ECON 0100
Fall 2023
Midterm 2
October 31, 2023
Time Limit: 60 Minutes

Name (Print): _____

Penn ID number: _____
(8 digits)

- This exam contains 8 pages (including this cover page) and 10 questions. Check to see if any pages are missing.
- The exam is scheduled for 1 hour.
- The total score is 26 points.
- This is a closed-book, closed-note, no calculator exam.
- Answer each multiple-choice question by filling in the bubble for the answer you select. Make sure that the bubble is clearly filled in, or it will be marked incorrect.
- Write your answers to the short answer questions in the spaces provided for them. Do not write your answers outside of the boxes.
- Do not remove any pages or add any pages.
- No additional paper is supplied
- Show your work when asked. Label all graphs carefully.
- 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 _____

Multiple Choice Questions (best 7 out of 8: 10.5 points)

1. (1½ points) Consider the market for apples, with inverse demand $P = 12 - 2Q_D$ and inverse supply $P = Q_S$ (price is in dollars and quantity is in pounds). The government considers imposing a price ceiling at \$8 per pound. Which of the following is a consequence of this policy?

   I. Excess supply of 6 pounds of apples
   II. Increase in the revenue of apple farmers
   III. Deadweight loss of \$6

   ◯ I. only
   ◯ II. only
   ◯ III. only
   ◯ I. and II.
   ◯ I. and III.
   ◯ II. and III.
   ◯ I., II. and III.
   √ **None**

2. (1½ points) Suppose the market for pumpkins in Pennsylvania, with downward sloping demand and upward sloping supply, is subject to a binding price floor. The department of agriculture just approved a new fertilizer that will double the production of pumpkins at every price. Which of the following must be a consequence of the new fertilizer?

   I. The quantity of pumpkins sold increases
   II. Total surplus increases
   III. The deadweight loss generated by the price floor increases

   ◯ Only I.
   ◯ Only II.
   ◯ Only III.
   ◯ I. and II.
   ◯ I. and III.
   √ **II. and III.**
   ◯ I., II. and III.
   ◯ None

3. (1½ points) Consider a market with inverse demand $P = 10 - Q_D$ and inverse supply $P = Q_S$ where the price is in dollars. The government is considering imposing a per-unit tax on buyers, with the objective of collecting as much tax revenue as possible. Which of the following per-unit tax would you recommend?

   ◯ \$2
   √ **\$5**
   ◯ \$7
   ◯ \$10

4. (1½ points) The government of the city of Pleasantland wants to boost the production of its historic olive orchards by placing a subsidy for sellers on olive oil. Demand for olive oil in Pleasantland is perfectly elastic, and supply is upward sloping. Which of the following must be true?

   I. Olive oil production will increase.

   II. Consumer surplus will increase.

   III. Producers will benefit more from the subsidy than consumers.

   ◯ I.
   ◯ II.
   ◯ III.
   ◯ I. and II.
   √ **I. and III.**
   ◯ II. and III.
   ◯ I., II., and III.
   ◯ None must be true

5. (1½ points) Assume that the market for apples has a downward sloping demand and an perfectly inelastic supply. Consider the following cases:

   I. The government imposes a per unit tax on apple buyers.

   II. The government imposes a binding price ceiling in the market for apples.

   III. The government imposes a binding price floor in the market for apples.

   In which of the cases will the market produce at the efficient quantity?

   ◯ Only I.
   ◯ Only II.
   ◯ Only III.
   √ **I. and II.**
   ◯ I. and III.
   ◯ None of them

6. (1½ points) Abbaland and Bee-Gees Federation are two nations that can produce radios and microphones. Abbaland has 100 workers, while Bee-Gees Federation has 300 workers. In Abbaland, each worker produces for 10 hours a day, but in Bee-Gees Federation they do so for 8 hours a day. In a day of work, Abbaland can produce 100 radios or 150 microphones, whereas Bee-Gees Federation can produce 240 radios or 480 microphones.

   Which of the following statements is correct?

   I. Abbaland has an absolute advantage in the production of radios

   II. Abbaland has a comparative advantage in the production of radios

   ◯ I. only
   √ **II. only**
   ◯ Both I. and II.
   ◯ Neither I. nor II.

7. (1½ points) France and Mexico can produce cheese and avocados. Given their current technology, if each country allocates all of its resources to the production of one of the two goods, France can produce 10 million tons of cheese or 2 million tons of avocado, while Mexico can produce 5 million tons of cheese or 10 million tons of avocado per year. Which of the following statements is false?

   ◯ France has an absolute and comparative advantage over Mexico in the production of cheese

   ◯ If each country specializes according to the principle of comparative advantage, total production will be 10 million tons of cheese and 10 million tons of avocado

   √ **If the countries trade with each other at a rate of 1 ton of avocado for 2 tons of cheese, France can consume 5 million pounds of avocado and 10 million pounds of cheese**

   ◯ If the countries trade with each other at a rate of 1 ton of avocado for 2 tons of cheese, Mexico can consume 5 million pounds of avocado and 10 million pounds of cheese

8. (1½ points) Consider the market open to free trade as described in the graph below (where P_w is the world price). Suppose a \$1 tariff is placed on this good, what is the resulting deadweight loss?

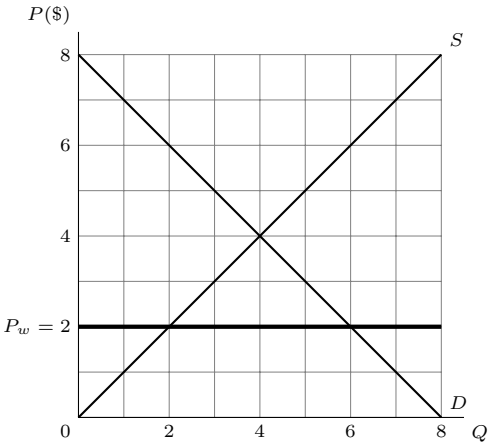
   ◯ \$0.5

   √ **\$1**

   ◯ \$2

   ◯ \$4

   ◯ \$6.5



Short Answer Questions (13.5 points total)

To get any point you must show your work

9. Kai, Adin, and Fanum produce Skibidis and Ohios. The table below shows, in millions, how many of each good they can produce in a day:

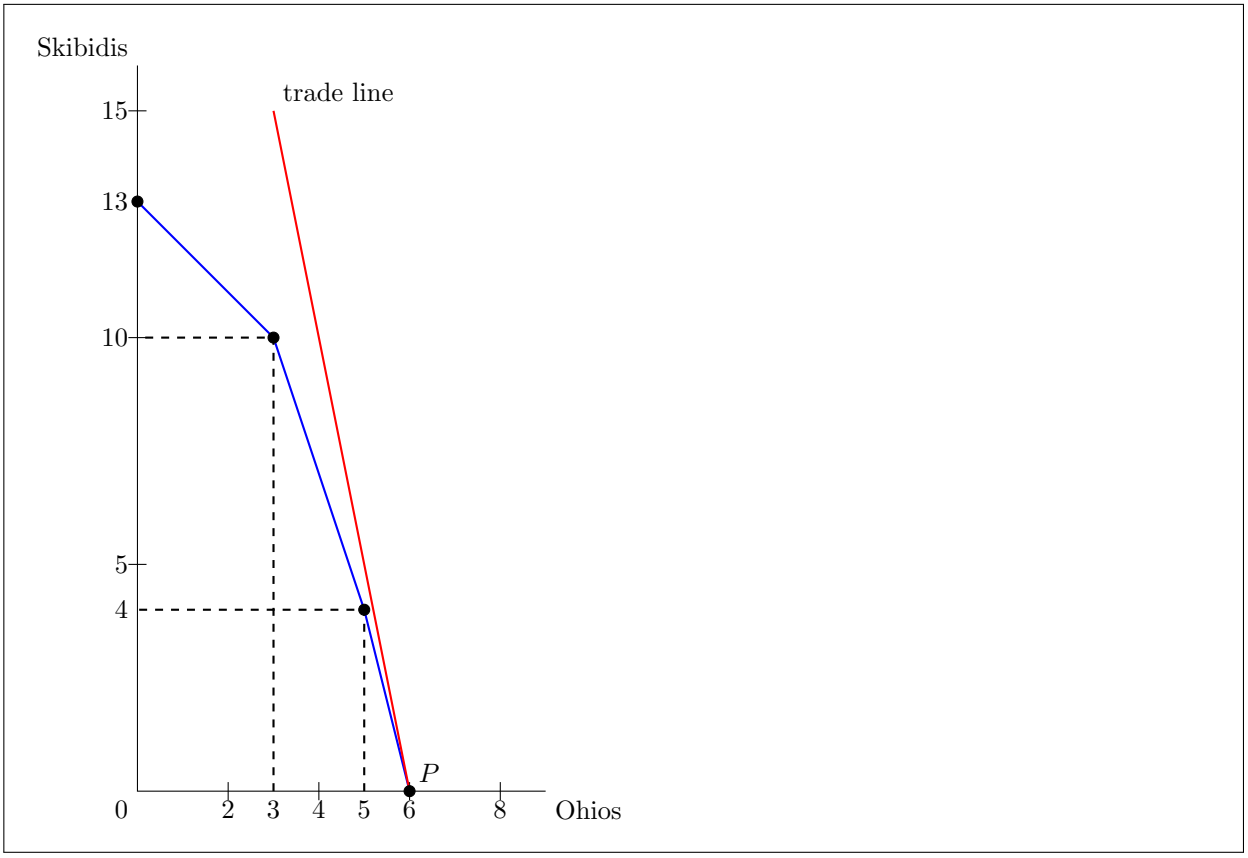
	Skibidis	Ohios
Kai	6	2
Adin	4	1
Fanum	3	3

(a) Fill in each of the blanks below with one of the possible options (*Kai / Adin / Fanum*):

- **Adin** has the comparative advantage in producing Skibidis
- **Fanum** has the comparative advantage in producing Ohios

(b) Now suppose Kai, Adin, and Fanum decide to produce jointly as SIGMA. Draw SIGMA's joint PPF in the graph below, where Ohios are on the X-axis and Skibidis are on the Y-axis.
Be sure to clearly label all intercepts and kinks' coordinates. The graph does not have to be to scale.

Solution:



(c) Suppose SIGMA begins trading with the world. The world price of 1 Ohio is 5 Skibidis.

i. Draw the trade line in the graph above, labelling the production point P.

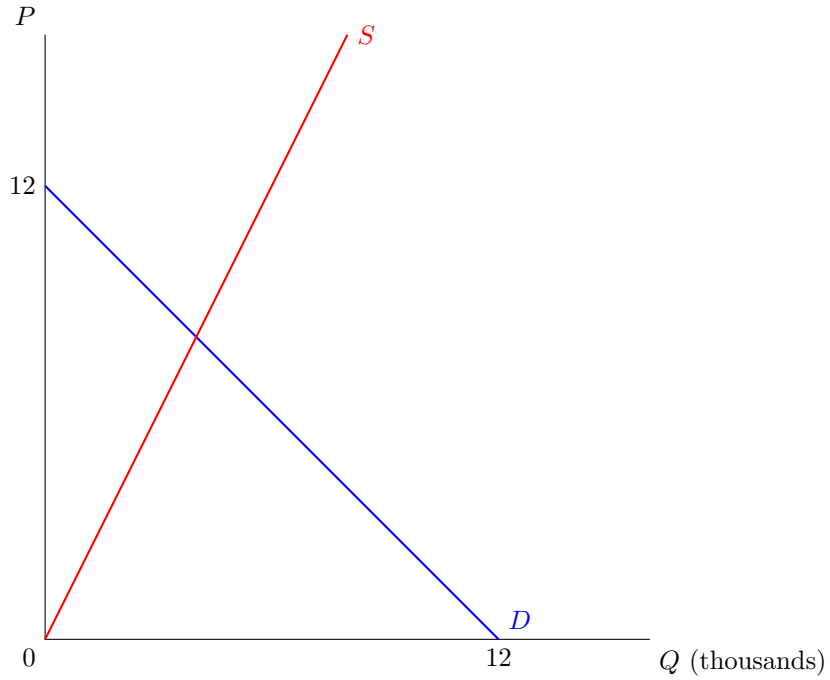
ii. Suppose SIGMA wants to consume a total of 2 million Ohios:

- SIGMA's total consumption of Skibidis will be equal to _____**10**_____ million
- Please fill in the first blanks with *import* or *export* and the second blanks with the quantity:
  - SIGMA will _____**import**_____ a total of _____**10**_____ million Skibidis
  - SIGMA will _____**export**_____ a total of _____**2**_____ million Ohios

10. The mayor of Philadelphia is concerned that the current consumption of cheesesteak is too high. You are working as an intern at the city council, and given your Econ 0100 background, you are asked to find potential solutions. Your data analysis suggests that market demand is given by $P = 12 - Q$ and market supply is given by $P = 2Q$ where P is in dollars and Q is in thousand per day.

(a) Draw the market demand and market supply on the graph below. *Label all curves and intercepts.* The graph does not have to be to scale.

Solution:



(b) At the market equilibrium:

- The equilibrium quantity is $Q^* =$ **4** thousand per day
- The equilibrium price is $P^* =$ **8** dollars

(c) You are considering the consequences of a price ceiling at \$6. With the price ceiling:

- Producer surplus is $PS =$ **9** thousand dollars per day
- Consumer surplus $CS =$ **13.5** thousand dollars per day

(d) Does the price ceiling address the mayor's concern about the consumption of cheesesteaks? Why or why not?

Solution: The mayor's issue is that current consumption is too high. With the tax, consumption decreases from 4 to 3 so it addresses the mayor's issue.

(e) To help city hall overcome financial issues, you consider a per-unit tax. Another intern recommends you choose the tax such that the tax burden falls less heavily on local businesses than on consumers. Do you think that's feasible? Explain in the box below.

Solution: At the market equilibrium, demand is elastic (the unit elastic point would be at $Q = 6, P = 6$) and supply is unit-elastic (it starts from the origin). With a tax,the price buyers pay will increase so we will move up on the demand curve annd demand will still be elastic. So the more inelastic side of the market is supply, which means any tax will fall more heavily on sellers than on buyers. So the intern's suggestion is not feasible.

(f) You suggest that the city council imposes a tax of \$3 per cheesesteak. With the tax:

- The quantity sold is $Q_{\text{tax}} =$ **3** thousand per day
- The price charged to buyers is $P_b =$ **9** dollars
- The price kept by sellers is $P_s =$ **6** dollars