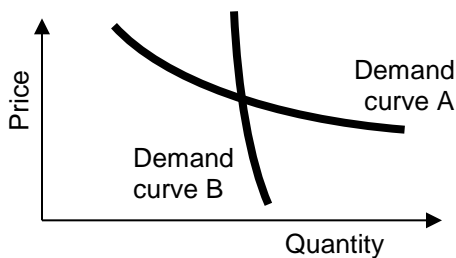


**EXAMINATION 2 VERSION A**  
**"Applications of Supply and Demand"**  
**October 9, 2019**

**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.

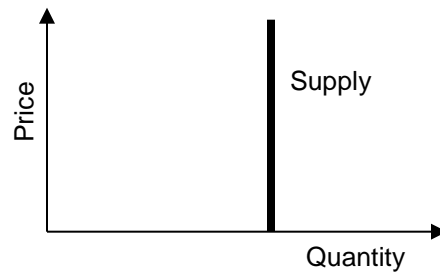
**I. Multiple choice:** Please circle the one best answer to each question. [1 pt each, 12 pts total]

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



- (2) If the price elasticity of demand for a good is large in absolute value, then buyers
- are not very sensitive to price.
  - are very sensitive to price.
  - buy the same amount of the good, regardless of price.
  - Cannot be determined from information given.
- (3) A good that has close substitutes will likely have a price elasticity of demand that is
- small, in absolute value.
  - large, in absolute value.
  - zero.
  - infinite.
  - cannot be determined.

- (4) The supply curve in the graph below is
- perfectly elastic.
  - perfectly inelastic.
  - unitary elastic.
  - Cannot be determined from information given.



- (5) In recent years, the supply of soybeans in Latin America has shifted right due to expansion of agriculture there. Because soybeans are traded internationally, this should cause the price of soybeans in the United States to
- rise.
  - fall.
  - rise or fall, depending on the shapes of the demand and supply curves.
  - remain constant.
- (6) To pass the *compensation test of Kaldor and Hicks*, a change in the economy must result in
- winners but no losers.
  - gains to winners that exceed any losses to losers.
  - at least some winners.
  - cost savings for the government.
  - a rise in wages, salaries, and other compensation.

(7) Arbitrage will *not* guarantee that people in Denver and Chicago pay similar prices for

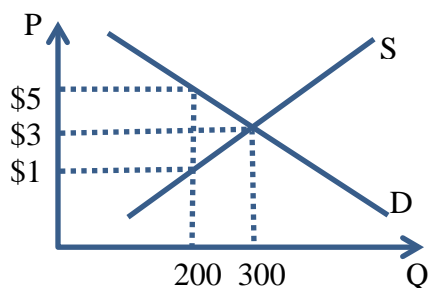
- a. U.S. government bonds.
- b. gold.
- c. houses.
- d. euro currency.

(8) Suppose the price of a pumpkin in Des Moines is \$5 and the cost of shipping a pumpkin between Des Moines and Minneapolis is \$1.50. Markets are *out of equilibrium* if the price of pumpkins in Minneapolis is

- a. \$3.
- b. \$4.
- c. \$5.
- d. \$6.

(9) Consider the market for sandwiches depicted in the graph below. Suppose a law is passed prohibiting *buyers from buying* more than 200 sandwiches. With this quota, the price of sandwiches will be

- a. \$1.
- b. \$3.
- c. \$4.
- d. \$5.
- e. Cannot be determined from information given.



(10) A Laffer curve shows the relationship between

- a. quantity and price.
- b. consumer surplus and price.
- c. tax rates and tax revenues.
- d. quota quantities and quota price.
- e. deadweight loss and tax rates.

(11) Suppose the price elasticity of demand for hotel rooms in a small city is -5.0 and the price elasticity of supply is 1.5. If a tax is imposed on hotel rooms in this city,

- a. Sellers (hotel operators) will pay most of the tax.
- b. Buyers (guests) 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.

(12) Suppose the government subsidizes vitamins. The increase in consumer and producer surplus from this subsidy will necessarily be \_\_\_\_\_ the amount of money paid by the government to buyers or sellers of vitamins.

- a. equal to.
- b. greater than.
- c. less than.
- d. Cannot be determined.

**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 \$2 per gallon, the average driver buys 7 gallons per week. If the price is \$4 per gallon, the average driver buys 5 gallons per week. Compute the price elasticity of demand for gasoline using the “arc-elasticity” formula.

(2) [Cross-price elasticity of demand: 8 pts] Use the information given below to determine whether each pair of goods (in *italics*) are substitutes or complements. Also compute the cross-price elasticity of demand. (Full credit requires correct sign.)

	Substitutes or complements?	Computed cross-price elasticity
a. The price of <i>hamburgers</i> falls by 15%, causing the quantity of <i>ketchup</i> purchased to increase by 3%.		
b. The price of <i>gasoline</i> rises by 20%, causing the quantity of <i>bus fares</i> purchased to rise by 2%.		

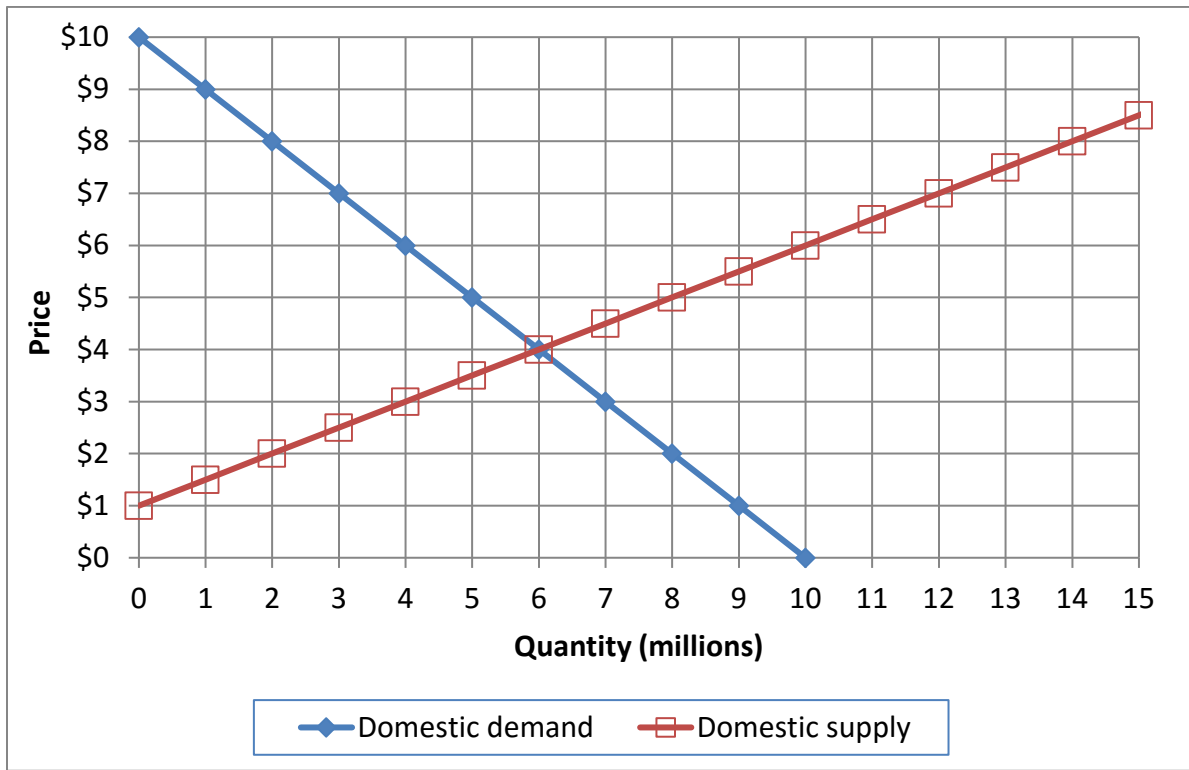
(3) [Using price elasticity of demand: 10 pts] Suppose the cable TV company *lowers* its price by 5%. Suppose the price elasticity of demand for cable TV service is -1.2. Assume everything else affecting demand for cable TV service remains constant.

a. According to the information above, is demand for cable TV service <i>elastic</i> , <i>inelastic</i> , or <i>unitary-elastic</i> ?	
b. As the price falls, will the amount of cable TV service consumed <i>increase</i> , <i>decrease</i> , or remain <i>constant</i> ?	
c. ... by approximately how much?	%
d. Will the total revenue received by cable TV company <i>increase</i> , <i>decrease</i> , or remain <i>constant</i> ?	
e. ... by approximately how much?	%

(4) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for concert tickets is 1.5. Now suppose income *rises* by 4%. Assume the price of concert tickets does not change.

a. According to the information above, are concert tickets a <i>necessary good</i> , an <i>inferior good</i> , or a <i>luxury (or superior) good</i> ?	
b. As income rises, will the quantity of concert tickets demanded <i>increase</i> , <i>decrease</i> , or remain <i>constant</i> ?	
c. ... by about how much?	%
d. Will consumer spending on concert tickets, as a fraction of a consumer's total budget, <i>increase</i> , <i>decrease</i> , or remain <i>constant</i> ?	
e. ... by about how much?	%

(5) [Welfare effects of international trade: 18 pts] Domestic supply and demand for ballcaps in a particular country are given by the following diagram.



a. At first, international trade in ballcaps is not permitted. Find the equilibrium price without international trade.

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

b. Will this country now *export* or *import* ballcaps?

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c. How many?

million
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d. Does consumer surplus in this country *increase or decrease* from international trade in ballcaps?

e. By how much?

\$	million
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f. Does producer surplus in this country *increase or decrease* from international trade in ballcaps?

g. By how much?

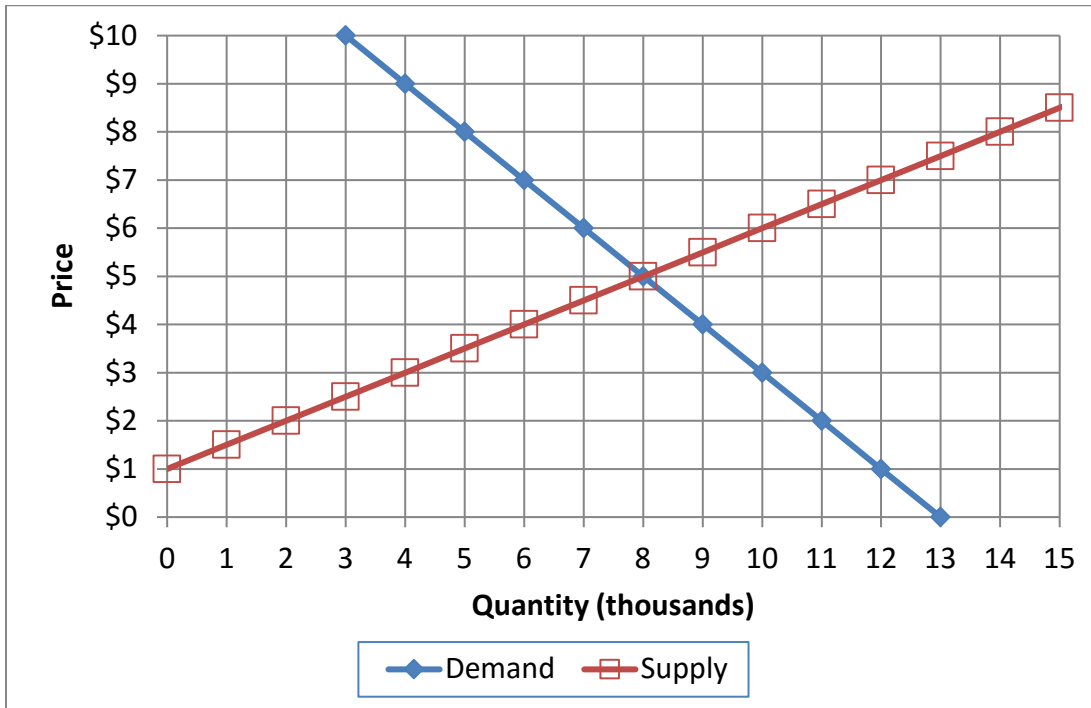
\$	million
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h. Does total social welfare in this country *increase or decrease* from international trade in ballcaps?

i. By how much?

\$	million
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(6) [Welfare analysis of market controls: 18 pts] The following graph shows the market for thumbdrives.



a. Find the equilibrium price without government intervention.

\$
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Suppose the government imposes a price floor (or legal minimum price) of \$7. No thumbdrives may be sold for a price less than the price floor.

b. How many thumbdrives will actually be sold?

thousand
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c. Will there be *excess demand*, *excess supply*, or *neither*?

d. How much?

thousand
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e. Does producer surplus *increase*, *decrease*, or *remain constant* because of the price floor, as compared to the market without government intervention? (Assume optimistically that thumbdrives are sold by those producers who have the lowest cost.)

f. By how much?

\$	thousand
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g. Does consumer surplus *increase*, *decrease*, or *remain constant* because of the price floor, as compared to the market without government intervention?

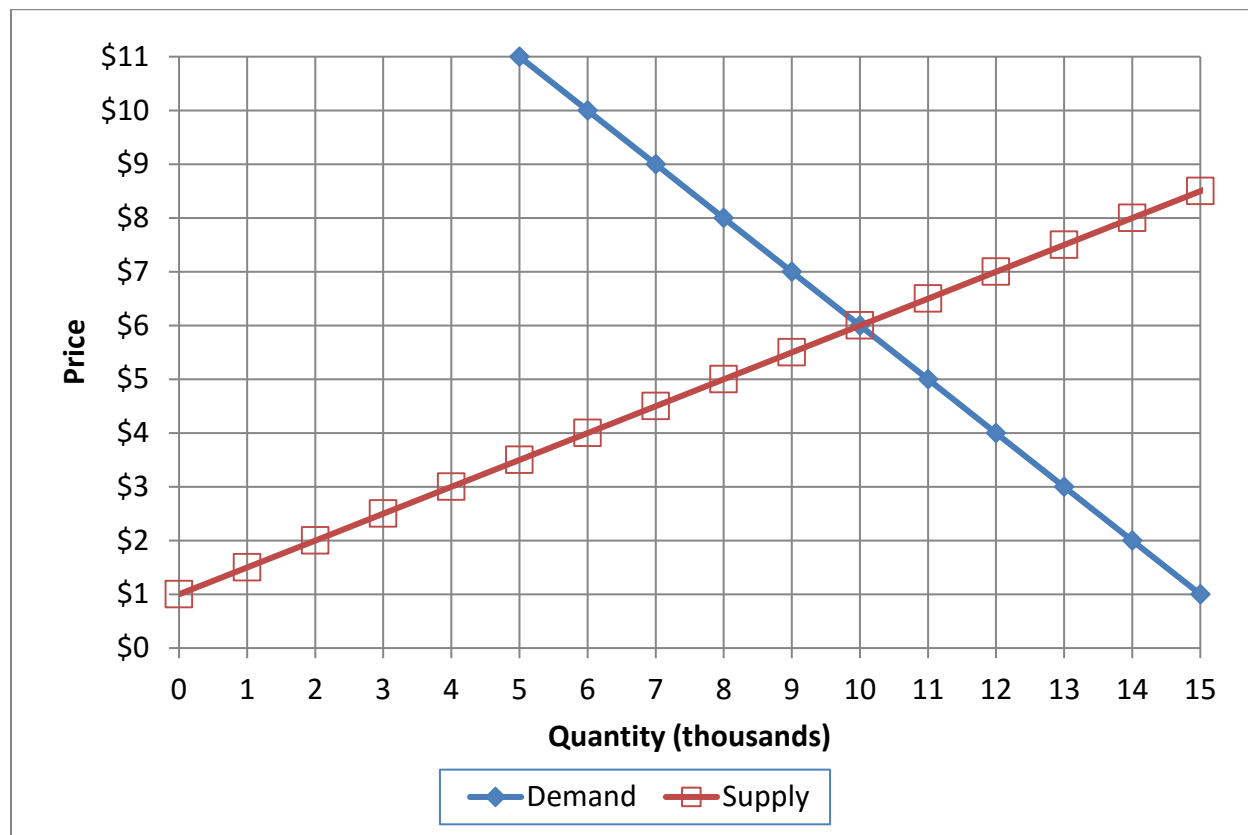
h. By how much?

\$	thousand
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i. Compute the deadweight social loss caused by the price floor.

\$	thousand
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(7) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for snow shovels.



Suppose the government pays a **subsidy of \$ 3** per snow shovel.

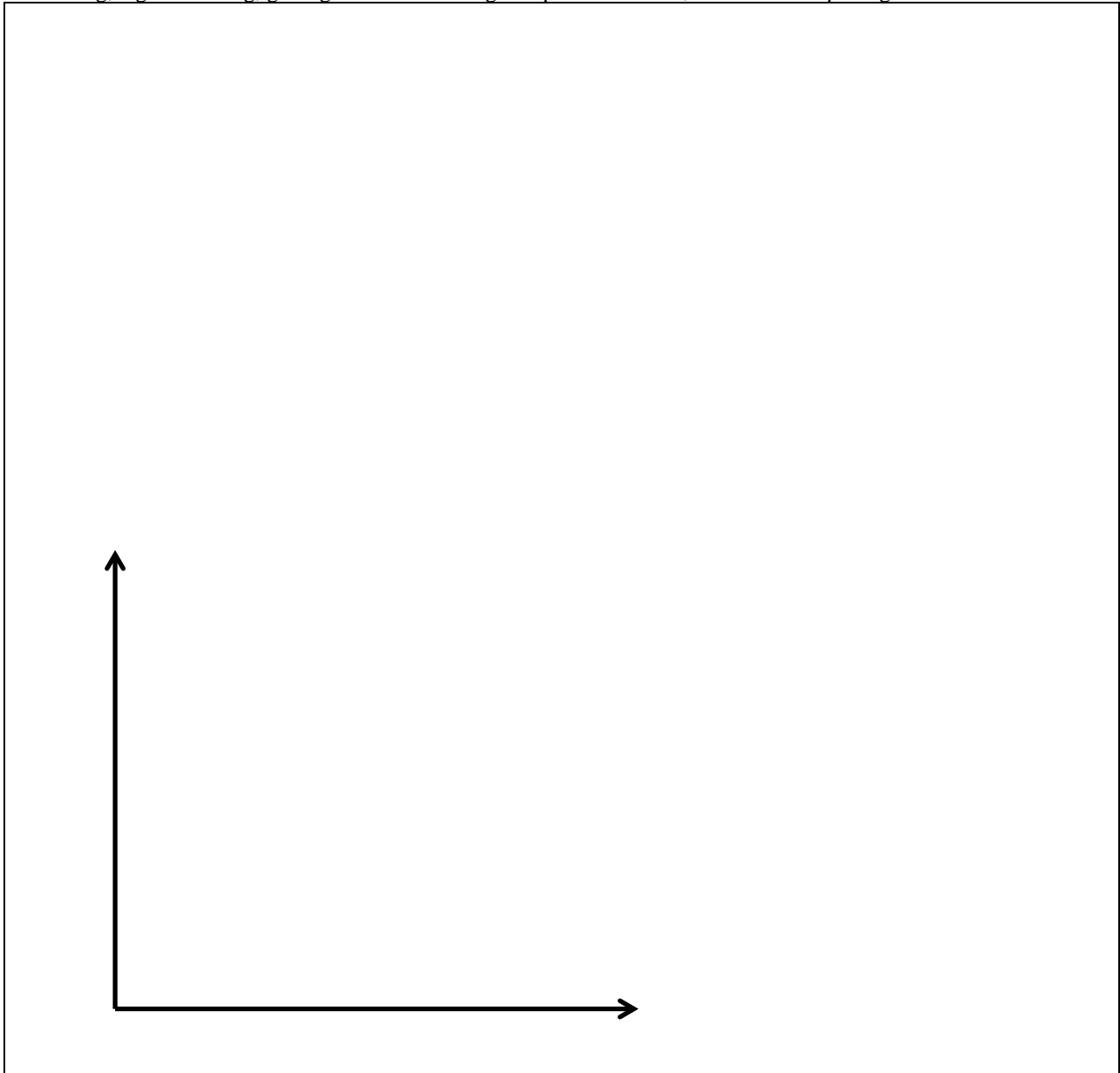
- Compute the equilibrium quantity sold.
- Compute the equilibrium total price received by sellers (including the subsidy).
- Compute the equilibrium net price paid by buyers (excluding the subsidy).
- Does producer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Does consumer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Compute the direct cost of the subsidy to the government—that is, the amount that the government will have to pay buyers and sellers.
- Compute the deadweight social loss caused by the subsidy.

	thousand
\$	per shovel
\$	per shovel
\$	thousand
\$	thousand
\$	thousand
\$	thousand

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

- (1) Suppose a tax of \$3 is placed on calculators, and as a consequence, the number of calculators sold falls from 20 million to 16 million. Does the country's overall welfare *increase* or *decrease* as a result of this change? By how much? Show your work and circle your final answer. Illustrate your answer with a supply-and-demand graph, labelling all axes and curves.
- (2) The price of petroleum is currently about \$50 per barrel. A blogger says the price of petroleum will rise in the next three months to \$200 per barrel. Do speculators agree with the blogger? Explain your answer. Assume the market is in equilibrium. (Ignore the graph.)

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]