ECON 001
Fall 2018
Midterm 2
October 30, 2018
Time Limit: 60 Minutes

Name (Print): _____

Recitation Section: _____

Name of TA: _____

- This exam contains 8 pages (including this cover page) and 9 questions. Check to see if any pages are missing.
- The exam is scheduled for 1 hour.
- This is a closed-book, closed-note, no calculator exam.
- Answer each multiple choice question by writing the correct answer on the line at the right margin of the corresponding question. Make sure that your answer is clearly written or it will be marked incorrect.
- Write your answers to the other questions in the spaces provided below them. If you don't have enough space, continue on the back of the page and state clearly that you have done so.
- Do not remove any pages or add any pages. No additional paper is supplied
- Show your work when applicable. Use diagrams where appropriate and label all diagrams carefully.
- You must use a pen instead of a pencil to be eligible for remarking.
- This exam is given under the rules of Penn's Honor system.

My signature certifies that I have complied with the University of Pennsylvania's Code of Academic Integrity in completing this examination.

Please sign here _____ Date _____

Question	Maximum	Grade
MC (Q1-7)	30	
1st SA (Q8)	35	
2nd SA (Q9)	35	
Total	100	

Multiple Choice Questions (best 6 out of 7: 30 points)

1. (5 points) Consider a perfectly competitive market. Currently the market is in the long-run equilibrium. All firms are identical. Which of the following is true?

   I. Each firm is producing at a quantity q^* such that marginal cost equals average total cost.

   II. Each firm is producing at a quantity q^* such that the lowest possible average total cost is achieved.

   III. It is impossible that some firms now are earning strictly positive profits.

   IV. It is impossible that some firms now are earning strictly positive producer surplus.

   V. If the government levies a price ceiling that is above the current market price p^*, then the government will distort the market and create positive dead weight loss.

   A. I and II
   B. I, II and V
   C. I, II and III
   D. I, II, III and IV
   E. II and III
   F. I, II, III, IV and V

   1. **C**

2. (5 points) Suppose the market for video games is characterized by a demand curve $P = 20 - Q_d$, and supply curve $P = Q_s$. The Coalition of Concerned Parents lobbies the government to impose a price floor of \$18. What is the deadweight loss of this policy?

   A. \$0
   B. \$54
   C. \$64
   D. \$65
   E. \$72

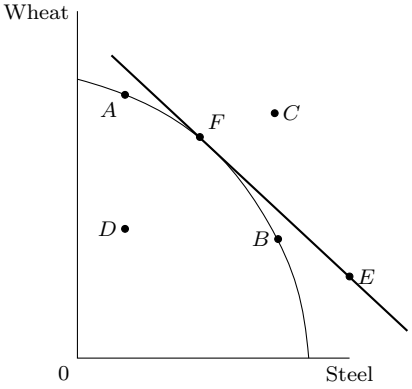
   2. **C**

3. (5 points) The market for widgets is characterized by a downward-sloping demand and a perfectly inelastic supply. Suppose the government imposes a binding price ceiling. What can you say about the market outcome?

   A. The outcome will be inefficient because too few widgets will be exchanged
   B. The outcome will be inefficient because too many widgets will be exchanged
   C. The outcome will be inefficient because the price will not be equal to the equilibrium price
   D. The outcome will be inefficient because the producers' share of the surplus will be too small
   E. None of the above.

   3. **E**

4. (5 points) The U.S. produces both steel and wheat. The graph above shows the production possibilities frontier of the U.S. Now the U.S. produces at point F and consumes at point E. However, the government decides to impose a tariff on the import of steel. Suppose the U.S. still imports steel after the tariff. Which of the following point may be the new production point of the U.S.?



A. Point A B. Point B C. Point C D. Point D E. Not enough information

4. **B**

5. (5 points) Suppose the U.S. market for steel is characterized by a demand curve $P = 12 - Q_d$, and supply curve $P = 2Q_s$. The world price of steel is $P_w = 5$. The government wants to set a tariff that would give domestic producers the same surplus as in autarky. What is the tariff the government needs to set to achieve their goal?

A. \$0 B. \$1 C. \$2 D. \$3 E. \$4

5. **D**

6. (5 points) Suppose that 1,000 apples are sold in Philadelphia a day. The government wants to promote the consumption of healthy food so it gives a subsidy of 10 cents for each apple. How much would the government expenditure of this subsidy be, per day?

A. Zero
B. \$100
C. At least \$100
D. At most \$100

6. **C**

7. (5 points) The Coase Theorem says which of the following?

A. Private bargaining alone will not always lead to an efficient allocation of resources
B. Who holds the initial property rights is irrelevant for obtaining the socially efficient outcome
C. Negotiation leads to the socially efficient outcome regardless of who has the legal property right
D. Government intervention always creates deadweight loss
E. Choices B and C

7. **C**

Short Answer Questions (70 points total)

To get any point you must show your work.

8. Suppose that two countries, Australia and New Zealand, produce two goods, wheat and cotton, as follows:

	Australia	New Zealand
Wheat (bushels per acre)	2	4
Cotton (bales per acre)	4	2
Acres	200	100

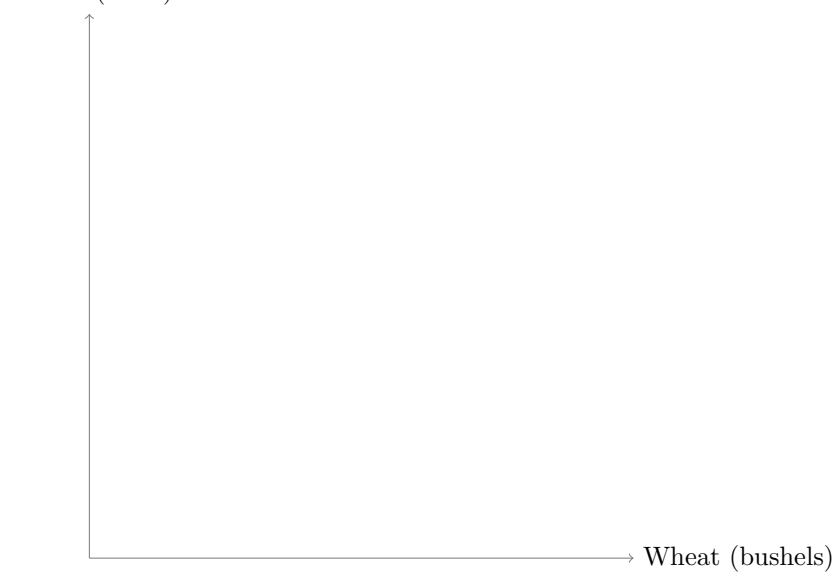
(a) Which country has the absolute advantage in the wheat production? Which country has the absolute advantage in the cotton production? Explain.

Solution: New Zealand can produce more wheat per acre than Australia so it has an absolute advantage in wheat. Australia can produce more cotton per acre than New Zealand so it has an absolute advantage in cotton.

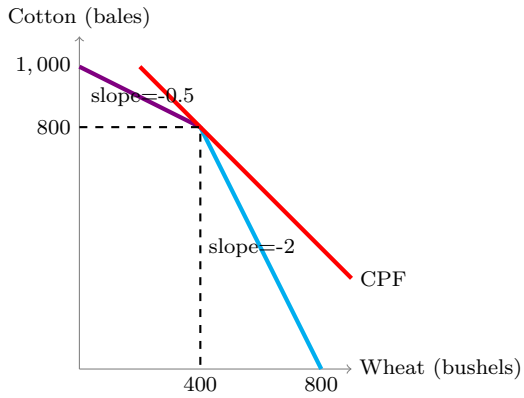
(b) What is the opportunity cost of 1 bushel of wheat in each country? Which country has the comparative advantage in wheat production and in the cotton production?

Solution: The opportunity cost of 1 bushel of wheat is 2 bales of cotton in Australia and 0.5 bales of cotton in New Zealand, so New Zealand has the comparative advantage in wheat and Australia has the comparative advantage in cotton.

(c) Suppose that rather than being separated countries, Australia and New Zealand create the Closer Economic Relations (CER) agreement. The effect of this is to merge their economies. Graphically depict the joint PPF of CER. For full credit you must label both endpoints and the point where the slope of the line changes, as well as the slopes for each line.



Solution:



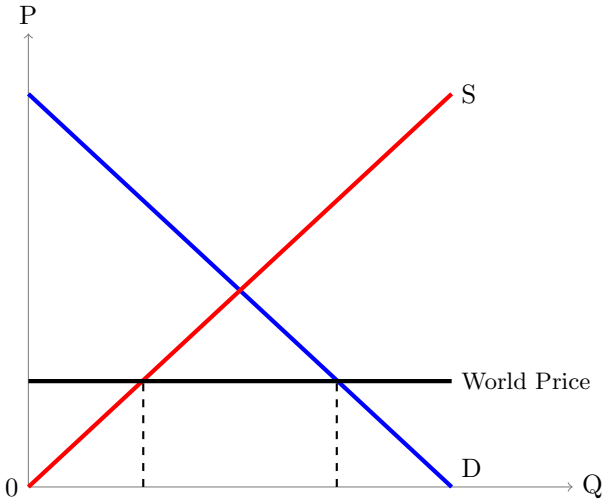
(d) Suppose the CER wants to produce and consume 500 bushels of wheat: how much cotton will CER produce and consume? How much of each good will Australia produce? How much of each good will New Zealand produce?

Solution: If CER produces 500 bushels of wheat, New Zealand specializes in wheat and produces 400 bushels (and no cotton), and Australia produces the remaining 100 bushels. Australia's opportunity cost of 1 bushel of wheat is 2 bales of cotton, so overall it sacrifices 200 bales of cotton, and it produces 800-200=600 bales of cotton. Overall, CER produces 600 bales of cotton.

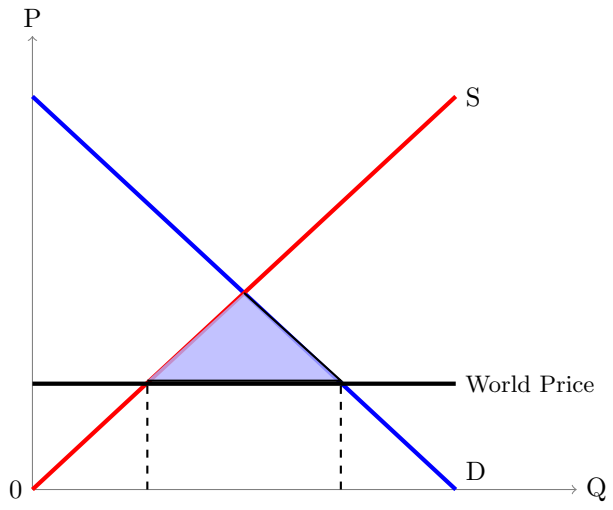
(e) Assume that CER trades with Indonesia at a rate of 1 bale of cotton per bushel of wheat. Draw the trade line ("consumption possibilities frontier") of CER on the graph from part (d). What quantities of wheat and cotton are being produced by CER?

Solution: See graph above. The trade line has a slope of -1, so the CER is producing at the kink of its joint PPF: 400 bushels of wheat and 800 bales of cotton.

(f) Suppose that demand and supply of wheat in CER are shown in the graph below. Indicate on the graph the gains in total surplus that result from free trade.



Solution:



(g) In a popular vote, free trade is rejected and imports are not allowed. Explain the possible reasons for this outcome.

Solution: There is a gain in total surplus from allowing free trade, as consumers gain more than producers lose. But the losses are concentrated on those who will lose their jobs or take a pay-cut as a result of the opening up to trade, and are therefore felt very strongly. These people are affected enough to have a lobby, make commercials, and go to the poles to vote. Each consumer who benefits is affected very little, and will likely not feel strongly enough to start a pro-trade campaign, or even to vote on the issue.

9. Consider the competitive market for coffee in University City. Each coffee shop faces the following costs: $TC = 4 + q + q^2$, $MC = 1 + 2q$.

(a) Suppose the market is in the long run equilibrium. Find the long run equilibrium price P_{LR}.

Solution: The long run equilibrium price is such that each firm makes zero profit, so $P_{LR} = \min ATC$, and $\min ATC$ is achieved at the intersection of ATC and MC: $MC = ATC \Leftrightarrow 1+2q = \frac{4}{q}+1+q \Leftrightarrow q = 2$. Plugging back that quantity into the ATC or MC equation yields $\min ATC = 5$, so $P_{LR} = 5$.

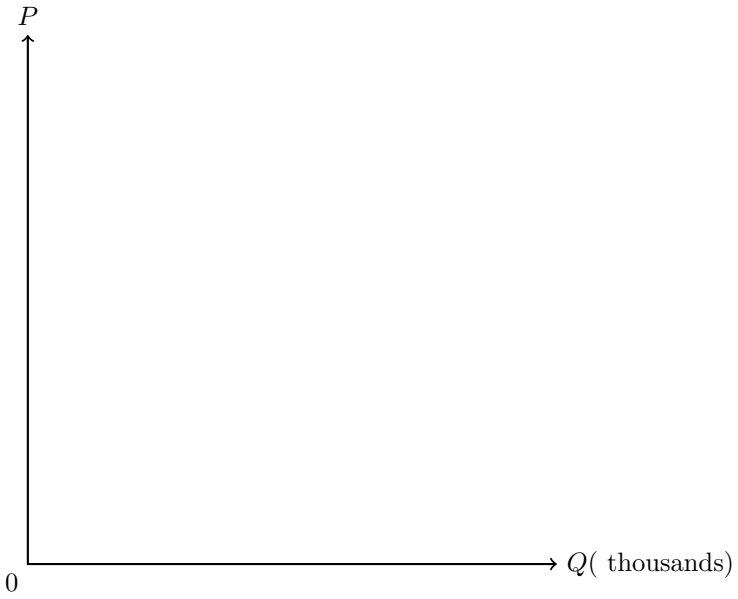
(b) Suppose that the market demand is $P = 13 - \frac{Q}{2}$ (equivalent to $Q_D = 26 - 2P$). What is the market quantity Q_{LR} and how many coffee shops are in the market in the long run equilibrium?

Solution: We can plug the long run equilibrium price P_{LR} into the demand equation to find the long run equilibrium quantity: $Q_{LR} = 26 - 2P_{LR} = 16$. Since each firm produces $q = 2$, there must be 8 coffee shops in the market.

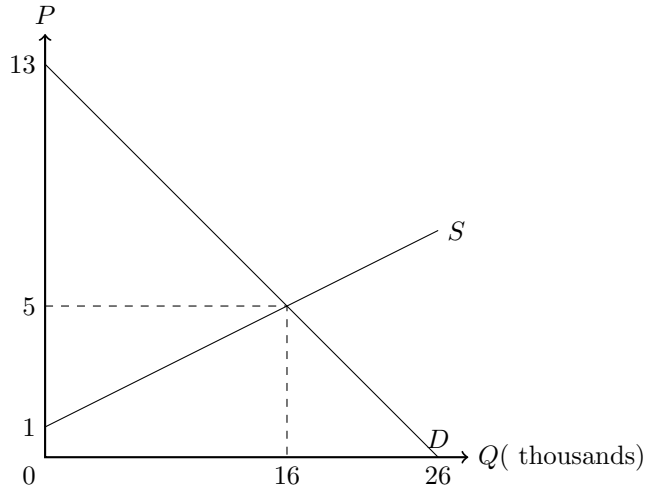
For the remainder of this question, use the following market supply and demand (where P is in dollars and Q is in thousand cups):

- Market supply : $Q_S = 4P - 4 \Leftrightarrow P = 1 + \frac{Q}{4}$
- Market demand : $Q_D = 26 - 2P \Leftrightarrow P = 13 - \frac{Q}{2}$

(c) Draw the market demand and supply for coffee in the graph below. Label the equilibrium price and quantity, and all intercepts. Compute the consumer surplus (CS), producer surplus (PS) and total surplus (TS)



Solution:



$CS = (13-5) \times 16 \times 0.5 = \$64$(thousand) and $PS = (5-1) \times 16 \times 0.5 = \$32$(thousand).

(d) In an effort to increase coffee consumption on campus to hopefully improve students' test scores, the University decides to grant local coffee shops a subsidy of \$1.50 per cup of coffee sold.

- Find the new equilibrium quantity (Q').
- What price P_{buyers} do customers pay per cup?
- What price P_{sellers} do coffee shops receive?

Solution:
The new supply equation (with the subsidy) is $P + 1.50 = 1 + \frac{Q}{4} \Leftrightarrow P = \frac{Q}{4} - \frac{1}{2}$. It intersects demand if $\frac{Q}{4} - \frac{1}{2} = 13 - \frac{Q}{2} \Leftrightarrow Q' = 18$. Plugging this quantity into the demand equation yields $P_{\text{buyers}} = \$4$. Therefore, $P_{\text{sellers}} = \$4 + \$1.50 = \$5.50$.

(e) Who benefits more from this subsidy: buyers or sellers of coffee? What is the reason?

Solution:
Both sellers and buyers benefit from the subsidy, but buyers benefit relatively more: their price falls by \$1, while sellers receive 50 cents more per unit. Buyers benefit more than sellers because their demand is less elastic than supply at the equilibrium point.

(f) Find the total expenditure for the university and determine the deadweight loss.

Solution:
The total expenditure is equal to $\$1.50 \times 18 = \$27$(thousand). The deadweight loss is equal to $\$1.50 \times (18 - 16) \times 0.5 = \$1.50$(thousand)

(g) A former Econ 001 student meets with the University president and argues that the impact of drinking coffee goes well beyond improving test scores, and helps students become more productive workers and citizens. According to the student, the subsidy does not generate any deadweight loss. Explain the reasoning behind this student's argument.

Solution: There are different possible answers here. Maybe the student considers that coffee consumption generates a positive externality, such that the marginal external benefit at $Q = 16$ is equal to \$1.50. Or the student may consider that the demand or the supply of coffee is perfectly inelastic so that the quantity traded is the same with and without tax (there is no inefficiency).