

EXAMINATION 1 VERSION A
"Competitive Supply and Demand"
February 17, 2014

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.

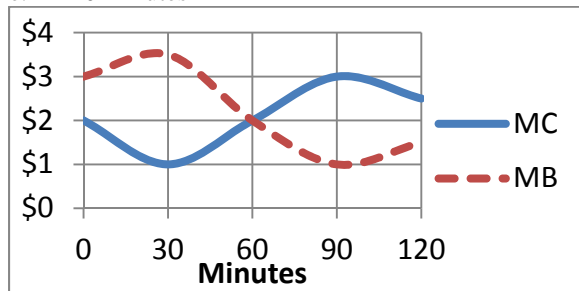
I. Multiple choice: Please circle the one best answer to each question. [2 pts each, 22 pts total]

(1) The assumption in economics that people are rational means that people

- a. ignore "soft" concerns like friendships and charity.
- b. do the best one can with what they have.
- c. make sacrifices today for a better future.
- d. maximize their income.
- e. use math to make decisions.

(2) The graph below shows Amy's marginal cost (MC) and marginal benefit (MB) from exercise. If Amy is rational, she will choose to exercise

- a. zero minutes.
- b. 30 minutes.
- c. 60 minutes.
- d. 90 minutes.
- e. 120 minutes

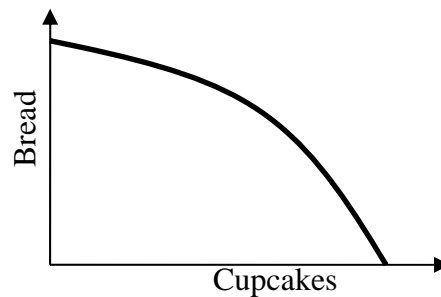


(3) Suppose cable television service in City A costs \$35 per month, but in City B it costs \$65 per month. The percent difference in price, computed using the *midpoint method*, equals.

- a. 30 %.
- b. 35 %.
- c. 46.2 %.
- d. 60 %.
- e. 65 %.
- f. 85.7 %.

(4) Tasty Bakery makes bread and cupcakes, with the production possibility curve shown below. As more cupcakes are produced, the opportunity cost of the last cupcake produced

- a. decreases.
- b. increases.
- c. first increases, then decreases.
- d. remains constant.



(5) Farm A can produce 200 units of corn or 200 units of soybeans. Farm B can produce 300 units of corn or 150 units of soybeans. Which farm has a comparative advantage in soybeans?

- a. Farm A.
- b. Farm B.
- c. Both farms.
- d. Neither farm.

(6) Monetary exchange is more common today than bartering because

- a. bartering is a lost art.
- b. monetary exchanges are subject to less tax.
- c. bartering requires a "double coincidence of wants."
- d. bartering is often illegal whereas anything can be legally bought and sold with money.

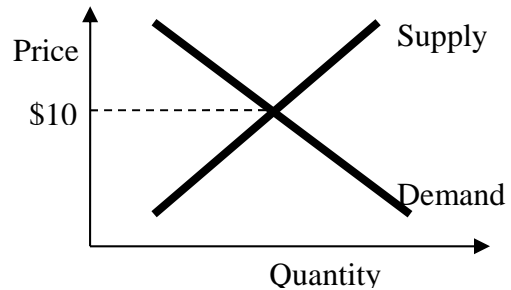
- (7) Efficient well-functioning markets
- force every potential buyer and seller to make a trade.
 - guarantee that buyers' total gains from trade (or earnings) will equal sellers' total gains.
 - obey the law of one price.
 - ensure that every trade takes place at a price halfway between the buyer's value and the seller's cost.
 - all of the above.

- (8) The "income effect" causes consumers to buy more when the price of a good falls because consumers
- want to substitute goods for money.
 - want to reward sellers for lowering the price by increasing sellers' incomes.
 - shift their purchases from alternative goods that have not fallen in price.
 - can afford to buy more of everything due to the drop in price of this good.

- (9) If the price of gasoline rises, demand for hybrid cars will shift right, because hybrid cars and gasoline are
- inferior goods.
 - complementary goods.
 - substitute goods.
 - normal goods.

- (10) A rise in consumers' income will shift the demand for hotel rooms to the right, because hotel rooms are
- inferior goods.
 - complementary goods.
 - substitute goods.
 - normal goods.

- (11) Consider the supply-and-demand diagram below. If for some reason the price were initially \$7, then
- the price would fall.
 - the price would rise.
 - the demand curve would shift left.
 - the supply curve would shift right.
 - none of the above.



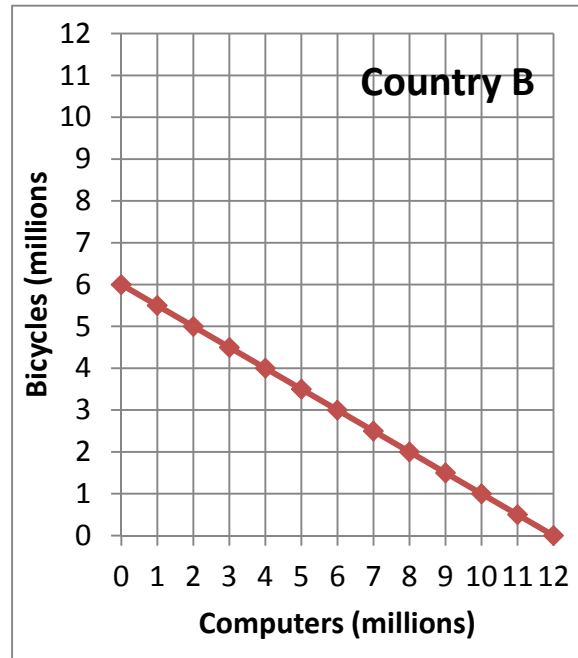
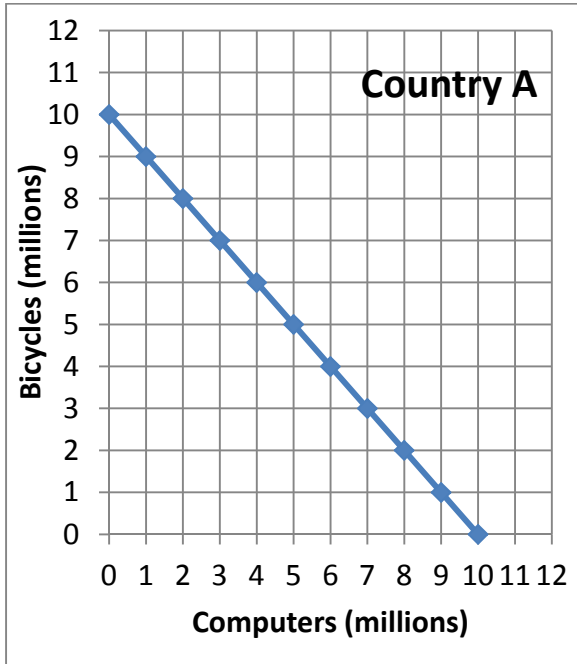
II. Problems: Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Production functions: 8 pts] A work crew changes oil on cars. Complete the table by computing the work crew's average product and marginal product, placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question at the bottom.

<i>Number of workers</i>	<i>Number of cars serviced</i>	<i>Average Product</i>	<i>Marginal Product</i>
0 workers	0 cars		
			cars per worker
5 workers	40 cars	cars per worker	
			cars per worker
10 workers	70 cars	cars per worker	
			cars per worker
15 workers	90 cars	cars per worker	

[2 pts] Is the work crew's production function characterized by *diminishing returns* to their labor input? Answer "YES" or "NO."

(2) [Comparative advantage, gains from trade: 17 pts] Country A and Country B both can make bicycles and computers. They each face a tradeoff between these two products because their resources are limited. Their production possibility curves are shown below.

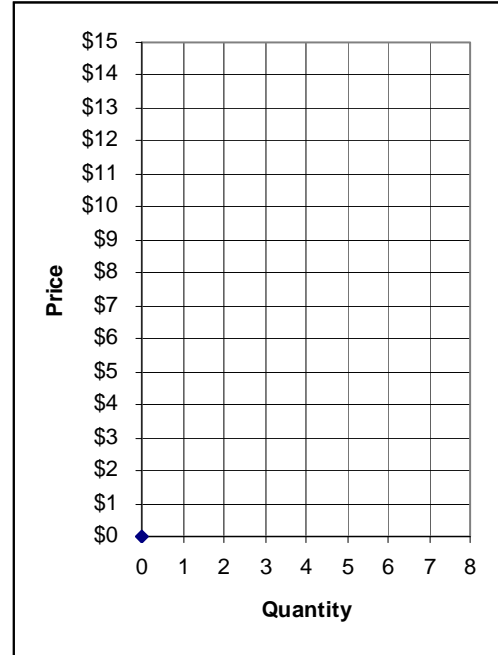


- [2 pts] What is Country A's opportunity cost of a bicycle?
- [2 pts] What is Country B's opportunity cost of a bicycle?
- [2 pts] What is Country A's opportunity cost of a computer?
- [2 pts] What is Country B's opportunity cost of a computer?
- [2 pts] Which country has a comparative advantage in producing bicycles?
- [2 pts] Which country has a comparative advantage in producing computers?
- [3 pts] Fill in the blanks: *Both* countries can consume combinations of bicycles and computers *outside* their individual production possibility curves if _____ exports **two** million bicycles to _____, which exports _____ million computers in return.
- [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each producer, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

computers
computers
bicycles
bicycles

(3) [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	\$14	Sue	\$ 1
Barb	\$14	Steve	\$ 2
Ben	\$14	Sam	\$ 3
Bailey	\$13	Sven	\$ 4
Brian	\$13	Sarina	\$ 5
Brittany	\$13	Sam	\$11
Brandon	\$ 3	Sophia	\$14



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 \$6, 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
\$	
\$	

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

a. Consider the market for **chicken**: The price of beef rises.

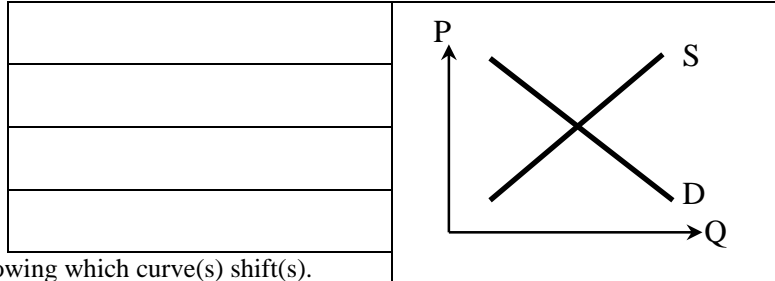
Does demand shift *left*, *shift right*, or remain *unchanged* ?

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).



b. Consider the market for **new houses**: The price of lumber rises.

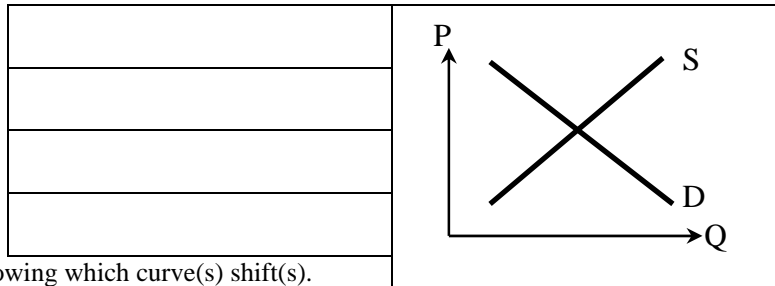
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Does supply shift *left*, *shift right*, or remain *unchanged* ?

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 **cotton clothing**: The price of raw cotton falls. Simultaneously, cotton clothing becomes more fashionable in the minds of consumers.

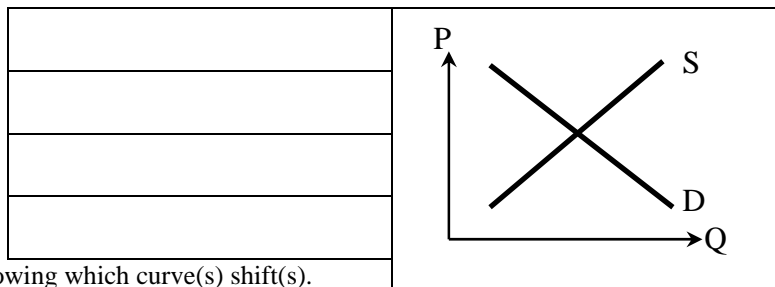
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Does supply shift *left*, *shift right*, or remain *unchanged* ?

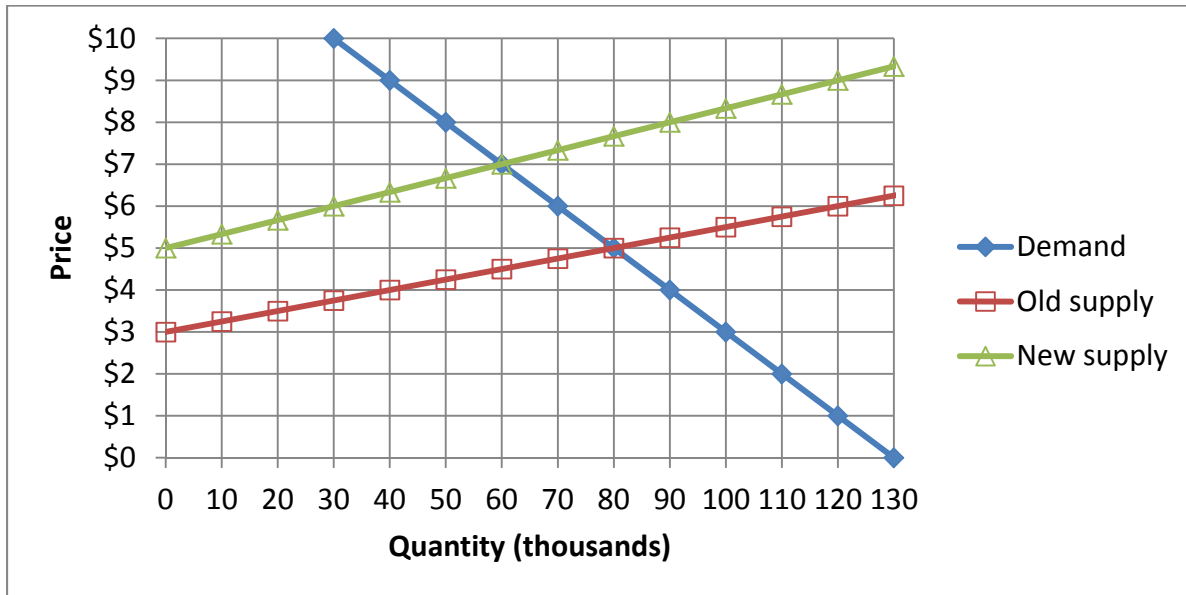
Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

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

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



(5) [Welfare effects of shifts in curves: 22 pts] The following graph shows the market for papayas. Initially the supply curve was at the position shown as “Old Supply.” Then government environmental regulations raised the cost of growing papayas and the supply curve shifted to “New Supply.”



Consider the market *before* the supply shift.

- What was the old equilibrium market price of papayas?
- How much are consumers willing to pay for the 50 thousandth papaya?
- How much consumer surplus did they enjoy for the 50 thousandth papaya?
- What was the marginal cost to producers of the 40 thousandth papaya?
- How much producer surplus did they enjoy for the 40 thousandth papaya?

\$
\$
\$
\$
\$

Now consider the effects of the supply shift.

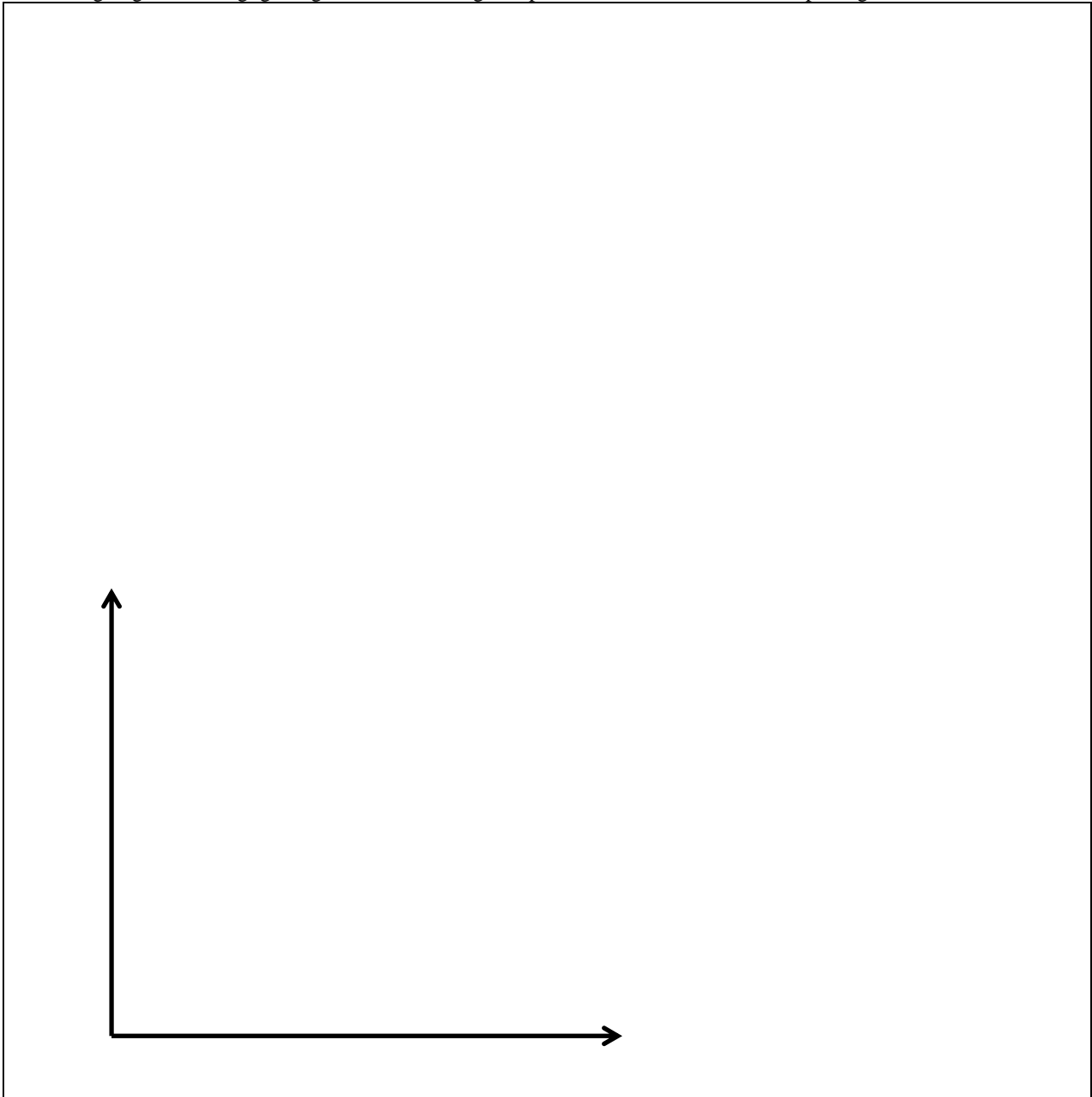
- What is the new equilibrium market price of papayas?
- Did total consumer surplus *increase, decrease, or remain constant* as a result of the shift in supply?
- Compute the *change* in total consumer surplus.
- Did total producer surplus *increase, decrease, or remain constant* as a result of the shift in supply?
- Compute the *change* in total producer surplus.
- Who was harmed more by the regulations—consumers or producers?

\$
\$ thousand
\$ thousand

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

- (1) Consider the following statement. "They are building too many hotels in this city. All the hotels will be half full, so they will raise their prices just to stay profitable. In the end, the consumer will suffer from higher prices." Does this argument make sense? Why or why not? Justify your answer with a supply-and-demand graph.
- (2) In very cold weather, the prices of fuels like natural gas and propane, which are used to heat houses, tend to rise. Why? 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]