

AP[®] MICROECONOMICS
2012 SCORING GUIDELINES

Question 3

5 points (1 + 3 + 1)

(a) 1 point:

- One point is earned for stating that Loriland is importing 12 million pounds.

(b) 3 points:

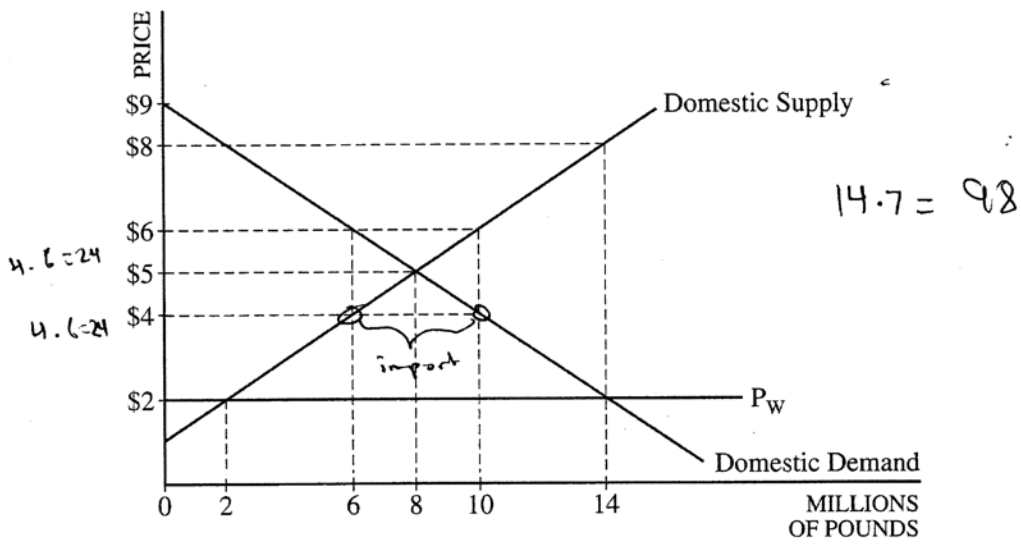
- One point is earned for identifying the new level of domestic production as 6 million pounds.
- One point is earned for calculating the domestic consumer surplus as \$25 million and showing the work: $\frac{1}{2} [(\$9 - \$4) \times 10] = \$25$
- One point is earned for calculating the revenue from the tariff as \$8 million and showing the work: $(\$4 - \$2) (10 - 6) = \$8$.

(c) 1 point:

- One point is earned for identifying the per-unit tariff that maximizes the sum of consumer and producer surplus as \$0.

3A

3. Sugar is freely traded in the world market. Assume that a country, Loriland, is a price taker in the world market for sugar. Some of the sugar consumed in Loriland is produced domestically while the rest is imported. The world price of sugar is \$2 per pound. The graph below shows Loriland's sugar market, and P_w represents the world price.



- (a) At the world price of \$2 per pound, how much sugar is Loriland importing?
- (b) Suppose that Loriland imposes a per-unit tariff on sugar imports and the new domestic price including the tariff is \$4.
 - (i) Identify the new level of domestic production.
 - (ii) Calculate the domestic consumer surplus for Loriland. You must show your work.
 - (iii) Calculate the total tariff revenue collected by the government. You must show your work.
- (c) Given the world price of \$2, what per-unit tariff maximizes the sum of Loriland's domestic consumer surplus and producer surplus?

a) At \$2 per pound, the quantity of domestic demand is 14 million pounds, but domestic quantity supplied is 2.
 $14 - 2 = 12$
 * 12 million pounds of sugar are imported into Loriland.

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Additional answer page for Question 3.

b) i) At \$4, domestic quantity supplied is
6 million pounds

ii) Consumer surplus is the ^{area of the} triangle between ~~\$9, \$4, and the~~
\$9, \$4, and the quantity demanded. $A = bh/2$

$b = 10, h = 5. \quad \frac{5 \cdot 10}{2} = \$25.$ Consumer surplus is ~~\$25~~ \$25

iii) At \$4, domestic quantity demanded exceeds domestic supply by 4 million pounds.

The tariff is \$2 per pound ($\$4 - \underbrace{\$2}_{\text{world price}} = \2)

$\frac{\$2 \cdot 4,000,000 \text{ lbs}}{1 \text{ lb}} = \underline{\$8,000,000}$

Tariff revenue is equal to \$8 million.

c) To maximize surplus, no tariff should be imposed. Tariffs increase ~~the~~ domestic producer surplus, but decrease consumer surplus by far more and create deadweight loss.

To maximize surplus, ~~best~~ Loriland should impose a tariff of \$0.00 per unit.

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Additional answer page for Question 3.

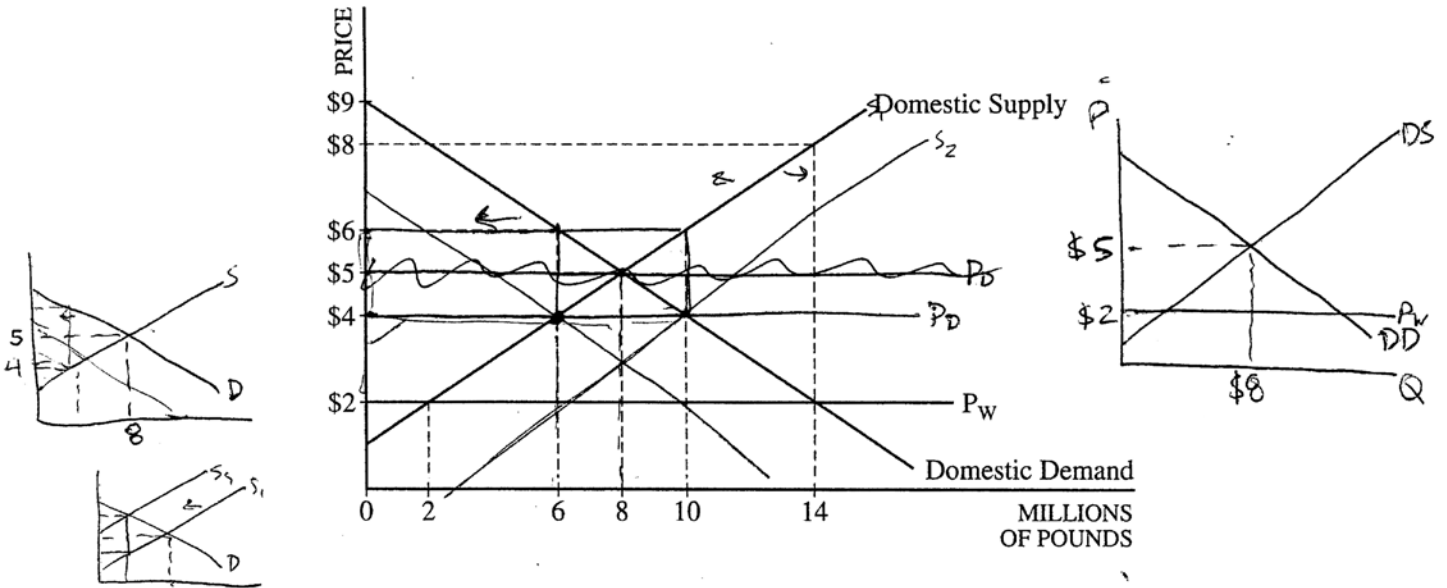
$$\text{iii. } 4(2) = \$8$$

~~work~~

c) \$3 per unit

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 - (iii) Calculate the total tariff revenue collected by the government. You must show your work.
- (c) Given the world price of \$2, what per-unit tariff maximizes the sum of Loriland's domestic consumer surplus and producer surplus?

(a) ~~2 million pounds~~ 2 million pounds

(b) ~~8 million pounds~~ 6 million pounds

ii) $6 \times 6 = 36,000,000$

\$36,000,000

iii) $4 \times 6 = 24,000,000$

c) ~~A per unit tariff of \$3~~ \$3 tariff

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**AP[®] MICROECONOMICS
2012 SCORING COMMENTARY**

Question 3

Overview

This question tested for proficiency with a supply-and-demand model involving trade. Students were asked to identify the quantity of imports without a tariff and domestic production with a tariff. They were also asked to calculate consumer surplus and tariff revenue, and to indicate that the sum of consumer and producer surplus is maximized when the tariff is zero.

Sample: 3A

Score: 5

The student answers all parts of the question correctly and so earned all 5 points.

Sample: 3B

Score: 3

The student lost 1 point in part (b)(ii) for the incorrect calculation of domestic consumer surplus, and 1 point in part (c) for stating an incorrect per-unit tariff.

Sample: 3C

Score: 1

The student earned 1 point in part (b)(i) for correctly identifying of the level of domestic production.