

2024



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# AP<sup>®</sup> Microeconomics

## Sample Student Responses and Scoring Commentary Set 1

### **Inside:**

#### **Free-Response Question 2**

- Scoring Guidelines**
- Student Samples**
- Scoring Commentary**

**Question 2: Short****5 points**


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**(a)** State that the market equilibrium price is \$15, and the market equilibrium quantity is 300 units. **1 point**

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**(b)** Calculate the deadweight loss as \$500 and show your work. **1 point**

$$\text{Deadweight loss} = \frac{1}{2} \times (\$25 - \$15) \times (400 - 300) = \frac{1}{2} \times \$10 \times 100 = \$500$$


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**(c) (i)** State that the government will grant a per-unit subsidy to consumers to achieve the socially optimal quantity of Good X and explain with **ONE** of the following: **1 point**

- A per-unit subsidy to consumers that internalizes external benefits increases the incentive and ability of consumers to buy the socially optimal quantity (400).
  - A per-unit subsidy to consumers equal to the marginal external benefit increases consumption to the socially optimal quantity (400), by lowering the price paid by the consumer.
  - A per-unit subsidy to consumers equal to the difference between marginal social benefit and marginal private benefit increases the quantity exchanged to the socially optimal quantity (400).
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**(ii)** State that the dollar value of the per-unit subsidy is \$10. **1 point**

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**Total for part (c) 2 points**

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**(d)** State no, the price ceiling will not achieve the socially optimal quantity of Good X and explain that the price ceiling will cause the quantity exchanged in the market, which is limited by the quantity supplied (200), to be less than the socially optimal quantity (400). **1 point**

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**Total for question 2 5 points**

# Question 2 Sample A Page 1 of 1

● **Important:** Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1

Question 2

Question 3



Begin your response to each question at the top of a new page.

a) The market equilibrium price is \$15; the market equilibrium quantity is 300 units.

b)  $DWL = \text{Area between market equilibrium quantity, marginal social/private cost, and marginal social benefit}$   
 $= \frac{1}{2} \cdot (25 - 15) \cdot (400 - 300)$   
 $= \frac{1}{2} \cdot \$10 \cdot 100$   
 $= \boxed{\$500}$

ci) A per-unit subsidy to consumers would achieve the government's objective by incentivizing increased consumption at all prices, i.e. increased demand, which would be closer to the marginal social benefit and thus decrease or eliminate deadweight loss.\*  
push consumption behavior

ii) The per-unit subsidy should be \$10 to eliminate the deadweight loss.

d) No. Though the quantity demanded is the original socially optimal quantity, at the price ceiling the producers will not supply that quantity (200 as opposed to the optimal 400).

\* A per-unit tax would have the opposite effect, disincentivizing consumption and moving the quantity consumed away from the socially optimal quantity. ~~the subsidy results in a gain~~

Page 3

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

# Question 2 Sample B Page 1 of 1

**Important:** Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1

Question 2

Question 3



Begin your response to each question at the top of a new page.

2a) market equilibrium quantity = 300  
market equilibrium price = \$15

2B)  $\frac{1}{2}bh$        $\frac{1}{2}(10)(100) = \boxed{500}$

2ci) A per-unit subsidy to consumers will achieve the government's objective because a subsidy encourages production and will eliminate any deadweight loss.

2cii) \$10

2d) The price ceiling of \$10 will achieve the socially optimal quantity of good X because price ceilings are meant to make a lower price for a product that was demanded.

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Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.



- **Important:** Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1

Question 2

Question 3



Begin your response to each question at the top of a new page.

a) Quantity = 300  
Price = 15

b)  $25 - 15 \times 400$   
 $10 \times 400$   
 $\frac{1}{2} \frac{4,000}{1} = 2,000$

- c) i) Per-unit subsidy to achieve equilibrium  
ii) \$10 per-unit subsidy

- d) No, the government will not achieve socially optimal quantity of Good X because that does not bring you back to  $MSC = MPC$

Page 3

Use a pen with black or dark blue ink only. Do NOT write your name. Do NOT write outside the box.

## Question 2

**Note:** Student samples are quoted verbatim and may contain spelling and grammatical errors.

### Overview

Students were provided with a graph of the market for Good X. The perfectly competitive market is experiencing a positive externality in consumption. Students were asked to recognize the inefficient market outcome from the graph provided and to evaluate the effects of government policies designed to eliminate the inefficiencies in the market.

In part (a) students were asked to identify the market equilibrium price and quantity. Students were expected to identify market equilibrium as the intersection of the marginal private cost curve and the marginal private benefit curve at a price of \$15 and a quantity of 300 units of Good X.

In part (b) students were asked to calculate the deadweight loss at the market equilibrium. The market equilibrium quantity is not equal to the socially optimal quantity because all social benefits are not internalized. The socially optimal quantity (400 units of Good X) occurs when the marginal social benefit (MSB) is equal to the marginal social cost (MSC). Production of any non-efficient quantity results in deadweight loss. At the market equilibrium quantity, the MSB of \$25 is greater than the MSC of \$15. Students were expected to calculate the area of the deadweight loss using the formula  $DWL = \frac{1}{2} \times (\$25 - \$15) \times (400 - 300) = \$500$ .

In part (c) students were asked to identify a government policy that would eliminate the deadweight loss in the market and to identify the value of the marginal external benefit. In part (c)(i) students were expected to explain the government will grant a per-unit subsidy to consumers to internalize the external benefit present in a market with a positive externality and to increase the incentive and ability of consumers to purchase the socially optimal quantity of Good X (400 units). In part (c)(ii) students were expected to identify the dollar value of the per-unit subsidy as \$10, which is the vertical distance between the marginal private benefit curve (\$10) and the marginal social benefit curve (\$20) at the socially optimal quantity.

In part (d) students were asked to evaluate the effectiveness of a different government intervention in the market. Students were expected to explain a price ceiling established at a price of \$10 would not result in the socially optimal quantity of Good X being exchanged in the market because the price ceiling would intersect the marginal social cost/marginal private cost curve at a quantity of 200 units, limiting the quantity exchanged in the market at a number less than the socially optimal quantity of 400 units.

### Sample: 2A

#### Score: 5

Part (a): 1 point

The response earned the point in part (a) because the response states the market equilibrium price is \$15 and the market equilibrium quantity is 300 units of Good X.

## Question 2 (continued)

Part (b): 1 point

The response earned the point in part (b) because the response correctly calculates the deadweight loss as \$500 and shows the work.

Part (c): 2 points

The response earned the point in part (c)(i) because the response explains the government should implement a per-unit subsidy to consumers to increase consumption of Good X to the socially optimal level. The response earned the point in part (c)(ii) because the response states the dollar value of the per-unit subsidy is \$10.

Part (d): 1 point

The response earned the point in part (d) because the response asserts no and correctly explains that a price ceiling at \$10 will not result in the socially optimal quantity of Good X being exchanged in the market because the quantity supplied will be limited to 200 units.

### **Sample: 2B**

**Score: 3**

Part (a): 1 point

The response earned the point in part (a) because the response correctly states the equilibrium quantity is 300 units and the equilibrium price is \$15 in the market for Good X.

Part (b): 1 point

The response earned the point in part (b) because the response correctly calculates the deadweight loss as \$500 and shows the work.

Part (c): 2 points

The response did not earn the point in part (c)(i) because the response incorrectly explains that the subsidy to consumers encourages production, not consumption. The response earned the point in part (c)(ii) because the response states the dollar value of the per-unit subsidy is \$10.

Part (d): 1 point

The response did not earn the point in part (d) because the response incorrectly asserts that the price ceiling will achieve the socially optimal quantity of Good X.

**Question 2 (continued)**

**Sample: 2C**

**Score: 2**

Part (a): 1 point

The response earned the point in part (a) because the response correctly states the equilibrium quantity is 300 units and the equilibrium price is \$15 in the market for Good X.

Part (b): 1 point

The response did not earn the point in part (b) because the response incorrectly calculates the deadweight loss as \$2,000.

Part (c): 2 points

The response did not earn the point in part (c)(i) because the response does not explain how a per-unit subsidy increases the ability of consumers to purchase the socially optimal quantity of Good X. The response earned the point in part (c)(ii) because the response states the dollar value of the per-unit subsidy is \$10.

Part (d): 1 point

The response did not earn the point in part (d) because the response does not correctly explain the effect of the price ceiling at \$10 on the quantity of Good X exchanged in the market.