

EXAMINATION 1 VERSION B
“Introduction to Economics”
September 18, 2024

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

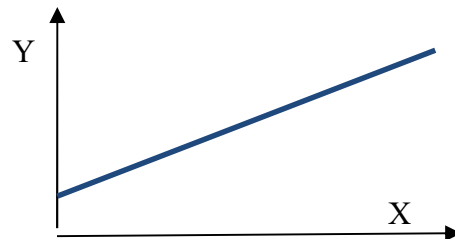
- (2) Brian buys a ticket to a basketball game for \$30. When he arrives at the stadium, he discovers that scalpers are willing to pay \$100 for his ticket. His *opportunity cost* of attending the game is now
- \$0.
 - \$30.
 - \$70.
 - \$100.

- (3) Rational choice implies pursuing an activity until the marginal cost of the last unit
- is much greater than its marginal benefit.
 - begins to exceed its marginal benefit.
 - begins to fall below its marginal benefit.
 - is much less than its marginal benefit.

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

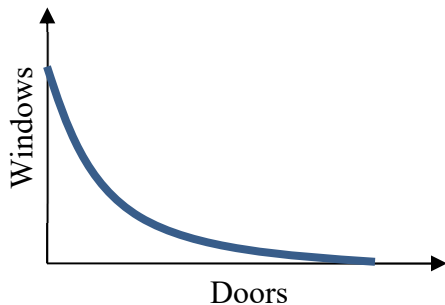
- (5) “The earth is flat” is an example of
- a positive statement.
 - a normative statement.
 - both of the above.
 - none of the above.

- (6) According to the graph below, as X increases, Y
- increases at a constant rate.
 - increases at an increasing rate.
 - increases at a decreasing rate.
 - decreases at a constant rate.
 - decreases at an increasing rate.
 - decreases at a decreasing rate.



- (7) A curve that shows the combinations of output that can be produced with a fixed amount of inputs is called
- a production function or total product curve.
 - an average cost or unit-cost curve.
 - a production-possibilities curve.
 - a supply curve.

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



(8) By definition, what is held constant along this production-possibilities curve?

- a. Output of windows.
- b. Output of doors.
- c. The factory's total inputs.
- d. The prices of windows and doors.
- e. None of the above.

(9) As more doors are produced, the opportunity cost of the last door

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

(10) Suppose Farmer A's opportunity cost of producing a bushel of soybeans is 2 bushels of corn, but Farmer B's opportunity cost of producing a bushel of soybeans is 3 bushels of corn. Which farmer has a comparative advantage in producing soybeans?

- a. Farmer A.
- b. Farmer B.
- c. both farmers.
- d. neither farmer.

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

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

- (12) An efficient well-functioning market
- a. generates a variety of prices from which buyers and sellers may choose.
 - b. converges to a price such that consumer surplus equals producer surplus.
 - c. ensures that every potential buyer and seller makes a trade.
 - d. obeys the law of one price.
 - e. all of the above.

(13) A demand curve for green peppers shows how the quantity of green peppers people want to buy is affected by

- a. the price of green peppers.
- b. the price of substitutes, like red peppers.
- c. the quality of the green peppers.
- d. the income of consumers.

(14) If the price of gasoline rises, consumers will buy fewer large sport-utility vehicles, because gasoline and large vehicles are

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

(15) Supply curves tend to slope upward because

- a. the first few units are relatively cheap to produce but additional units often cost more.
- b. you have to pay more to buy more.
- c. sellers try to increase the price over time.
- d. price necessarily equals quantity.

(16) Some people believe there is excess supply in the commercial real estate market. If they are right, then the price of commercial real estate can be expected to

- a. rise.
- b. fall.
- c. remain constant.
- d. Price movements are not related to excess supply.

(17) A price ceiling, or legal maximum price

- a. causes excess supply.
- b. causes the demand curve to shift right.
- c. causes excess demand.
- d. causes the supply curve to shift left.

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) [Using slopes: 2 pts] Suppose that the slope of the curve relating X and Y , with X on the horizontal axis and Y on the vertical axis, is negative 5. That is $\Delta Y/\Delta X = -5$. Now suppose that X increases by 3 units.

a. Does Y increase or decrease?

units

b. By how much?

(2) [Percent changes: 2 pts] Income per capita in a country equals total income divided by the population. Suppose total income increases by 2 percent and population increases by 3 percent.

a. Does income per capita *increase* or *decrease*?

%

b. By approximately how much?

(3) [Percent change: 2 pts] Suppose that total output in an industry is initially \$200 billion. Then suppose output increases by 6 percent. Compute the new level of output.

\$	billion
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(4) [Economic capital: 6 pts] Which of the following are examples of *economic capital*? Answer YES or NO.

a. Shares of stock in corporations.

d. Office buildings.

b. Container ships.

e. Savings accounts.

c. State and local government bonds.

f. Tractor-trailer trucks.

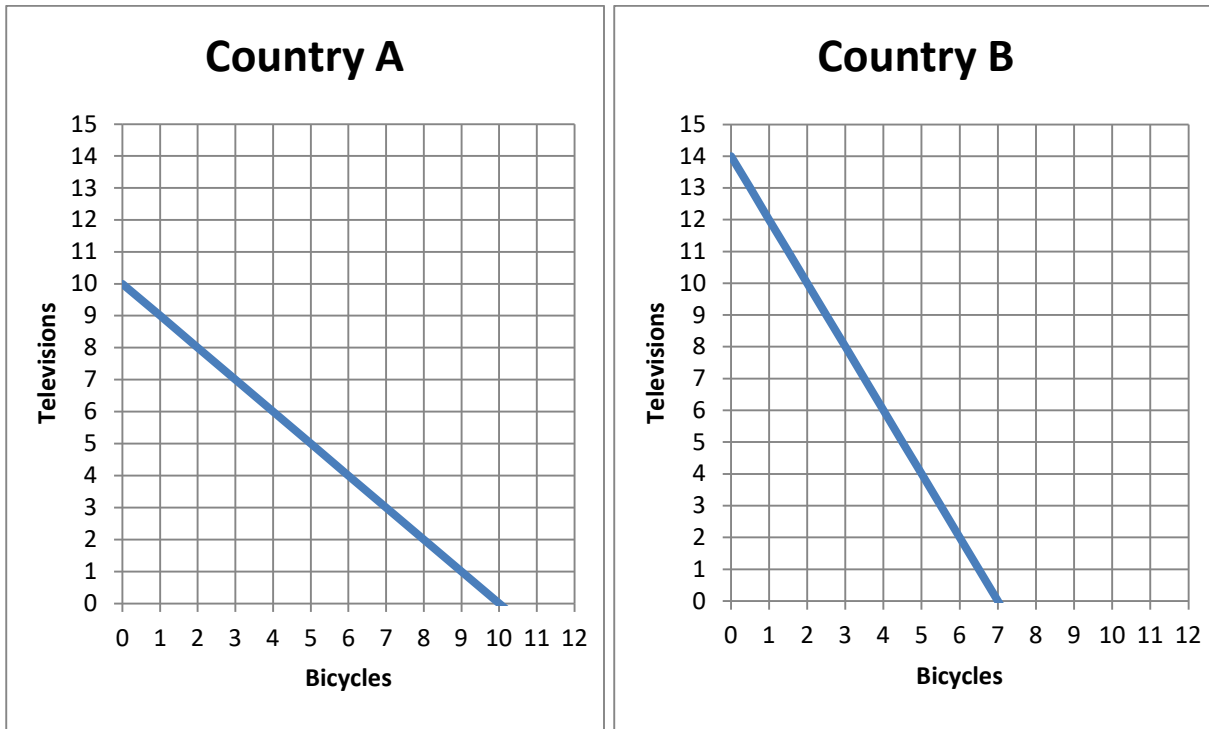
(5) [Production functions: 7 pts] A work crew washes cars. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

<i>Number of workers</i>	<i>Cars washed per day</i>	<i>Average Product</i>	<i>Marginal Product</i>
0 workers	0 cars		
			cars per worker
2 workers	20 cars	cars per worker	
			cars per worker
4 workers	28 cars	cars per worker	
			cars per worker
6 workers	30 cars	cars per worker	

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

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(6) [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 possibilities 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?

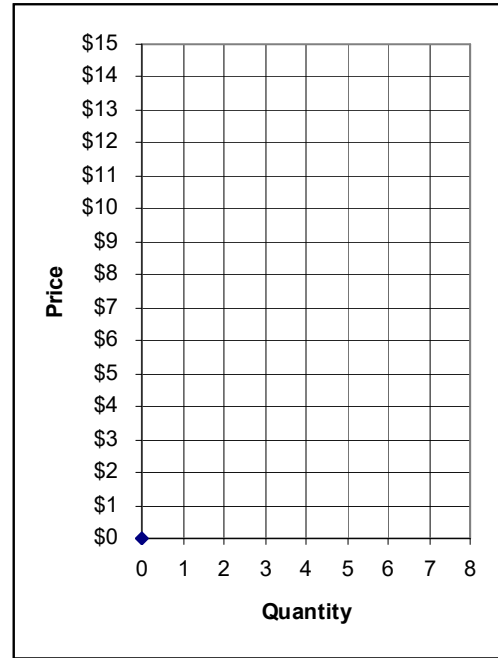
	bicycles
	bicycles
	televisions
	televisions

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

(7) [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	\$ 9
Brian	\$ 4	Sarina	\$11
Betty	\$ 3	Sean	\$14
Bert	\$ 1	Sally	\$15



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 **\$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
\$	
\$	

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

a. Consider the market for **new houses**: A construction workers' union wins a big wage increase.

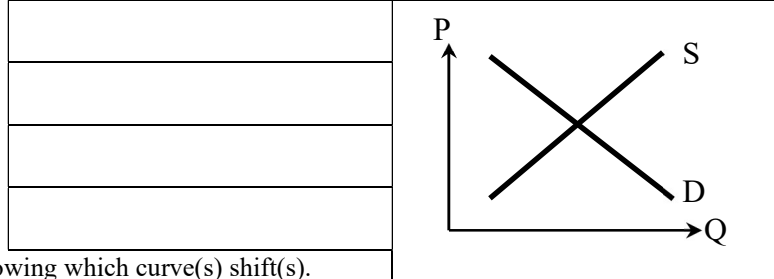
Does demand shift *left*, shift *right*, or remain *unchanged* ?

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 **natural gas**. Suppose we have an unusually cold winter. (Most homes in the Midwest are heated with natural gas.)

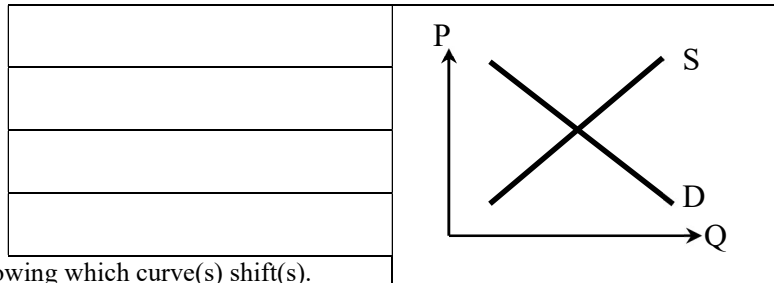
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Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

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.

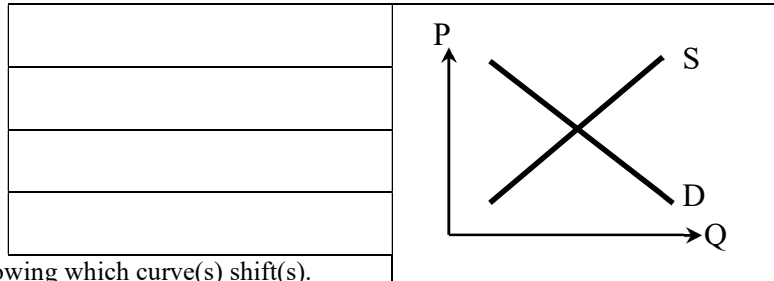
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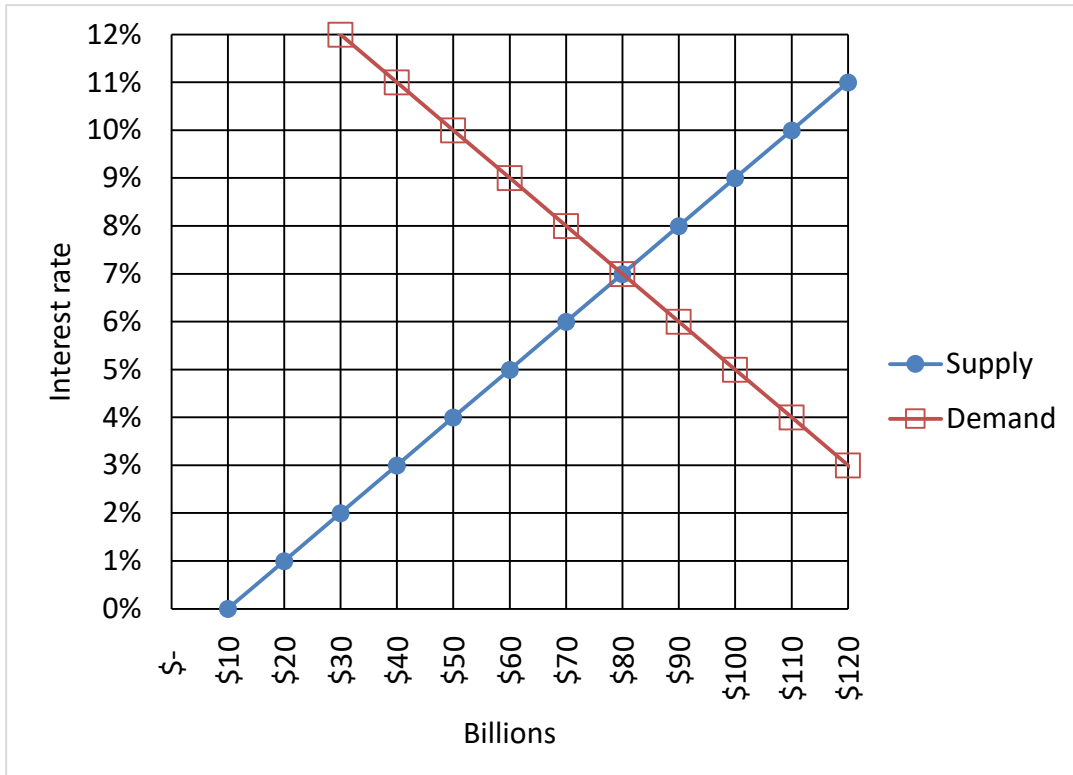
Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

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

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



(9) [Market equilibrium, price controls: 12 pts] The following graph shows the market for loans. Note that the interest rate is the price.



First, find the unregulated market equilibrium.

a. Find the equilibrium interest rate.

	%
	\$ billion

b. Find the equilibrium quantity.

Second, suppose the government imposes a maximum interest rate (a type of price ceiling) of 5%. No loans may be made for any higher interest rate.

c. Compute the quantity of loans demanded at this interest rate.

	\$ billion
	\$ billion

d. Compute the quantity of loans supplied at this interest rate.

e. Will there be *excess supply* or *excess demand* with this price ceiling?

f. How much?

	\$ billion
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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? Justify your answer using a supply-and-demand graph. Label all axes and curves.

(2) Consider the following statement. "In most markets today, there is no haggling. Sellers set the price and they can set any price they want. The buyers have no influence on the price." Do you agree or disagree? Justify your answer with a supply-and-demand diagram. Label all axes and curves.

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]