

EXAMINATION 1 VERSION B
"Competitive Supply and Demand"
September 19, 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, 14 pts total]

- (1) The assumption in economics that people are *rational* implies that people
- maximize their income.
 - use math to make decisions.
 - ignore "soft" concerns like friendships and charity.
 - do the best they can with what they have.
 - make sacrifices today for a better future.

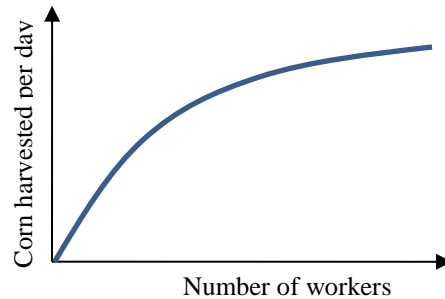
- (2) Suppose that your top activity choices this evening are to go to a concert or to have dinner with friends, but you do not have time for both. Then missing the concert would be your _____ of having dinner with friends.
- marginal cost.
 - equilibrium cost.
 - sunk cost.
 - opportunity cost.

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

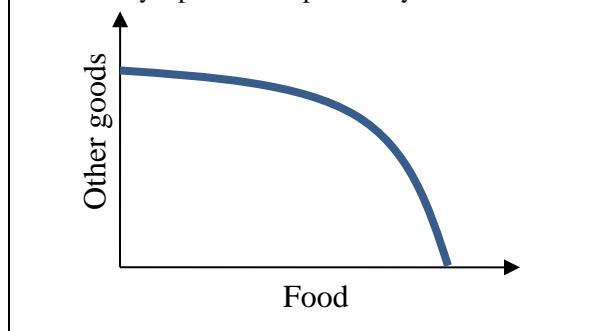
- (4) "GDP has increased this year" is an example of
- a positive statement.
 - a normative statement.
 - both of the above.
 - none of the above.

- (5) Economic or physical capital includes
- trucks and bulldozers.
 - machinery and equipment.
 - factories and office buildings.
 - all of the above.
 - none of the above.

- (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.



The next two questions refer to the following graph of a country's production-possibility curve.



(7) By definition, what is held constant along this production-possibility curve?

- a. The country's total inputs.
- b. The prices of food and other goods.
- c. Output of food.
- d. Output of other goods.
- e. None of the above.

(8) As more food is produced, the opportunity cost of the last unit of food

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

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

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

(10) If a market is characterized by *price dispersion*, then

- a. the market is not functioning efficiently.
- b. a variety of prices are being generated by the market to suit every need.
- c. monetary prices are disappearing as the market returns to a barter system.
- d. buyers and sellers are each seeking their own preferred prices.

(11) The *law of supply* means

- a. legal regulation of sellers.
- b. there is always someone willing to sell a product.
- c. the quantity that sellers want to produce and sell is positively related to the price.
- d. sellers can charge whatever price they want.

(12) A rise in consumers' income will shift the demand for hotel rooms to the right, because hotel rooms are

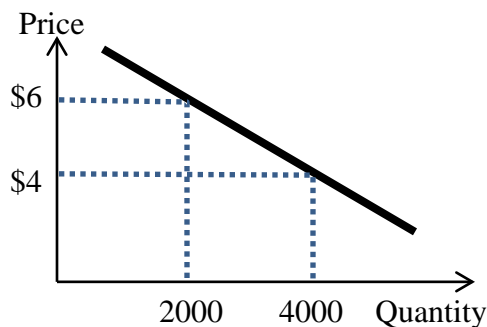
- a. inferior goods.
- b. complementary goods.
- c. substitute goods.
- d. normal goods.

(13) In February, the price of roses rises and the quantity sold increases. This could be caused by a

- a. rightward shift in the demand for roses.
- b. rightward shift in the supply of roses.
- c. leftward shift in the demand for roses.
- d. leftward shift in the supply of roses.

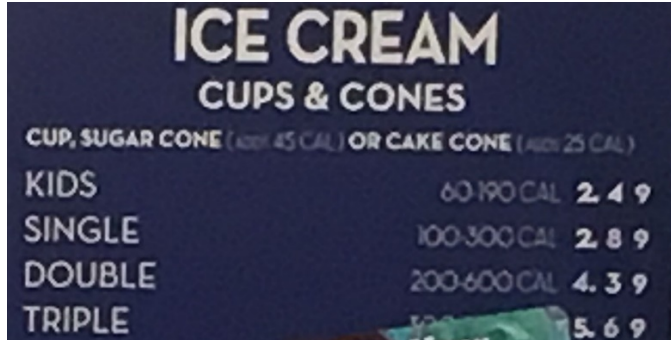
(14) The graph below shows the demand for movie tickets. If the market price of movie tickets falls from \$6 to \$4, then total consumer surplus

- a. decreases by \$2000.
- b. increases by \$2000.
- c. increases by \$4000.
- d. increases by \$6000.
- e. increases by \$8000.



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) [Marginal cost: 6 pts] The picture at right shows prices of ice cream sundaes at Baskin-Robbins. (Ignore the “KIDS” cone.)



- a. Compute the marginal cost of the first scoop of ice cream.
- b. Compute the marginal cost of the second scoop of ice cream.
- c. Compute the marginal cost of the third scoop of ice cream.

(2) [Percent change, midpoint formula: 2 pts] Suppose the average price of a hamburger in Des Moines is \$4.50, and the average price in New York is \$7.50. Compute the percent difference using the midpoint method.

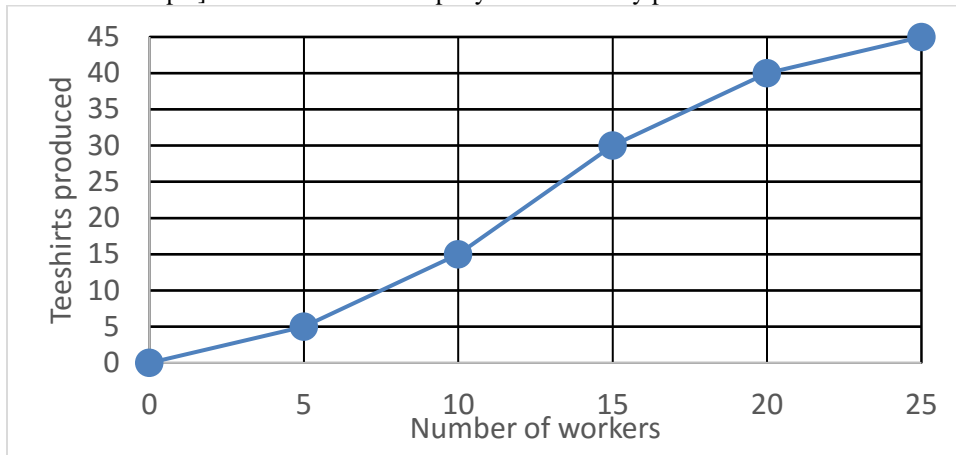
%

(3) [Percent change of product: 4 pts] A consumer's spending on gasoline equals the price paid times the quantity purchased. Suppose the price of gasoline increases by 4 percent and the quantity purchased decreases by 5 percent.

- a. Does spending on gasoline *increase* or *decrease*?
- b. By approximately how much?

	%

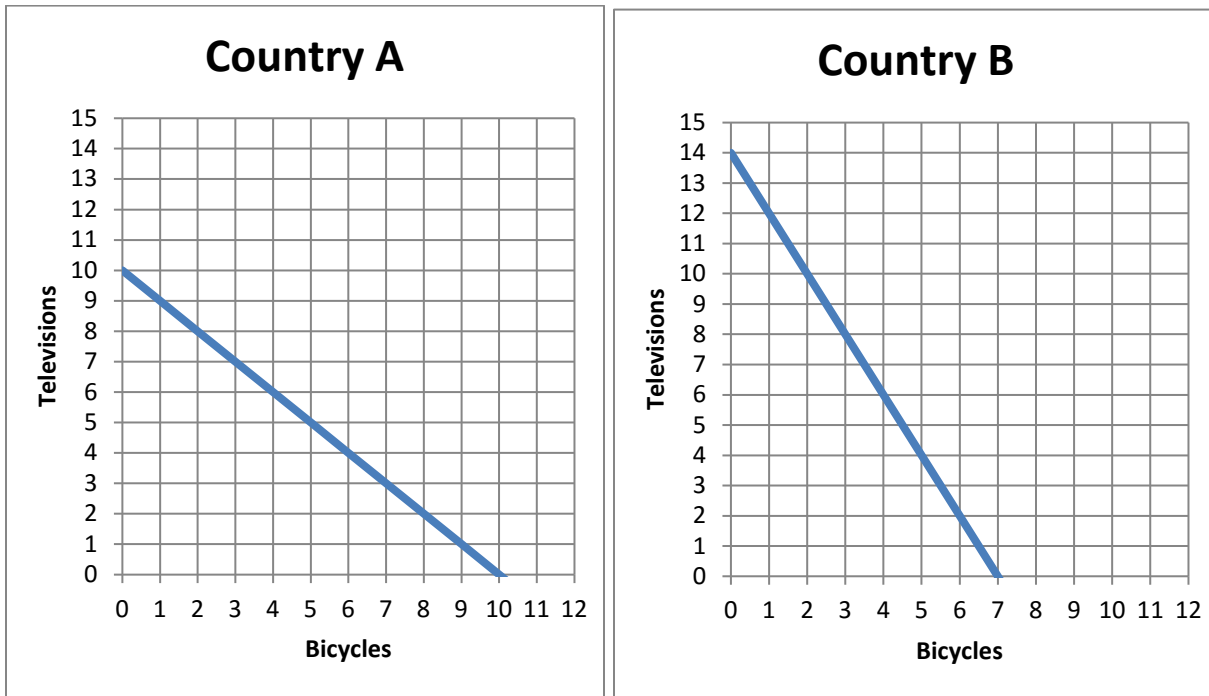
(4) [Production functions: 4 pts] Acme Teeshirt Company has the hourly production function shown below.



- a. If the company employs 20 workers, what is their average product?
- d. What is the marginal product of workers, as the number of workers increases from 20 to 25?

shirts per worker
shirts per worker

(5) [Comparative advantage, gains from trade: 17 pts] Country A and Country B can each produce televisions and bicycles. They each face a tradeoff between these two products because of limited workforces. Their production possibility curves are shown below.



- What is Country A's opportunity cost of producing a television?
- What is Country B's opportunity cost of producing a television?
- What is Country A's opportunity cost of producing a bicycle?
- What is Country B's opportunity cost of producing a bicycle?
- Which country has a comparative advantage in producing televisions?
- Which country has a comparative advantage in producing bicycles?

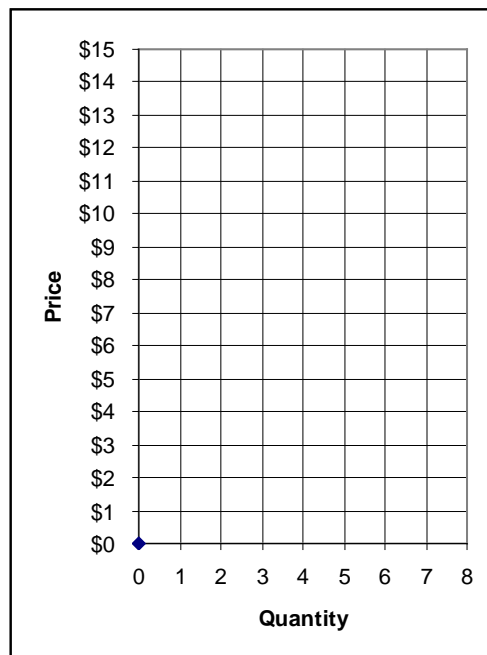
_____	bicycles
_____	bicycles
_____	televisions
_____	televisions

g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of products *outside* their individual production possibility curves if _____ exports *two* bicycles to _____, which exports _____ televisions in return.

h. **Plot** the trade that you propose in part (g) on the graphs above. For each country, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(6) [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	\$13	Steve	\$ 2
Ben	\$12	Sam	\$ 2
Bailey	\$10	Sven	\$ 3
Brian	\$ 8	Sarina	\$ 3
Brittany	\$ 6	Sam	\$ 4
Brandon	\$ 4	Sophia	\$10



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 \$10, 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
\$	
\$	

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

a. Consider the market for **pizza**: The price of mozzarella cheese (an important ingredient in pizza) rises.

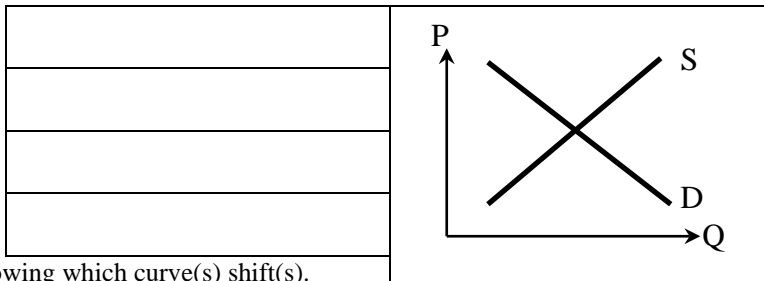
Does demand shift *left*, shift *right*, or remain *unchanged* ?

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 **chicken**: The price of beef rises.

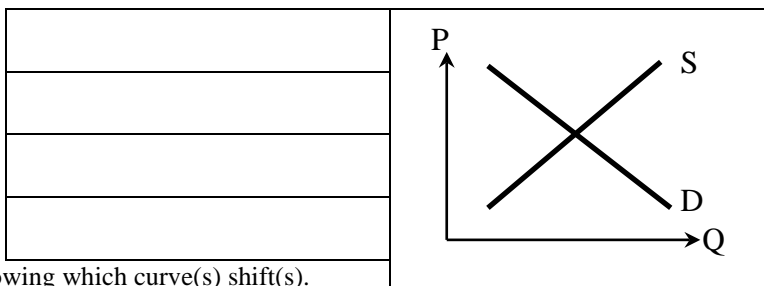
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Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

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 **coal**: Suppose new safety regulations raise the cost of digging coal. Simultaneously, the price of natural gas falls sharply.

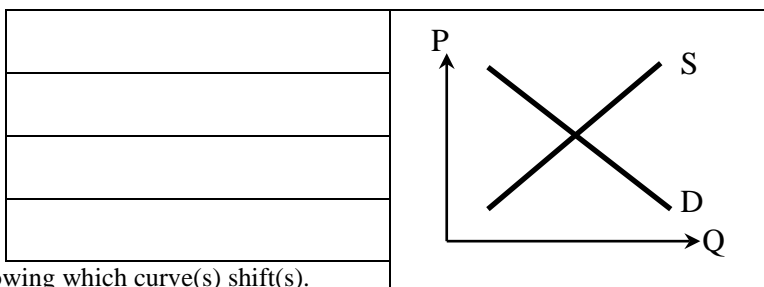
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Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

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

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



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 using a supply-and-demand graph.
- (2) An angry reader wrote to the Des Moines Register in August 2015: "The grocery stores are charging higher prices for eggs claiming a shortage because of the bird flu. So why is that every time I've been shopping that the shelves are all well stocked? You'd think if there really was a shortage the shelves would be empty, right? Someone's got some 'splaining to do." Use a supply-and-demand graph to "splain" (explain) why, in a free market for eggs, bird flu does not result in empty shelves (that is, excess demand).

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]