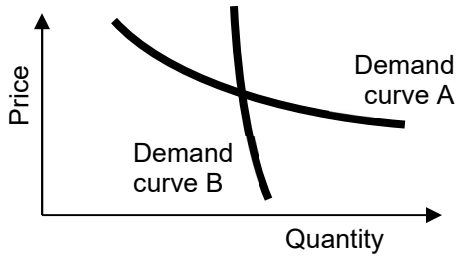
ECON 002 - Principles of Microeconomics Signature: _____
Drake University, Fall 2022
William M. Boal Printed name: _____

EXAMINATION 2 VERSION C
"Applications of Supply and Demand"
October 12, 2022

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 write your name and "Version C" on your answer sheet. Then mark the one best answer to each question on the answer sheet. [1 pt each, 30 pts total]

(1) Which demand curve below is *more* elastic?
a. Demand curve A.
b. Demand curve B.
c. Both have the same elasticity because they pass through the same point.
d. Cannot be determined from information given.



(2) Assume that California consumers are similar to Iowa consumers in their behavior. California has about thirteen times as many people as Iowa. Therefore the price elasticity of demand for housing in California should be about
a. one-thirteenth the elasticity of demand in Iowa.
b. the same as the elasticity of demand in Iowa.
c. thirteen times the elasticity of demand in Iowa.
d. Cannot be determined from information given.

(3) A good that has close substitutes will likely have a price elasticity of demand that is
a. zero.
b. small, in absolute value.
c. large, in absolute value.
d. cannot be determined.

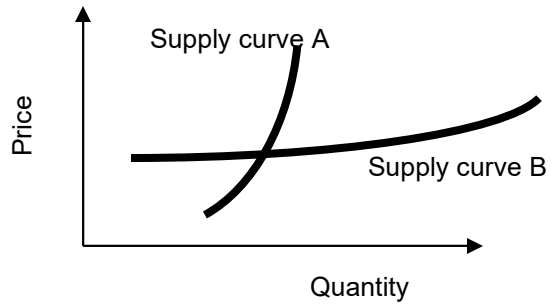
(4) It takes time for consumers to adjust their lifestyles to changes in natural gas prices. Therefore, the short-run demand for natural gas is
a. more elastic than the long-run demand.
b. less elastic than the long-run demand.
c. just as elastic as the long-run demand.
d. Elasticity of demand is not related to time for adjustment.

(5) Assuming that coffee and doughnuts are complements, then the cross-price elasticity of demand for coffee with respect to the price of doughnuts must be
a. positive
b. negative.
c. zero.
d. cannot be determined from information given.

(6) Assuming that opera tickets are a *superior* or *luxury good*, the income elasticity of demand for opera tickets must be
a. negative.
b. exactly zero.
c. between zero and one.
d. exactly one.
e. greater than one.

(7) Some estimates show that rich people buy more clothing than poor people, but they spend a slightly *smaller fraction* of their income on clothing than poor people do. If this is true, then the income elasticity of demand for clothing must be
a. negative.
b. exactly zero.
c. between zero and one.
d. exactly one.
e. greater than one.

(8) Which supply curve below is *less* elastic?
a. Supply curve A.
b. Supply curve B.
c. Both have the same elasticity because they pass through the same point.
d. Cannot be determined from the information given.



(9) Compare the supply of corn when producers are given one week to adjust to a new price, with the supply when producers are given a year to adjust to the new price.
a. The one-week supply is more elastic.
b. The one-year supply is more elastic.
c. Time for adjustment does not affect elasticity.
d. Cannot be determined from information given.

(10) If the quantity supplied of some good, such as paintings by Salvador Dali (1904-1989), is exactly the same, regardless of the price, then the supply is
a. elastic.
b. perfectly elastic.
c. inelastic.
d. perfectly inelastic.
e. cannot be determined from information given.

The next four questions refer to the following demand and supply schedules for soybeans in two countries.

	Country X		Country Y	
Price	Q_D	Q_S	Q_D	Q_S
\$1	60	30	60	10
\$2	50	50	55	15
\$3	40	70	50	20
\$4	30	90	45	25
\$5	20	110	40	30
\$6	10	130	35	35
\$7	0	150	30	40

(11) In the absence of international trade, Country X's equilibrium price of soybeans would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(12) In the absence of international trade, Country Y's equilibrium price of soybeans would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(13) With international trade, the equilibrium price of soybeans in both countries would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(14) Who in Country X benefits from international trade in soybeans?
a. buyers in Country X.
b. sellers in Country X.
c. both buyers and sellers in Country X.
d. neither buyers nor sellers in Country X.

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(15) In recent years, the demand for pork in East Asia has shifted right due to rising incomes there. Because pork is traded internationally, this should cause the price of pork in the United States to
a. rise.
b. fall.
c. rise or fall, depending on the shapes of the demand and supply curves.
d. remain constant.

(16) The price of peanuts is higher in the United States than in Africa. If the United States ends its restrictions on international trade in peanuts, this change will benefit
a. African peanut producers and U.S. peanut consumers.
b. U.S. peanut producers and African peanut consumers.
c. U.S. peanut producers and U.S. peanut consumers.
d. African peanut producers and African peanut consumers.

(17) Suppose there is a change in government policy affecting the oil industry. Which of the following outcomes would be a *Pareto improvement*?
a. Producers gain $1 billion while consumers lose $2 billion.
b. Producers gain $1 billion while consumers are unaffected.
c. Producers gain $2 billion while consumers lose $1 billion.
d. Both (b) and (c).
e. All of the above.

(18) To pass the *compensation test of Kaldor and Hicks*, a change in the economy must result in
a. gains to winners that exceed any losses to losers.
b. at least some winners.
c. cost savings for the government.
d. a rise in wages, salaries, and other compensation.
e. winners but no losers.

(19) Arbitrageurs buy low and sell high because they *want to*
a. enforce the Law of One Price.
b. keep markets orderly.
c. ensure that all consumers face a fair price.
d. make a profit.
e. All of the above.

(20) Suppose the price of platinum were higher in Berlin than in Tokyo, initially. Arbitrage would then *tend to*
a. raise the price of platinum in both cities.
b. raise the price of platinum in Berlin and lower the price in Tokyo.
c. lower the price of platinum in both cities.
d. lower the price of platinum in Berlin and raise the price in Tokyo.

(21) Suppose the price of apples in Des Moines is $0.80 per pound and the cost of shipping apples between Des Moines and Omaha is $0.50 per pound. Markets are *out of equilibrium* if the price of apples in Omaha is
a. $0.20 per pound.
b. $0.70 per pound.
c. $1.00 per pound.
d. $1.20 per pound.

(22) Arbitrage *cannot* guarantee that people in Iowa and Alaska pay similar prices for
a. computer chips.
b. cement blocks.
c. gold.
d. government or corporate bonds.

(23) If the free-market equilibrium price of gasoline is $5, which government price control would be *binding* on the market?
a. a price ceiling (or legal maximum price) of $4.
b. a price floor (or legal minimum price) of $4.
c. Both of the above would be binding.
d. None of the above would be binding.

(24) A price ceiling (or legal maximum price) on plywood, if it were binding, would create
a. excess supply of plywood.
b. excess demand for plywood.
c. neither excess demand nor excess supply.
d. Cannot be determined from information given.

(25) A quota (or legal maximum quantity) on *selling* rosewood would cause its price to
a. rise.
b. fall.
c. rise or fall, depending on the shapes of the demand and supply curves.
d. remain constant.

(26) Which of the following government controls on a competitive market cause the quantity traded to *increase?*
a. price floor (legal minimum price).
b. price ceiling (legal maximum price).
c. quota (or legal maximum quantity) on buyers.
d. all of the above.
e. none of the above.

(27) The sales tax rate in Des Moines is 7%. This is an example of
a. an *ad valorem* tax.
b. an excise or per-unit tax.
c. a price control.
d. a subsidy.

(28) A Laffer curve shows the relationship between
a. consumer surplus and price.
b. tax rates and tax revenues.
c. quota quantities and quota price.
d. deadweight loss and tax rates.
e. quantity and price.

(29) Suppose the price elasticity of supply for apartment rentals is 0.3 and the price elasticity of demand is -1.0 . If the city imposes a tax on apartment rentals,
a. sellers (landlords) will pay most of the tax.
b. buyers (renters) will pay most of the tax.
c. sellers and buyers will each pay half of the tax.
d. Answer depends on which side is legally required to remit the tax to the government.

(30) The amount of vitamins actually sold would increase if the government enacted a
a. a tax on vitamins.
b. a quota (or legal maximum quantity) on sellers of vitamins.
c. a price ceiling (or legal maximum price) for vitamins.
d. all of the above.
e. none of the above.

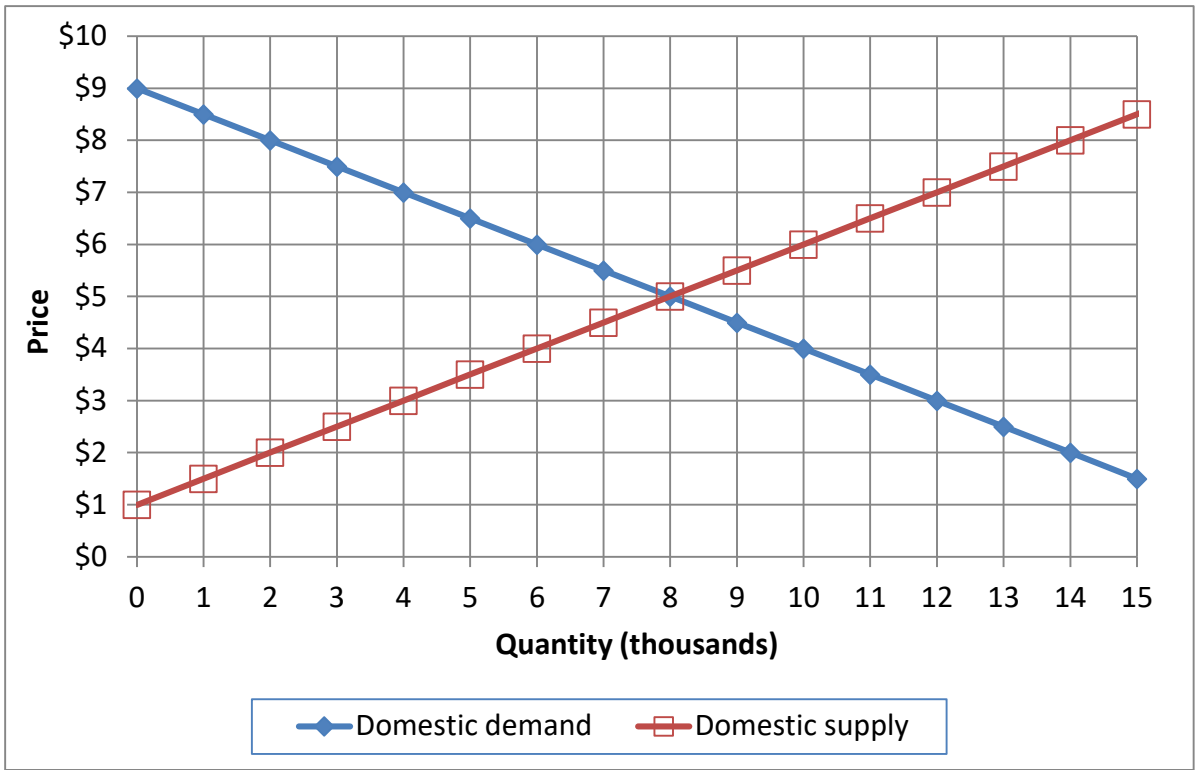
II. Problems: Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Calculating elasticities: 2 pts] Suppose that if the price of gasoline is $5 per gallon, the typical driver uses 20 gallons per month; but if the price is 3 dollars per gallon, the typical driver uses 30 gallons per month. Compute the price elasticity of demand for gasoline using the "arc-elasticity" formula.

(2) [Cross-price elasticity of demand: 4 pts] Suppose that when the price of potato chips rises by 20 percent, the quantity of tortilla chips purchased rises by 15 percent.
a. From the information above, are potato chips and tortilla chips *substitutes* or *complements*?
b. Compute the cross-price elasticity of demand. (Full credit requires correct sign.)

(3) [Using price elasticity of demand: 10 pts] Suppose the price of airline tickets rises by 4%. Suppose the price elasticity of demand for airline tickets is -1.5. Assume everything else affecting demand for airline tickets remains constant.
a. According to the information above, is demand for airline tickets *elastic, inelastic,* or *unitary-elastic*?
b. As the price rises, will the number of airline tickets purchased *increase*, *decrease*, or remain *constant*?
c. ... by approximately how much? %
d. Will the total revenue received by the airlines *increase*, *decrease*, or remain *constant*?
e. ... by approximately how much? %

(4) [Welfare analysis of international trade: 18 pts] Domestic supply and demand for ball caps in a particular country are given by the following diagram.

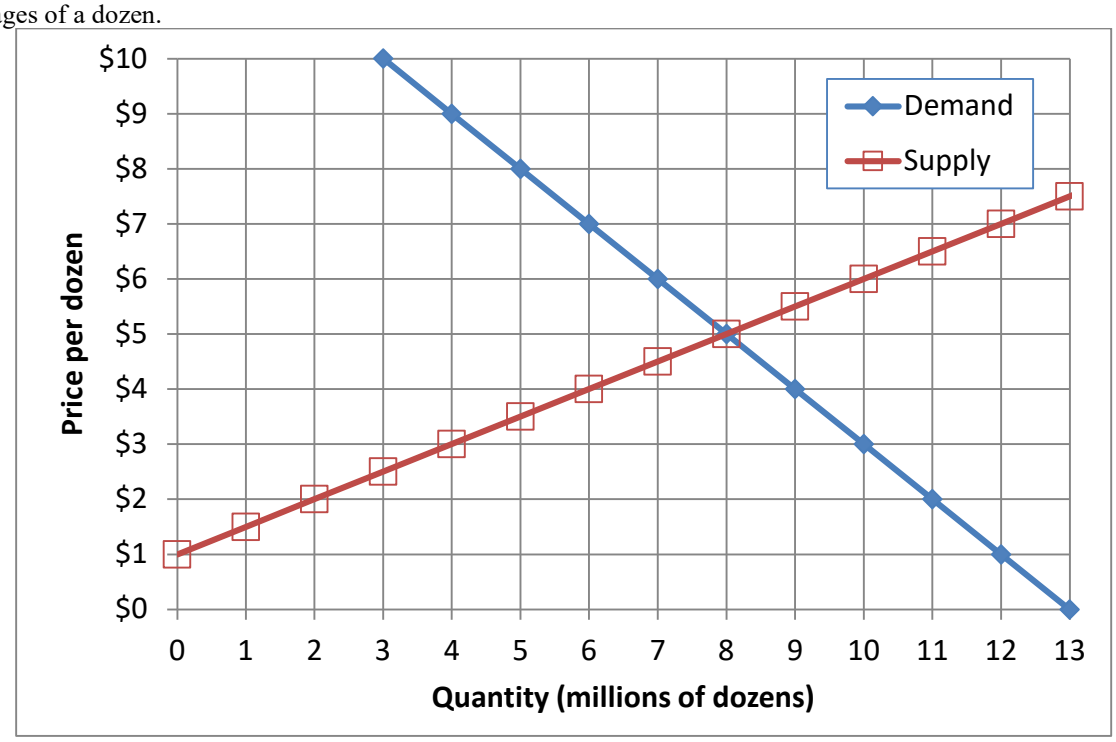


a. At first, international trade in ball caps is not permitted. Find the equilibrium price without international trade. | $ |

Then this industry is opened to international trade and the international price of ball caps turns out to be **$ 3.**

b. Will this country now *export* or *import* ball caps? |
c. How many? | thousand
d. Does consumer surplus in this country *increase or decrease* from international trade in ball caps? |
e. By how much? | $ thousand
f. Does producer surplus in this country *increase or decrease* from international trade in ball caps? |
g. By how much? | $ thousand
h. Does total social welfare in this country *increase or decrease* from international trade in ball caps? |
i. By how much? | $ thousand

(5) [Welfare analysis of market controls: 18 pts] The following graph shows the market for eggs, which are sold in packages of a dozen.



a. Find the equilibrium price without government intervention. $

Suppose the government imposes a quota (or legal maximum quantity) **on sellers of 6 million dozens**. Quota rights or permits to sell 6 million dozen eggs are distributed to sellers for free. No one may sell eggs without a permit.

b. Which curve is bent as a result of the quota—*demand, supply*, or *neither*?

c. Would this quota on sellers cause the price of eggs to *increase, decrease,* or *remain constant* ?

d. Compute the new equilibrium price of eggs with the quota on sellers. $

e. Does producer surplus *increase, decrease,* or *remain constant* because of the quota, as compared to the market without government intervention? (Assume optimistically that quota permits to sell eggs are given to those egg producers with the lowest cost.)

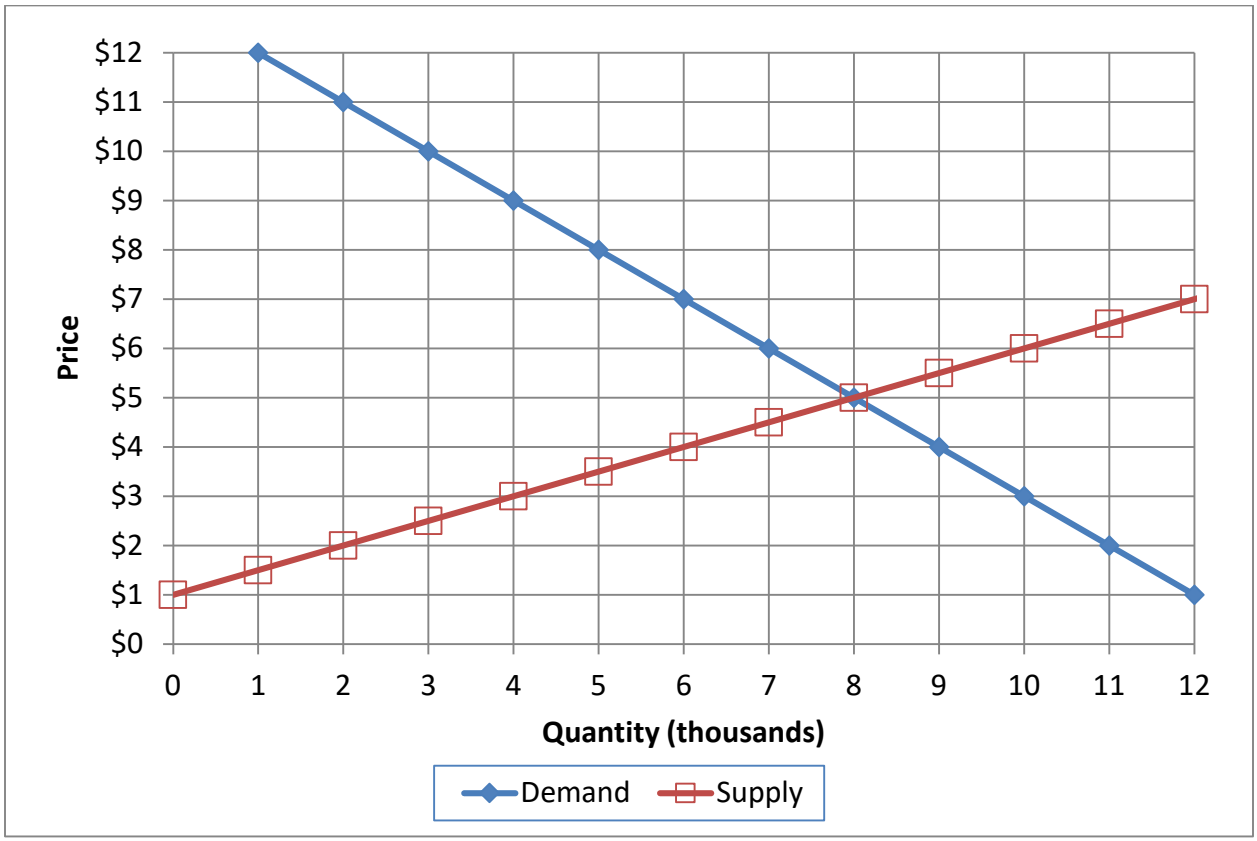
f. By how much? $ million

g. Does consumer surplus *increase, decrease,* or *remain constant* because of the quota, as compared to the market without government intervention?

h. By how much? $ million

i. Compute the deadweight social loss caused by the quota. $ million

(6) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for pumpkins.



Suppose the government imposes **subsidy of $ 3** per pumpkin.

a. Compute the equilibrium quantity sold.	thousand
b. Compute the equilibrium total price received by sellers (including the subsidy).	$ per pumpkin
c. Compute the equilibrium net price paid by buyers (excluding the subsidy).	$ per pumpkin
d. Does producer surplus *increase, decrease,* or *remain constant* because of the subsidy?	
e. By how much?	$ thousand
f. Does consumer surplus *increase, decrease,* or *remain constant* because of the subsidy?	
g. By how much?	$ thousand
h. Compute the direct cost of the subsidy to the government—that is, the amount that the government will have to pay buyers and/or sellers.	$ thousand
i. Compute the deadweight social loss caused by the subsidy.	$ thousand

[end of exam]