ECON 002 - Principles of Microeconomics Signature: _____
Drake University, Fall 2019
William M. Boal Printed name: _____

EXAMINATION 1 VERSION A
"Competitive Supply and Demand"
September 18, 2019

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, 17 pts total]

(1) When we assume that people do the best they can with what they have, we are assuming that people are
a. "competitive."
b. "positive."
c. "rational."
d. "in equilibrium."

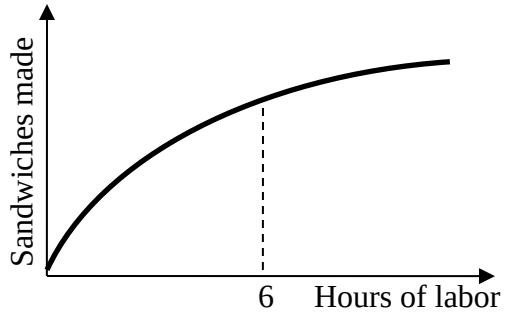
(2) Your *marginal benefit* of eating ice cream is
a. the benefit of the first scoop you eat.
b. the benefit of the last scoop you eat.
c. the total benefit of all scoops you eat.
d. the average benefit of all scoops you eat.

(3) The term "equilibrium" in economics describes a situation where
a. no one wants to change their choices.
b. total costs exactly equal total benefits.
c. all companies are the same size.
d. all prices are equal.

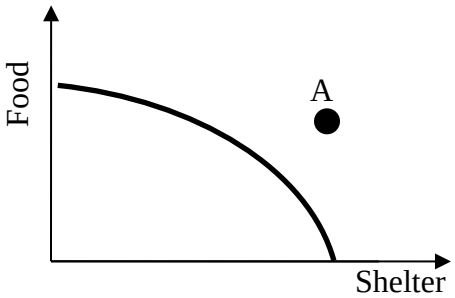
(4) "Reducing inflation is more important than reducing unemployment" is an example of
a. a positive statement.
b. a normative statement.
c. both of the above.
d. none of the above.

(5) A production function shows the relationship between the
a. level of output and the level of demand for output.
b. price of output and the quantity produced.
c. quantity of input and the quantity of output.
d. current level of output and the past level of output.

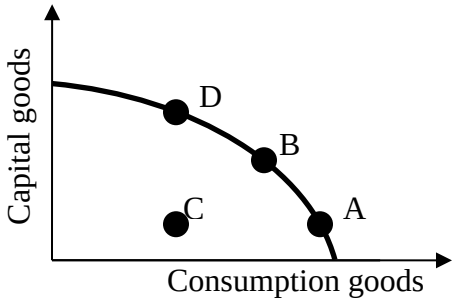
(6) Is the production function below characterized by diminishing returns to labor input?
a. Yes, for all levels of labor input.
b. No, not for any levels of labor input.
c. Yes, but only after 6 hours of labor input.
d. Yes, but only before 6 hours of labor input.



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



(8) The graph below shows the production possibility curve for Country Y. Which combination of outputs, chosen today, will cause the country's productive capacity to grow fastest in the future?
a. Combination A.
b. Combination B.
c. Combination C.
d. Combination D.



(9) Farm A can produce 100 units of corn or 100 units of soybeans per acre. Farm B can produce 300 units of corn or 150 units of soybeans per acre. Which farm has a comparative advantage in soybeans?
a. Farm A.
b. Farm B.
c. Both farms.
d. Neither farm.

(10) Barter is an unpopular method of trading because it
a. is subject to higher taxes.
b. requires that each party be able to offer a good that the other wants.
c. is often illegal.
d. causes both parties to lose.
e. all of the above.

(11) The Law of One Price means
a. a good cannot be resold.
b. all sellers are required by law to quote the same price.
c. the buyer and the seller in each transaction must agree on a price.
d. efficient markets eliminate price dispersion.
e. the total quantity buyers want to buy is negatively related to the price.

(12) A demand curve for laptop computers shows how the quantity of laptop computers people want to buy is affected by
a. the laptop computer's features.
b. the income of consumers.
c. the price of the laptop computer itself.
d. the price of substitutes, like desktop computers.

(13) "*Ceteris paribus*" means
a. "the Law of One Price."
b. "assuming rational behavior."
c. "holding other things constant."
d. "comparative advantage."

(14) A fall in the price of Android smart phones will shift the demand for Apple iPhones to the left, since Android phones and iPhones are
a. complementary goods.
b. substitute goods.
c. normal goods.
d. inferior goods.

(15) As consumers' incomes rise, they typically go to more music concerts, because concerts are
a. a substitute good.
b. a complementary good.
c. an inferior good.
d. a normal good.

(16) Increased environmental regulations on the natural gas industry would
a. shift the demand for natural gas to the right.
b. shift the demand for natural gas to the left.
c. shift the supply of natural gas to the right.
d. shift the supply of natural gas to the left.

(17) The height of the demand curve where Q=100 shows
a. the cost to produce the 100th unit.
b. the maximum amount consumers are willing to pay for the 100th unit.
c. the market price paid for the 100th unit.
d. the consumer surplus enjoyed on the 100th unit.

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, midpoint formula: 2 pts] Suppose the average apartment rent in Des Moines is $600, and the average rent in Minneapolis is $1400. Compute the percent difference using the midpoint method.

%

(2) [Percent change of product: 4 pts] Consumer spending on ice cream equals the price paid times the quantity purchased. Suppose the price of ice cream increases by 5 percent and the quantity purchased decreases by 3 percent.

a. Does spending on ice cream *increase* or *decrease*?

b. By approximately how much?

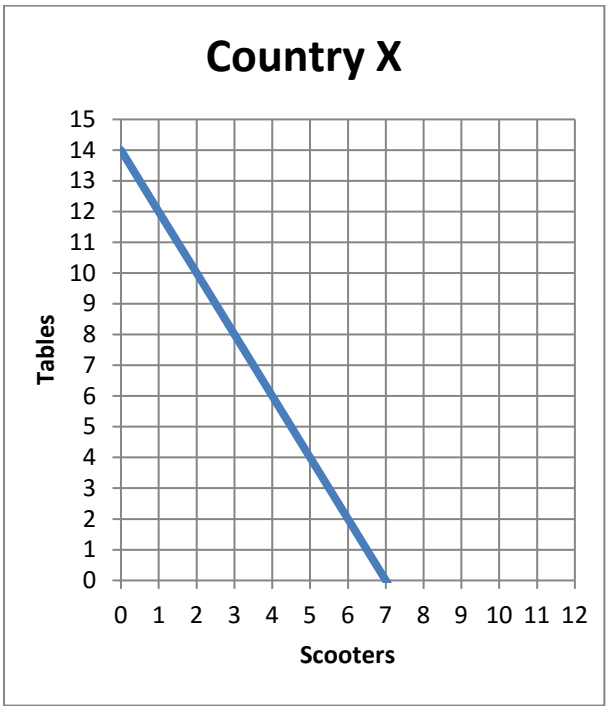
%

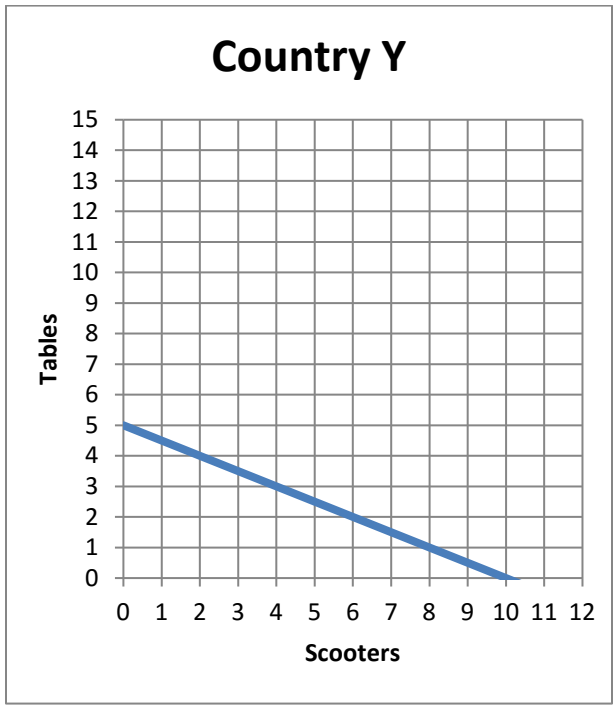
(3) [Production functions: 7 pts] A work crew trims trees. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

Number of workers	*Trees trimmed per day*	*Average Product*	*Marginal Product*
0 workers	0 trees trimmed		
			trees trimmed per worker
3 workers	18 trees trimmed	trees trimmed per worker	
			trees trimmed per worker
6 workers	24 trees trimmed	trees trimmed per worker	
			trees trimmed per worker
9 workers	27 trees trimmed	trees trimmed per worker	

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

(4) [Comparative advantage, gains from trade: 17 pts] Country X and Country Y can each produce dining-room tables and scooters. They each face a tradeoff between these two products because of limited workforces. Their production possibility curves are shown below.





a. What is Country X's opportunity cost of producing a table? scooters

b. What is Country Y's opportunity cost of producing a table? scooters

c. What is Country X's opportunity cost of producing a scooter? tables

d. What is Country Y's opportunity cost of producing a scooter? tables

e. Which country has a comparative advantage in producing tables?

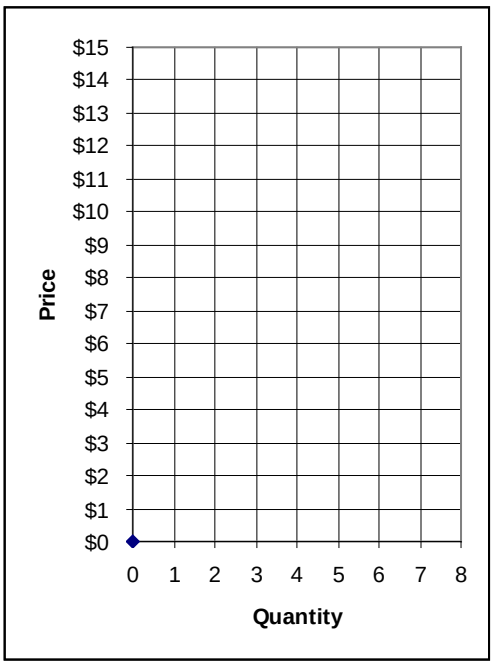
f. Which country has a comparative advantage in producing scooters?

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

(5) [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*	\$ 3
Bailey	\$11	*Sven*	\$ 4
Brian	\$10	*Sarina*	\$ 5
Brittany	\$ 8	*Sam*	\$ 6
Brandon	\$ 3	*Sophia*	\$ 8



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 \$3, would there by *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? units

d. Compute the total revenue received by sellers (which equals the total spending by buyers). \$

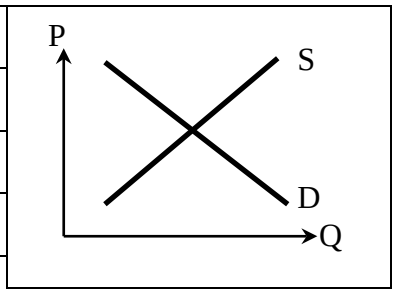
e. Compute the combined total surplus (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!) \$

f. Who enjoys higher surplus in this particular market, the *buyers* or the *sellers?* Or is buyers' total surplus *equal* to sellers' total surplus?

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

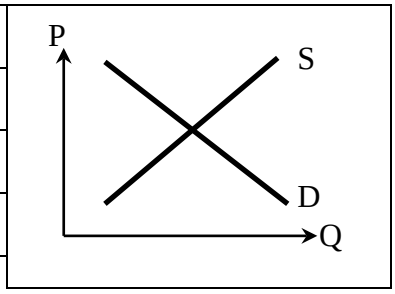
a. Consider the market for ***hybrid cars***: The price of gasoline rises. (Hybrid cars use very little gasoline.)

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).



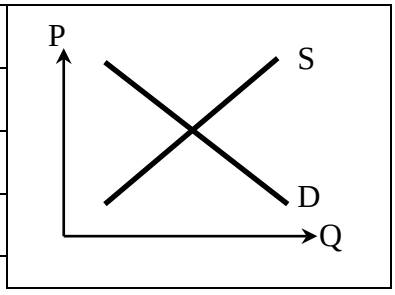
b. Consider the market for ***corn***: Excellent weather increases the corn harvest.

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).

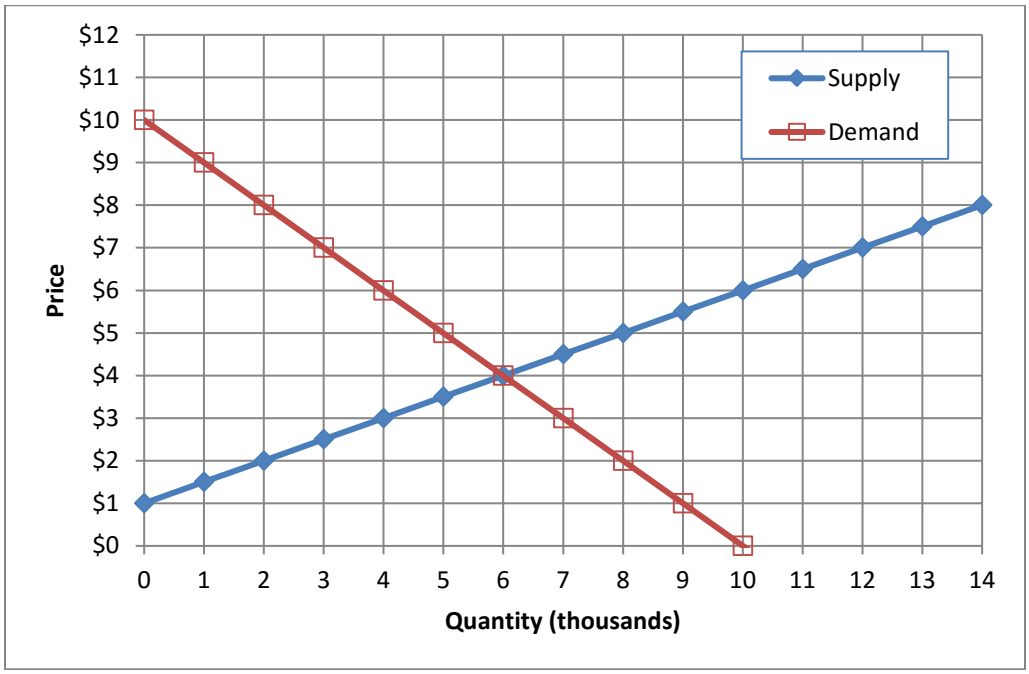


c. Consider the market for ***cars***: A recession causes consumers' incomes to fall. Simultaneously, car companies discover new ways to make cars more cheaply.

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).



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



Suppose the price in this market were $6 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. What is the equilibrium price?

e. What is the equilibrium quantity?

f. How much are consumers willing to pay for the 3 thousandth watermelon?

g. How much consumer surplus do they enjoy for the 3 thousandth watermelon?

h. What is the marginal cost to producers of the 4 thousandth watermelon?

i. How much producer surplus do they enjoy for the 4 thousandth watermelon?

j. Compute total consumer surplus.

k. Compute total producer surplus.

$
thousand
$
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$
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$ thousand
$ thousand

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

(1) If there is a freeze in Florida that ruins part of the orange crop, orange juice does not disappear from the shelves of grocery stores. Why not? What happens instead? Justify your answer using a supply-and-demand graph, labeling all axes and curves.

(2) Why are blueberries cheap in Iowa in summer, but expensive in winter? Justify your answer using a supply-and-demand graph, labeling all axes and curves.

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]