ECON 0100
Fall 2022
Midterm 2
November 8, 2022
Time Limit: 60 Minutes

Name (Print): _____

Penn ID number: _____
(8 digits)

- This exam contains 7 pages (including this cover page) and 9 questions. The last page (page 8) is blank, you can use it as scrap paper (just don't detach it).
- Do not remove any pages or add any pages. No additional paper is supplied
- 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 lines or boxes.
- 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 6 out of 7: 12 points)

1. (2 points) The Reuben Consumer Rights Association (RCRA) and the Rachel Producer Council (RPC) disagree over the regulation of the price of sandwiches. Whereas the RCRA demands a price ceiling of \$14, the RPC wants to enforce a price floor of \$16. The Delicatessen Mediation Committee decides to analyze the market for sandwich and evaluate the effects of the policy proposals. They find that demand for sandwiches is $P = 20–2Q_D$ and supply is given by $P = 3Q_S$. Which of the following statements about the Deadweight Loss (DWL) is correct? *(Assume there are no externalities)*

   ◯ The DWL under the price floor is 10 and the DWL under the price ceiling is 2.5.

   ◯ The DWL under the price floor is 2.5 and the DWL under the price ceiling is 10.

   ◯ The DWL under the price floor is 10 and the DWL under the price ceiling is 0.

   ◯ The DWL under the price floor is 0 and the DWL under the price ceiling is 10.

2. (2 points) Suppose the market for University City apartments has a downward sloping linear demand curve and an upward sloping linear supply curve that starts from the origin. The market is currently in equilibrium, in the elastic part of demand. The Philadelphia city government, noticing its underfunded school system, decides to introduce a per-unit tax on suppliers. Which of the following must hold true at the new equilibrium?

   I. The incidence of the tax falls more heavily on buyers

   II. Consumer expenditure has increased

   III. The deadweight loss is lower than if the tax was applied to buyers

   ◯ I. only

   ◯ II. only

   ◯ III. only

   ◯ I. and II.

   ◯ I. and III.

   ◯ II. and III.

   ◯ I., II. and III.

   ◯ None

3. (2 points) In the year 3430 of the Second Age, the Elves of Mirkwood (*Elves*) and the Rohirrim horsemen of Rohan (*Rohirrim*) are preparing for battle against Sauron by raising war horses and forging swords. It takes the *Elves* 3 months and the *Rohirrim* 4 months to raise 600 horses. The *Elves* can forge 300 swords per month, but the *Rohirrim* need 6 months to forge 300 swords. Assuming that both populations are of the same size, which of the following is / are correct?

   I. The *Elves* have an absolute advantage in raising horses

   II. If they decide to make an alliance and trade together, the *Rohirrim* should specialize in the forging of swords.

   ◯ I. only

   ◯ II. only

   ◯ Both I. and II.

   ◯ Neither I. nor II.

4. (2 points) Consider the perfectly competitive market for milk in Caledonia, a small open economy where domestic supply and demand for milk are respectively $P = Q_S$ and $P = 100 - Q_D$. The world price of milk is $P_w = 10$. With the intent of improving domestic producer surplus, the government of Caledonia is considering two alternative policies: (1) a tariff of 20 per unit, or (2) a price floor at 30. What is true about the domestic total surplus under the two policies?

   ◯ Domestic total surplus with the tariff is 400 lower.
   ◯ Domestic total surplus with the tariff is 400 higher.
   ◯ Domestic total surplus with the tariff is 800 higher.
   ◯ Both policies generate the same domestic total surplus.

5. (2 points) In Center City, Delancey street residents are well known for their Halloween house decorations and treats. They take a lot of pleasure in this activity, but also have a positive impact on other people who benefit and come on purpose to trick or treat and enjoy the atmosphere. Suppose that the supply for Halloween decorations is perfectly inelastic and that residents only care about their own pleasure at decorating. Which of the following will be true in equilibrium?

   I. The market is inefficient because the market quantity is lower than the efficient quantity.
   II. The inefficiency can be solved with a per-unit subsidy
   III. The inefficiency can be solved with a price ceiling

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

6. (2 points) Consider a perfectly competitive market for cigarettes. The market demand is given by $P = 12 - Q_d$ and the market supply is $P = 2Q_s$ (the price is in \$). Consuming cigarettes causes passive smoking to others in the vicinity, generating a marginal external cost of \$3. What is the total external cost at the *socially efficient* quantity?

   ◯ \$0
   ◯ \$3
   ◯ \$9
   ◯ \$12

7. (2 points) Consider that Alice, Bob, and Carol are residents of Econtown. Faced with rising gas prices, the mayor is considering providing a public system of electric buses. In terms of the number of buses Q per day, Alice's marginal benefit is given by $MB_A = 100 - 50Q$, Bob's marginal benefit is given by $MB_B = 200 - 50Q$, and Carol's marginal benefit is given by $MB_C = 25 - 25Q$. Suppose that the marginal cost of running the system is given by $MC = 50Q$. What is the efficient number of buses Q_E to run per day?

   ◯ 0
   ◯ 1
   ◯ 2
   ◯ 3
   ◯ 4

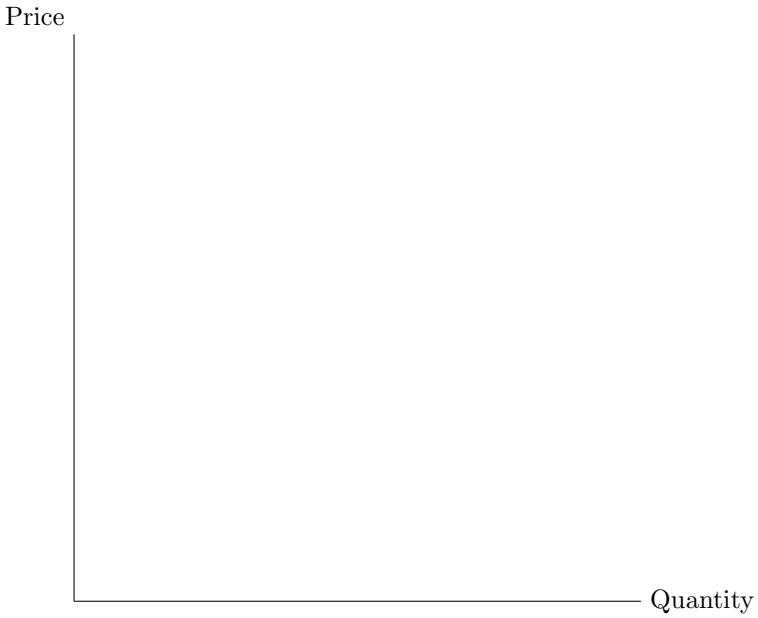
Short Answer Questions (14 points total)

To get any point you must show your work

8. Suppose the market for apples is characterized by an inverse demand curve $P = 240 - 3Q_D$ and inverse supply curve $P = 3Q_S$.

   (a) Draw the market demand and supply on the graph. Label the demand and supply curve, and all intercepts (the graph doesn't have to be to scale).

   The equilibrium price is P^* =_____ and the equilibrium quantity is Q^* =_____



   (b) Suppose the government decides to introduce a per-unit subsidy of $60.

   - The new equilibrium quantity is Q_{sub} =_____
   - The price sellers receive is P_s =_____
   - The price buyers pay is P_b =_____

   (c) Compute the government expenditure and deadweight loss from the subsidy:

   - The government's expenditure is Exp =_____
   - The deadweight loss is DWL =_____

(d) Suppose the consumption of apples causes a positive externality. The marginal external benefit is $MEB = 2Q$.

- The marginal social benefit equation is $MSB =$_____
- The socially efficient quantity is $Q_E =$_____

(e) Does the government's subsidy of \$60 achieve the efficient quantity? If not, what should the per-unit subsidy be? Show your work in the box below.

(f) Suppose that instead of a subsidy, the government is considering a price control. Is there a binding price floor and/ or a binding price ceiling that would achieve the socially efficient quantity? If so, which one? Explain in the box below.

9. Suppose there are countries A and B produce apples and bananas, using only one input: land. The table below shows how many apples and bananas they are able to produce per acre of land. Assume that each country has 50 acres of land.

	Apples	Bananas
Country A	8	8
Country B	2	6

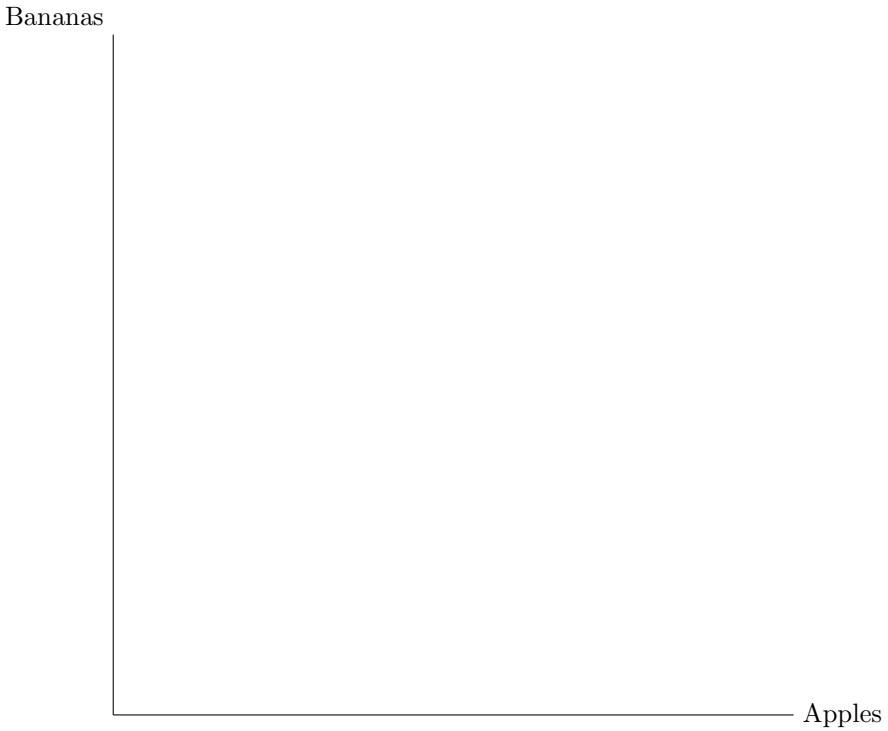
(a) The opportunity cost of producing one apple is:

- _____ banana(s) for country A
- _____ banana(s) for country B

(b) Country _____ has an absolute advantage in producing apples and country _____ has an absolute advantage in producing bananas.

(c) Country _____ has a comparative advantage in producing apples and country _____ has a comparative advantage in producing bananas.

(d) Suppose that the two countries merge and produce jointly. Assume that the unified country has **100 acres** of land in total.
Draw the unified country's joint production possibility frontier in the graph below (with apples on the x-axis and bananas on the y-axis). Label all intercepts and kinks.



(e) Suppose that the world price of one apple is 2 bananas. Draw the trade line (you don't have to show the x-coordinate and y-coordinate) in the graph above.

With trade, the unified country produces _____ apples and _____ bananas.

(f) After trade, the maximum possible amount of bananas the consumers in the united country can consume is _____. Label that point on your graph.