ECON 002 - Principles of Microeconomics   Signature: _____
Drake University, Fall 2016
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EXAMINATION 1 VERSION A
"Competitive Supply and Demand"
September 21, 2016

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, 12 pts total]

(1) In economics, *rational behavior* means
a.   using math to make decisions.
b.   ignoring "soft" concerns like friendships and charity.
c.   doing the best one can with what one has.
d.   making sacrifices today for a better future.
e.   maximizing one's income.

(2) The *marginal benefit* of tortilla chips is
a.   the total benefit of all tortilla chips eaten.
b.   the average benefit of all tortilla chips eaten.
c.   the benefit of the first tortilla chip eaten.
d.   the benefit of the last tortilla chip eaten.

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

(4) "The U.S. should send a manned mission to Mars" is an example of
a.   a positive statement.
b.   a normative statement.
c.   both of the above.
d.   none of the above.

(5) Consider the production function shown below. As more labor is used, the marginal product of labor
a.   decreases.
b.   increases.
c.   first increases, then decreases.
d.   remains constant.
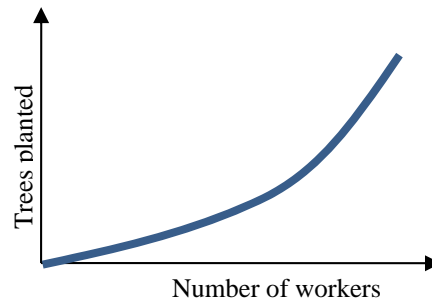
The next two questions refer to the following graph of a country's production-possibility curve.
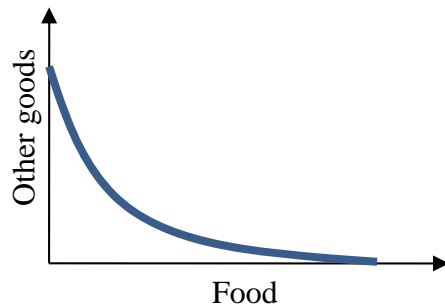
(6) By definition, what is held constant along this production-possibility curve?
a.   The prices of food and other goods.
b.   Output of food.
c.   Output of other goods.
d.   The country's total inputs.
e.   None of the above.

(7) 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.

(8) The United States and Canada can both produce corn and wheat. If the U.S. has a comparative advantage in corn, then which country has a comparative advantage in wheat?
a.   the United States.
b.   Canada.
c.   Both countries.
d.   Neither country.
e.   Cannot be determined from information given.

(9) 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.

(10) Efficient well-functioning markets
a.   ensure that every potential buyer and seller makes a trade.
b.   obey the law of one price.
c.   generate a variety prices from which buyers and sellers may choose.
d.   converge to a price such that consumer surplus equals producer surplus.
e.   all of the above.

(11) The gradual fall in the price of mobile (cellular) phone service has shifted the demand for landline phones to the left because mobile phones and landline phones are, in economic terms,
a.   inferior goods.
b.   complementary goods.
c.   substitute goods.
d.   normal goods.

(12) In August, the price of swimsuits decreases and the quantity sold decreases. This could be caused by a
a.   rightward shift in the demand.
b.   rightward shift in the supply.
c.   leftward shift in the demand.
d.   leftward shift in the supply.

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 monthly cost of a DSL line is $40 in Des Moines and $60 in Chicago. Compute the percent difference using the midpoint method.

%

(2) [Percent change of product: 4 pts] Total spending on ice cream equals the price per gallon times the number of gallons purchased. Suppose the price increases by 6 percent and the gallons purchased decreases by 4 percent.
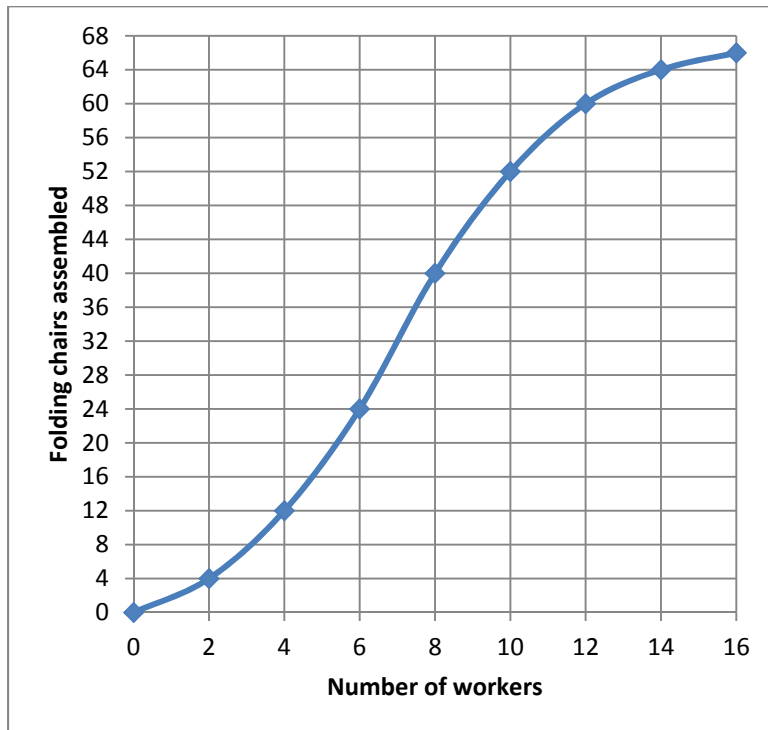   a. Does spending on ice cream *increase* or *decrease*?

   b. By approximately how much?

%

(3) [Production functions: 8 pts] Sitwell Folding Chair Company has the hourly production function shown below.

a. If the company employs 6 workers, what is their *average product*?   chairs per worker

b. If the company employs 8 workers, what is their *average product*?   chairs per worker

c. What is the *marginal product* of workers, as the number of workers increases from 2 to 4?   chairs per worker

d. What is the marginal product of workers, as the number of workers increases from 4 to 6?   chairs per worker

(4) [Comparative advantage, gains from trade: 17 pts] Country X and Country Y can each produce cars and refrigerators. They each face a tradeoff between these two products because of limited workforces. Their production possibility curves are shown below.
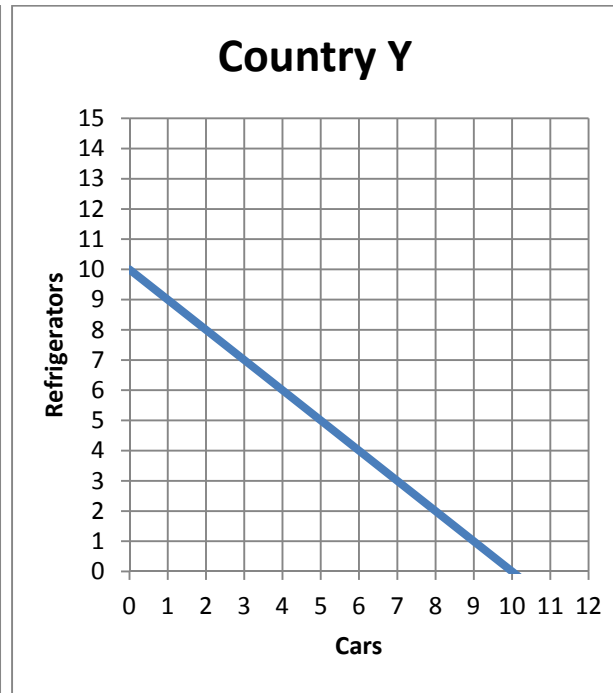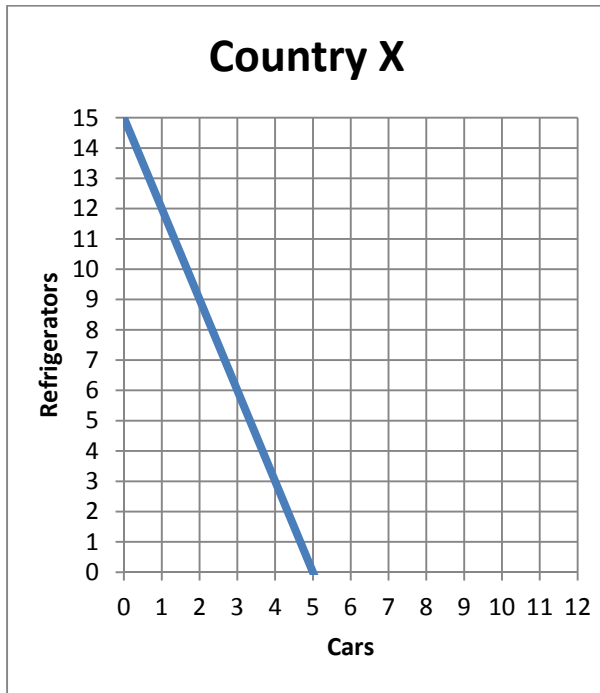
a. What is Country X's opportunity cost of producing a car?   refrigerators

b. What is Country Y's opportunity cost of producing a car?   refrigerators

c. What is Country X's opportunity cost of producing a refrigerator?   cars

d. What is Country Y's opportunity cost of producing a refrigerator?   cars

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

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

g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of products *outside* their individual

   production possibility curves if _____ exports *three* refrigerators to

   _____, which exports _____ cars in return.

h. **Plot** the trade that you propose in part (g) on the graphs above. For each country, plot 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	$12		Sue	$ 1
Barb	$10		Steve	$ 1
Ben	$ 8		Sam	$ 2
Bailey	$ 6		Sven	$ 2
Brian	$ 4		Sarina	$ 8
Brittany	$ 3		Sam	$10
Brandon	$ 2		Sophia	$12
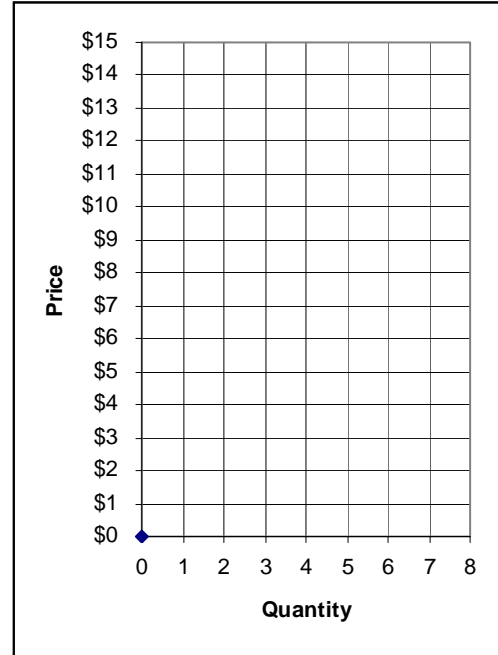
Suppose with some experience, the market settles on a single price. All trades are made at that price. (You can use the graph at right for scratch work.)

a. If the price were $11, would there by *excess demand, excess supply*, or *neither*?
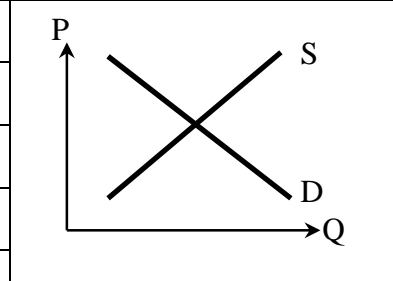
Now consider the market equilibrium.

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.
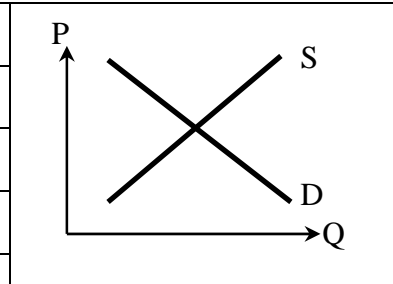
a. Consider the market for *luxury cars*. Suppose a boom raises consumers' incomes.

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).

b. Consider the market for *plastic*. Suppose the price of petroleum rises. (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).

c. Consider the market for consider the market for *grapefruit juice*: Suppose the price of orange juice rises. Suppose that, simultaneously, bad weather kills large numbers of grapefruit trees in Texas and Florida.

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).
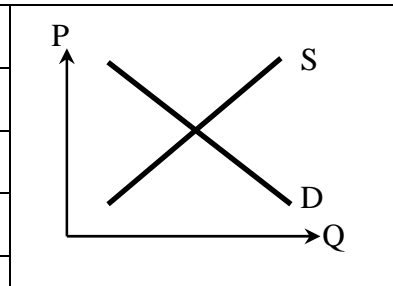
(7) [Consumer surplus, producer surplus: 22 pts] The market for pencil sharpeners is depicted in the graph below.
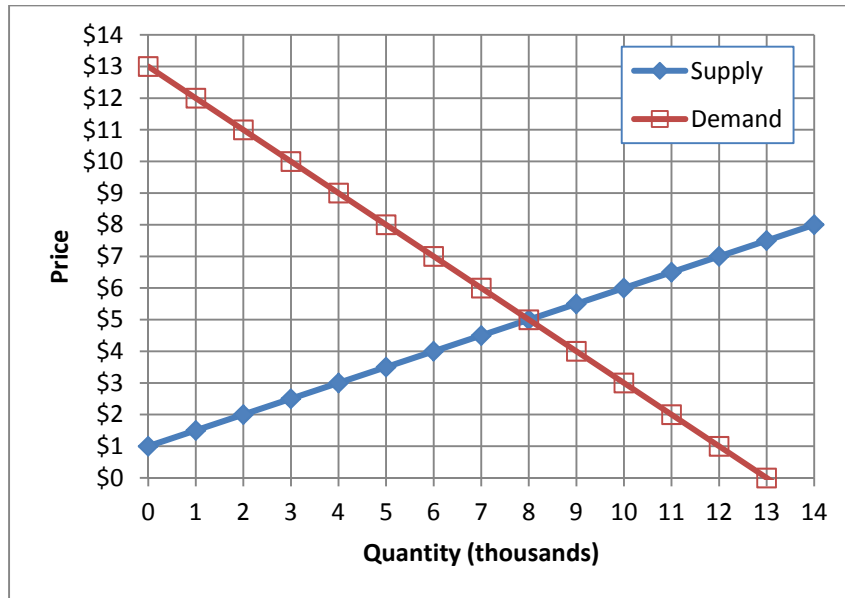
Suppose the price in this market were $4 for some reason.

a. Would there be *excess demand, excess supply*, or *neither*?

b. How much?

thousand

c. Would the price tend to *rise, fall*, or remain *constant*?

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 pencil sharpener?

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

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

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

j. Compute total consumer surplus.

k. Compute total producer surplus.

$
thousand
$
$
$
$
$ thousand
$ thousand

(8) [Consumer surplus, producer surplus: 4 pts] Consider the market for flashlights as depicted in the graph below.
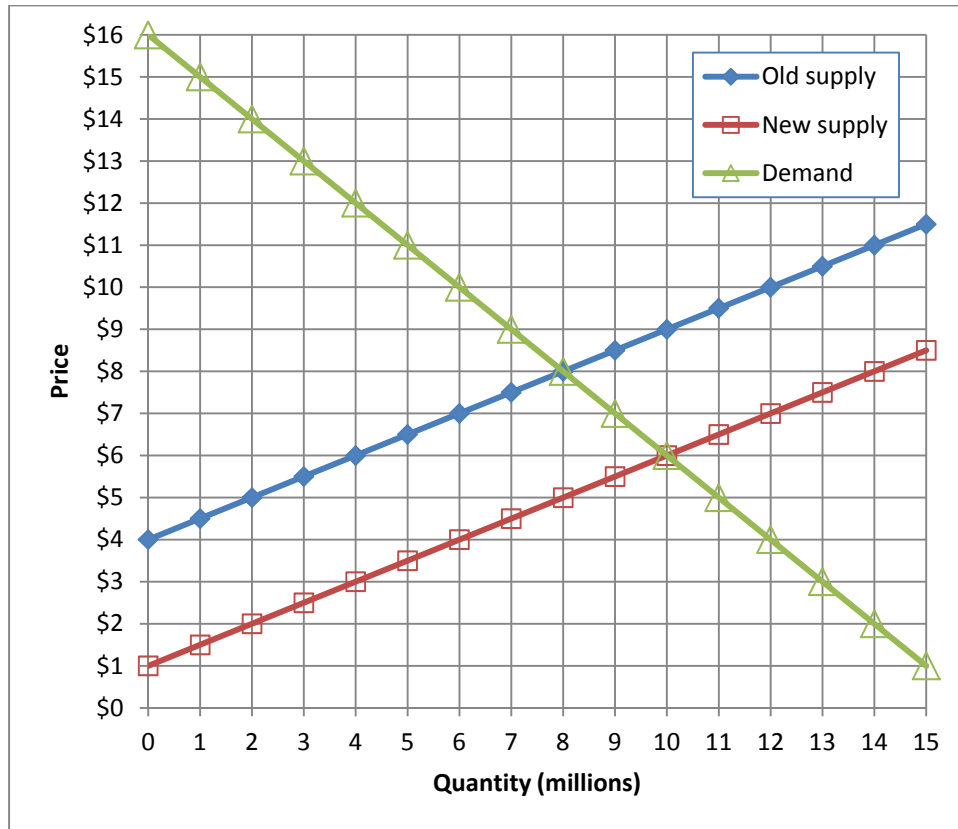
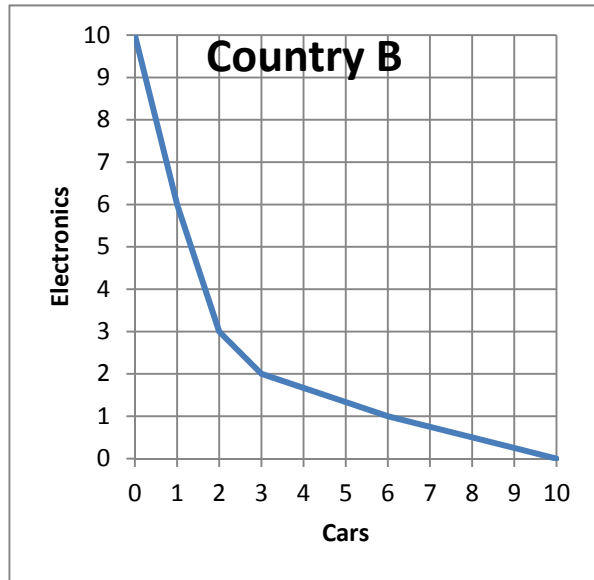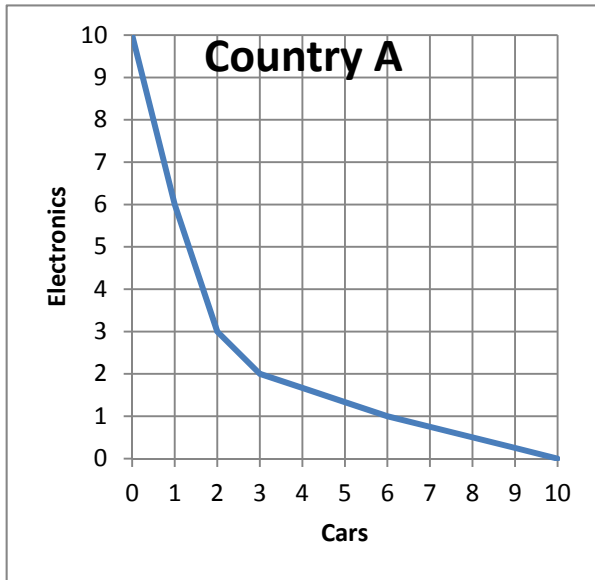Suppose supply shifts due to new production technology from the "old supply" curve to the "new supply" curve.

   a. Are consumers *better* off or *worse* off as a result of the supply shift?

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

$ _____ million

III. Critical thinking: Write a one-paragraph essay answering the question below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling. [4 pts]

(1) In this course, we have emphasized gains from grade based on *differences* in production possibility curves. Now consider the PP curves of two countries shown below, which are *identical*. Can both countries enjoy combinations of goods outside their individual PP curves through trade? If you answer NO, explain why not. If you answer YES, state verbally an example of a trade that puts both countries outside their individual PP curves, and plot that trade on the graphs.

[end of exam]