2024

AP® Microeconomics

Sample Student Responses and Scoring Commentary Set 2

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Free-Response Question 3

- ☑ **Scoring Guidelines**
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Question 3: Short — 5 points

(a)	Calculate the total economic surplus as \$960 and show the work. $\text{Total Economic Surplus} = \frac{1}{2} \times (\$150 - \$30) \times (16 - 0) = \frac{1}{2} \times \$120 \times 16 = \$960$	**1 point**
(b)	State that the quantity of backpacks purchased will decrease and explain that the price ceiling causes a decrease in the quantity supplied of backpacks and the quantity purchased in the market will be limited by the quantity supplied (8), which is less than the equilibrium quantity (16).	**1 point**
(c) (i)	State the price consumers pay per backpack after the per-unit subsidy is \$75.	**1 point**
(ii)	Calculate the total cost of the subsidy to the government as \$600 and show the work. $\text{Total Cost of Subsidy to the Government} = \text{Per-unit Subsidy} \times \text{Quantity of Backpacks}$ $\text{Total Cost of Subsidy to the Government} = \$30 \times 20 = \$600$	**1 point**
(iii)	State the deadweight loss will increase and explain with **ONE** of the following. • The per-unit subsidy causes the new equilibrium quantity (20 backpacks) to be greater than the allocatively efficient quantity (16 backpacks). • The per-unit subsidy causes the marginal cost (\$105) to be greater than the marginal benefit (\$75) at the new equilibrium quantity (20 backpacks).	**1 point**
	Total for part (c)	**3 points**
	Total for question 3	**5 points**

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) Economic Surplus = (150 − 30)(16)(½) = $960
(price change, quantity)

b) The quantity of backpacks purchased will decrease because of the price ceiling because suppliers will produce less of them due to the lower price. Quantity supplied will decrease and there will be a shortage of backpacks.

c) i) Consumers will pay [redacted] $75 for backpacks

c) ii) Cost of subsidy = $30 • # of backpacks so
$30 • 20 = $600

c) iii) The per unit subsidy causes deadweight loss to increase. This is because the former equilibrium quantity was allocatively efficient, so by producing more than the allocatively efficient quantity, there will be a deadweight loss which is an overallocation of resources in the backpack industry.

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) $\frac{1}{2}(120)(16) =$ $960

b) The quantity of backpacks purchased would increase. The price ceiling of $60 crosses the demand curve at a quantity of 24 backpacks which is greater than the equilibrium quantity of 16 backpacks.

c) i) $75

ii) $36 x 20 = $720

iii) The deadweight loss remains the same since there is no deadweight loss in either parts a or c.

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.

3A) $\frac{(120 \cdot 16)}{2} = 960$ The total economic surplus is 960.

3b) The quantity of backpacks purchased will increase because based on the law of demand, and the price of backpacks decreases, the demand will increase.

3Ci) the price paid once the per-unit subsidy is implemented is $120.

3Cii) $150 \cdot 30 = 4500$ the total cost of the subsidy to the government is $4500.

3Ciii) The per-unit subsidy causes deadweight loss to decrease because the subsidy increases the amount of supply which lessens the deadweight loss.

Question 3

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

Overview

The question assessed students' understanding of perfectly competitive markets and regulation. The concepts in the question included total economic surplus, price ceiling, subsidy equilibrium, total cost of a subsidy, and deadweight loss.

The question provided a graph showing a perfectly competitive market for backpacks with a demand and supply curves. The prices are in increments of $15 up to $150. The quantities are in increments of 4 backpacks up to 40 backpacks.

In part (a) students were asked to calculate the total economic surplus and to show their work. Students were required to calculate ½ × (150 – 30) × (16) = $960.

In part (b) a government regulation on price was introduced with a price ceiling of $60. The students were asked to state if the quantity of backpacks purchased increases, decreases, or does not change, and to explain their response. Students were required to state decrease and explain that a binding price ceiling will cause a decrease in quantity supplied and the quantity purchased will be limited to the quantity supplied which is less than the equilibrium quantity.

In part (c) a government regulation was introduced with a per-unit subsidy of $30 to the sellers of backpacks. Part (c)(i) required students to state that $75 is the price paid by consumers per backpack after the per-unit subsidy. Part (c)(ii) asked students to calculate the total cost of the subsidy to the government and to show their work. Students were required to calculate $30 x 20 = $600. Part (c)(iii) asked students to state if the per-unit subsidy caused deadweight loss to increase, decrease, or remain the same and explain their response. Students were required to answer increase and explain that the per-unit subsidy causes the new equilibrium quantity (20 backpacks) to be greater than the allocatively efficient quantity (16 backpacks).

Sample: 3A
Score: 5

Part (a): 1 point

The response earned the point in part (a) because the response calculates total economic surplus as $960 and shows the work as (150–30) (16) (1/2) = $960.

Part (b): 1 point

The response earned the point in part (b) because the response states, "The quantity of backpacks purchased will decrease because of the price ceiling…" and explains that the "Quantity supplied will decrease and there will be a shortage of backpacks."

Question 3 (continued)

Part (c): 3 points

The response earned the point in part (c)(i) because the response correctly states the price consumers pay per backpack after the per-unit subsidy is $75. The response earned the point in part (c)(ii) because the response correctly calculates the total cost of the subsidy to the government as $600 and shows the work. The response earned the point in part (c)(iii) because the response states that "The per-unit subsidy causes deadweight loss to increase." and explains that "This is because the former equilibrium quantity was allocatively efficient..." and now the market is producing "…more than the allocatively efficient quantity…" The response concludes, "...there will be a deadweight loss, which is an overallocation of resources in the backpack industry."

Sample: 3B
Score: 3

Part (a): 1 point

The response earned the point for part (a) because the response calculates total economic surplus as $960 and shows the work.

Part (b): 1 point

The response did not earn the point in part (b) because the response incorrectly states the quantity of backpacks purchased increases.

Part (c): 3 points

The response earned the point for part (c)(i) because the response correctly states the price consumers pay per backpack after the per-unit subsidy is $75. The response earned the point for part (c)(ii) because the response correctly calculates the total cost of the subsidy to the government as $600 and shows the work. The response did not earn the point in part (c)(iii) because the response incorrectly states that deadweight loss will remain the same.

Sample: 3C
Score: 1

Part (a): 1 point

The response earned the point in part (a) because the response calculates total economic surplus as $960 and shows the work.

Part (b): 1 point

The response did not earn the point in part (b) because the response incorrectly states the quantity of backpacks purchased increases.

Question 3 (continued)

Part (c): 3 points

The response did not earn the point in part (c)(i) because the response incorrectly states the price consumers pay per backpack after the per-unit subsidy is $120. The response did not earn the point in part (c)(ii) because the response incorrectly calculates the total cost of the subsidy to the government as $4,500. The response did not earn the point in part (c)(iii) because the response incorrectly states that deadweight loss decreases.