ECON 002 - Principles of Microeconomics
Drake University, Fall 2025
William M. Boal

Signature: _____

Printed name: _____

EXAMINATION 1 VERSION B
"Competitive Supply and Demand"
September 18, 2025

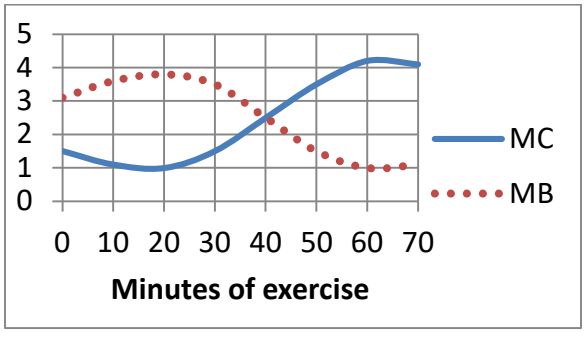
INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, cell phones, and wireless devices are NOT permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values 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, 15 pts total]

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

(2) Abe buys a ticket to a concert for $100. When he arrives at the concert venue, he discovers that scalpers are willing to pay $150 for his ticket. His *opportunity cost* of attending the game is now
a. $0.
b. $50.
c. $100.
d. $150.

(3) The graph below shows Amy's marginal cost (MC) and marginal benefit (MB) from cardio exercise at the gym. Amy's rational choice is to exercise for
a. zero minutes.
b. 20 minutes.
c. 40 minutes.
d. 50 minutes.
e. 60 minutes.

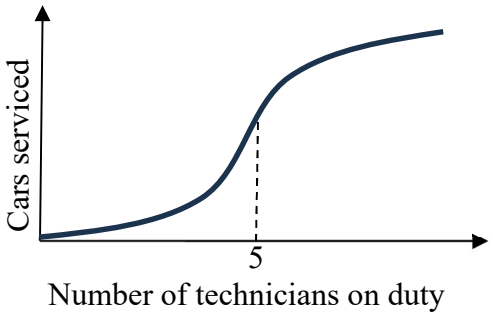


(4) In economics, an *equilibrium* is a situation where
a. economic growth is zero.
b. total costs equal total benefits.
c. no one wants to change their choices.
d. inflation equals zero percent.

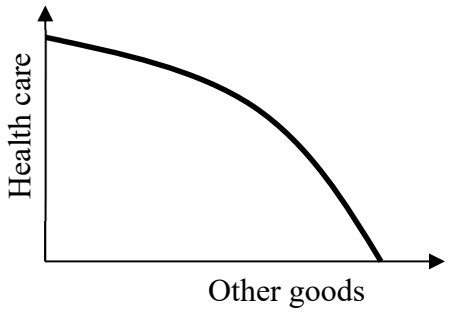
(5) "Rich people should pay more in taxes" is an example of
a. a positive statement.
b. a normative statement.
c. both of the above.
d. none of the above.

(6) Economic or physical capital includes
a. trucks and bulldozers.
b. machinery and equipment.
c. factories and office buildings.
d. all of the above.
e. none of the above.

(7) 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 5 technicians.
d. Yes, but only before 5 technicians.



(8) Suppose a country's production possibility curve is as shown below. By definition, what is held constant along the curve?
a. The country's total inputs.
b. The prices of health care and other goods.
c. Output of health care.
d. Output of other goods.
e. None of the above.



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

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

(11) A fall in the in the price of chips will shift the demand for salsa to the right, assuming chips and salsa are
a. complementary goods.
b. substitute goods.
c. normal goods.
d. inferior goods.

(12) A rise in people's incomes will shift the demand for Ramen noodles to the left, if Ramen noodles are
a. a complementary good.
b. a substitute good.
c. a normal good.
d. an inferior good.

(13) Polyester fiber is made from petroleum. If the price of petroleum rises, then the
a. demand for polyester fiber will shift left.
b. demand for polyester fiber will shift right.
c. supply of polyester fiber will shift left.
d. supply of polyester fiber will shift right.

(14) Excess supply in the market for cars would occur if the actual price of cars were
a. greater than the equilibrium price.
b. less than the equilibrium price.
c. too close to the equilibrium price.
d. cannot be determined from the information given.

(15) Data show that the average price of new houses is rising but the quantity of new houses being built is falling. This could be caused by a
a. rightward shift in the demand for new houses.
b. rightward shift in the supply of new houses.
c. leftward shift in the demand for new houses.
d. leftward shift in the supply of new houses.

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: 2 pts] A food truck sells tacos at a price of $5 each but three tacos for $12. Compute the marginal cost of the third taco.

$ _____

(2) [Percent change, midpoint formula: 2 pts] Suppose the average size of a house in City A is 1900 square feet, while the average size in City B is 2100 square feet. Compute the percent difference in size using the midpoint formula.

_____ %

(3) [Percent change with multiplication: 4 pts] A fruit stand's revenue from apples equals price times quantity sold. Suppose the price of apples decreases by 5% and the quantity sold increases by 7%

a. Does the fruit stand's revenue from apples *increase* or *decrease*?

_____

b. By approximately how much?

_____ %

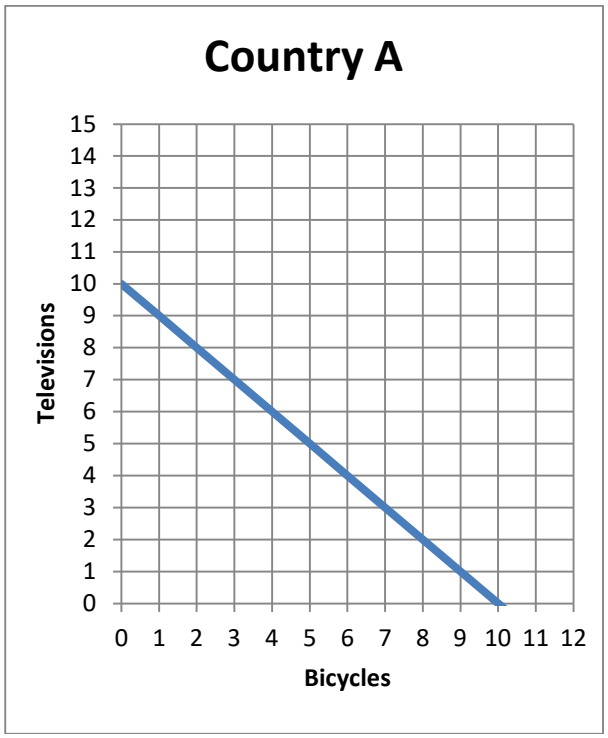
(4) [Production functions: 7 pts] A work crew reroofs houses. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

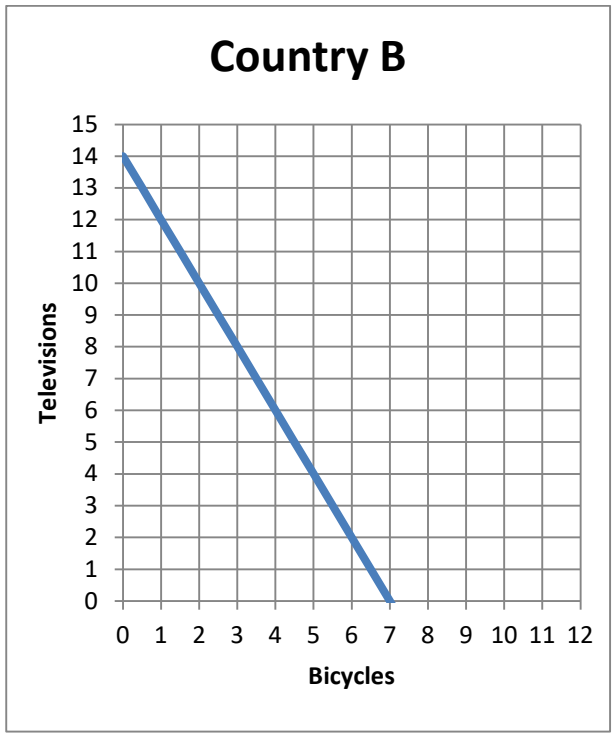
Number of workers	*Houses reroofed per month*	*Average Product*	*Marginal Product*
0 workers	0 houses		
			houses per worker
3 workers	18 houses	houses per worker	
			houses per worker
6 workers	24 houses	houses per worker	
			houses per worker
9 workers	27 houses	houses per worker	

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

_____

(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.





a. What is Country A's opportunity cost of producing a television? bicycles

b. What is Country B's opportunity cost of producing a television? bicycles

c. What is Country A's opportunity cost of producing a bicycle? televisions

d. What is Country B's opportunity cost of producing a bicycle? televisions

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

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

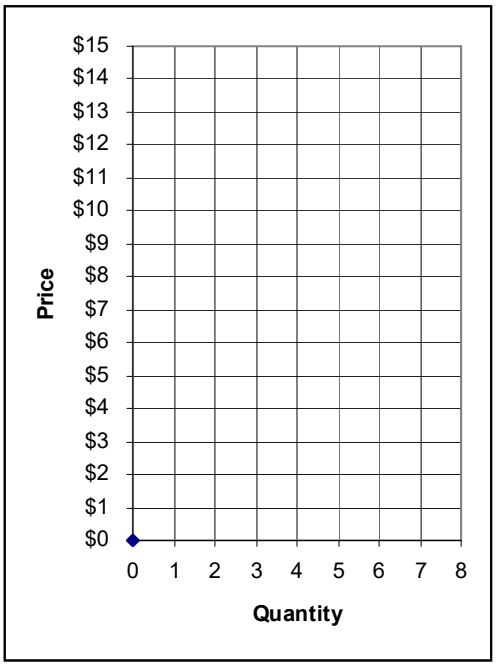
g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of products *outside* their individual production possibility curves if _____ exports *three* bicycles to _____, which exports _____ televisions in return.

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 own 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*
Bob	\$15
Barb	\$13
Ben	\$11
Bailey	\$ 9
Brian	\$ 7
Betty	\$ 5
Bert	\$ 3

Seller	*Cost*
Sue	\$ 1
Steve	\$ 1
Sam	\$ 1
Sven	\$ 2
Sarina	\$ 2
Sean	\$ 3
Sally	\$ 5



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

a. If the price were **\$8**, 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). \$

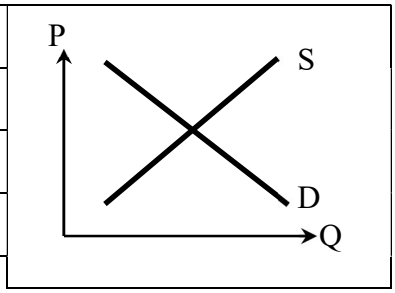
e. Compute the combined total surplus (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!) \$

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

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

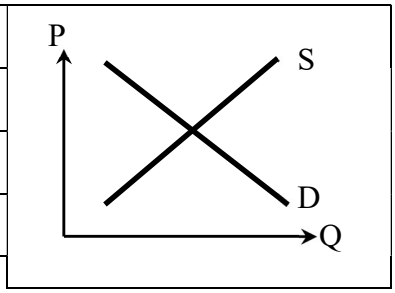
a. Consider the market for ***hotel rooms***: A recession lowers consumers' incomes.

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).



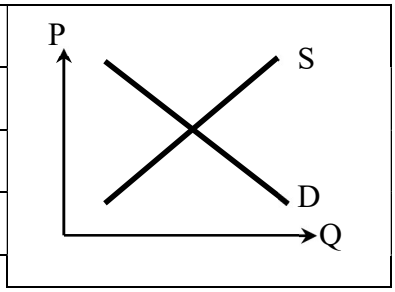
b. Consider the market for ***corn***: Excellent weather increases the corn harvest.

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).

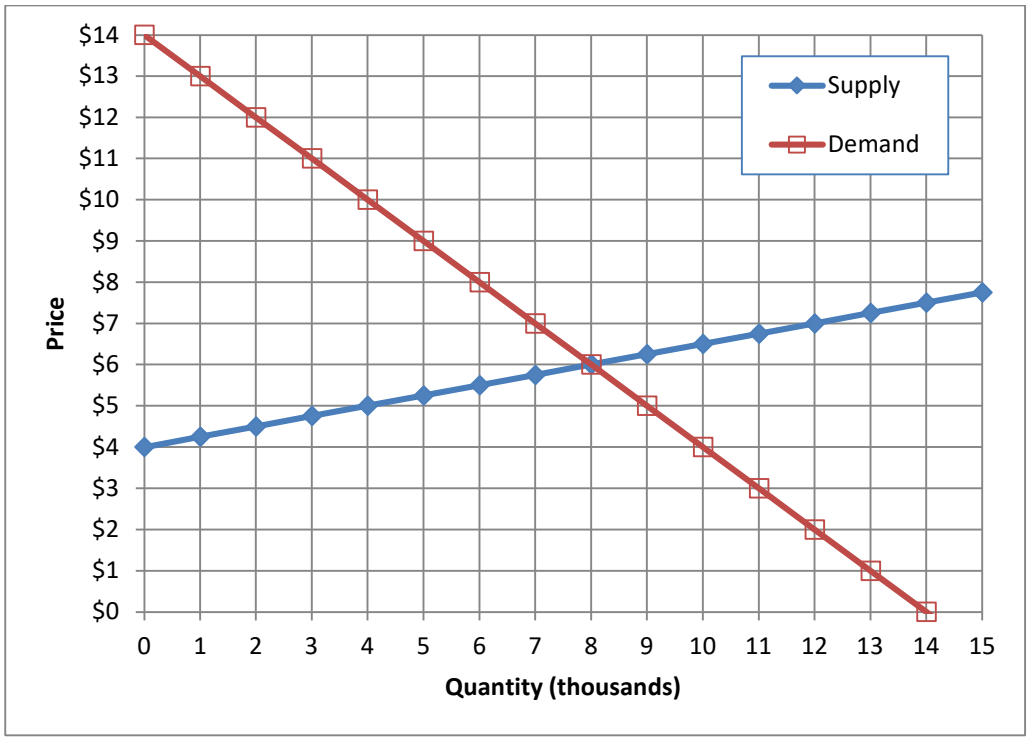


c. Consider the market for ***airline tickets***: The price of jet fuel rises. At the same time, a recession lowers consumers' incomes.

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).



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



Suppose the price in this market were **$5** 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 4 thousandth watermelon?

g. How much consumer surplus do they enjoy for the 4 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
$	
$	
$	
$	
$	thousand
$	thousand

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

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

(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 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]