$
\$
\$
\$
\$ thousand
\$ thousand

(7) [Consumer surplus, producer surplus: 4 pts] Consider the market for flash drives as depicted in the graph below.



Suppose demand shifts from the “old demand” curve to the “new demand” curve.

a. Are producers *better* off or *worse* off as a result of the demand shift?

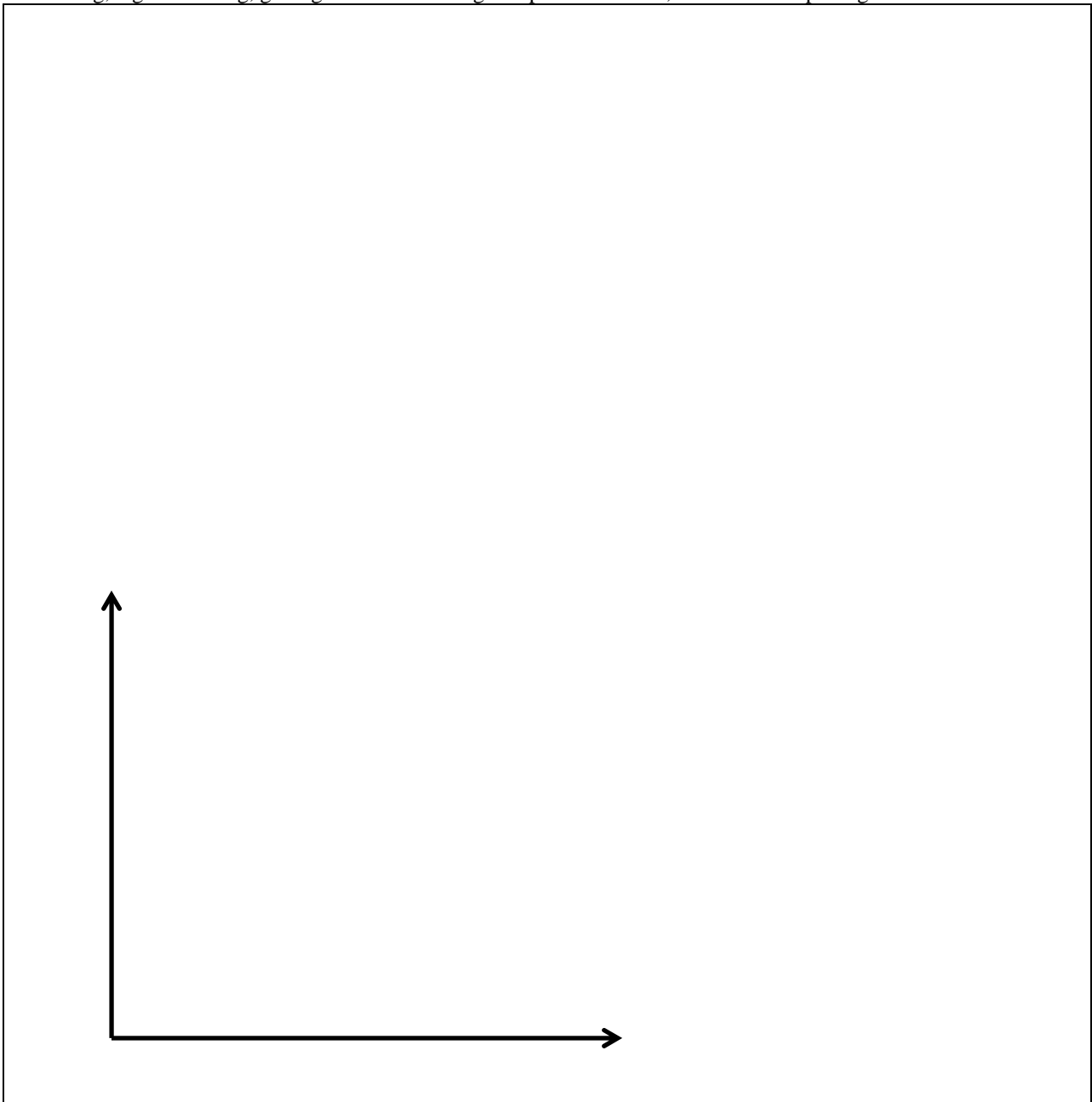
b. By how much? (Compute the change in producer surplus.)

\$	million

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

- (1) Why are restaurant meals expensive on Valentine's Day and cheap the day after? Justify your answer with a supply-and-demand diagram.
- (2) Why are tomatoes in Iowa expensive in winter and spring but cheap in summer and fall? Justify your answer with a supply-and-demand diagram.

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]