

**Unit 2.5-2.9 Practice AP Test Questions**

1. After the government imposed a 0.20 per gallon tax on gasoline, the price of a gallon of gasoline increased from 1.00 to \$1.15. Which of the following statements is true?
- (A) Consumers bear the entire burden of the tax, since producers can pass the tax along to consumers.
  - (B) Consumers and producers share the tax burden equally.
  - (C) Consumers bear most, but not all, of the tax burden. ✓
  - (D) Producers bear the entire burden of the tax, since the tax was levied on producers, not consumers.
  - (E) There is no tax burden, since gasoline is a normal good.

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2. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Ahmet derives from consuming two goods, books and Good D.

| Quantity of Books | Marginal Benefit of Books | Quantity of Good D | Marginal Benefit of Good D |
|-------------------|---------------------------|--------------------|----------------------------|
| 1                 | \$28                      | 1                  | \$32                       |
| 2                 | \$16                      | 2                  | \$16                       |
| 3                 | \$4                       | 3                  | \$8                        |
| 4                 | \$2                       | 4                  | \$4                        |
| 5                 | \$1                       | 5                  | \$2                        |
| 6                 | \$0                       | 6                  | \$1                        |

Ahmet has a limited weekly income of 18, and he spends it all on books and Good D. Assume the price of each book is 4 and the price of Good D is \$1 per unit.

- Calculate the total consumer surplus from books if Ahmet buys 5 books. Show your work.
- Given his weekly income, would Ahmet be able to buy 3 books and 2 units of Good D? Explain using numbers.
- Identify the quantity of books and the quantity of Good D that will maximize Ahmet’s total benefit given his weekly income. Explain using marginal analysis.
- Assume books are produced in a perfectly competitive market and that there is an increase in the number of buyers in the market for books.
  - Would Ahmet’s total consumer surplus from books if he buys 5 books increase, decrease, or stay the same compared to your answer in part (a)? Explain.
  - Will the quantity of books that will maximize Ahmet’s total benefit increase, decrease, or stay the same? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total consumer surplus as \$31 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = 51 - 20 = 31$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that yes, Ahmet would be able to buy 3 books and 2 units of Good D and explains that his total expenditures would be \$14 ( $= 3 \times \$4 + 2 \times \$1$ ), which is less than his weekly income of \$18.

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

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The response identifies that 3 books and 6 units of Good D will maximize Ahmet's total benefit given his weekly income of \$18 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of books (1) is equal to the ratio of the marginal benefit to the price of Good D (1), or

$$\frac{MB_{Book}}{Price_{Book}} = \frac{MB_{Good\ D}}{Price_{Good\ D}}$$

$$\frac{\$4}{\$4} = \frac{\$1}{\$1}$$

$$1 = 1$$

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response does both of the following:

- States that Ahmet's total consumer surplus would decrease and explains that an increase in the number of consumers in the market for books would increase the demand for books, which would increase the price of books, and an increase in the price of books would increase the total cost of 5 books while the total benefit of 5 books remains the same.
- States that the quantity of books that will maximize Ahmet's total benefit will decrease and explains that there has been an increase in the price of books which decreases the marginal benefit per dollar spent that Ahmet gets from each additional book.

## Unit 2.5-2.9 Practice APTest Questions

3. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Andrew derives from consuming two goods, cheeseburgers and Good J.

| Quantity of Cheeseburgers | Total Benefit of Cheeseburgers | Quantity of Good J | Total Benefit of Good J |
|---------------------------|--------------------------------|--------------------|-------------------------|
| 0                         | \$0                            | 0                  | \$0                     |
| 1                         | \$40                           | 1                  | \$30                    |
| 2                         | \$70                           | 2                  | \$50                    |
| 3                         | \$90                           | 3                  | \$65                    |
| 4                         | \$100                          | 4                  | \$75                    |
| 5                         | \$105                          | 5                  | \$80                    |
| 6                         | \$105                          | 6                  | \$83                    |

Andrew has a limited weekly income of 65, and he spends it all on cheeseburgers and Good J. Assume the price of each cheeseburger is 10 and the price of Good J is \$5 per unit.

- (a) Calculate Andrew’s consumer surplus from the second unit of Good J. Show your work.
- (b) Identify the quantity of cheeseburgers and the quantity of Good J that will maximize Andrew’s total benefit given his weekly income. Explain using marginal analysis.
- (c) If Andrew’s weekly income increases from 65 to 75, would Andrew be able to buy 5 cheeseburgers and 6 units of Good J? Explain using numbers.
- (d) Suppose the price of Good J decreases by 10% and Andrew buys 12% more of Good J and 8% more of Good S. Based on this change, identify whether Good J and Good S are substitutes, complements, or not related. Explain using numbers.
- (e) Suppose instead that cheeseburgers are produced in a perfectly competitive market and the price of beef, an input to the production of cheeseburgers, decreases. If cheeseburgers are a normal good, will the quantity of cheeseburgers that will maximize Andrew’s total benefit increase, decrease, or stay the same? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates consumer surplus as \$15 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \$20 - 5 = \$15$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 4 cheeseburgers and 5 units of Good J will maximize Andrew’s total benefit given his weekly income of \$65 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of cheeseburgers (1) is equal to the ratio of the marginal benefit to the price of Good J (1), or

$$\frac{MB_{\text{Frisbees}}}{\text{Price}_{\text{Frisbees}}} = \frac{MB_{\text{Good J}}}{\text{Price}_{\text{Good J}}}$$

$$\frac{\$10}{\$10} = \frac{\$5}{\$5}$$

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1 = 1

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that no, Andrew would not be able to buy 5 cheeseburgers and 6 units of Good J and explains that his total expenditures would be \$80 ( $= \$10 \times 5 + \$5 \times 6$ ), which is greater than his weekly income of \$75.

## Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that Good J and Good S are complements and explains that the cross-price elasticity of demand is negative because a 10% decrease in the price of Good J led to an 8% increase in the demand for Good S.

## Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that the quantity of cheeseburgers that will maximize Andrew's total benefit will increase and explains that a decrease in the price of an input to production will increase the supply of cheeseburgers, which will decrease the price of cheeseburgers and increase the marginal benefit per dollar spent for each additional unit consumed.

4. A decrease in the demand for antique lanterns, a normal good, would be caused by which of the following?

- (A) An increase in consumers' incomes
- (B) An increase in the price of antique lanterns
- (C) An increase in the expected price of antique lanterns in the future
- (D) An increase in the price of electric lanterns, a substitute good
- (E) An increase in the price of lamp oil, a complementary good

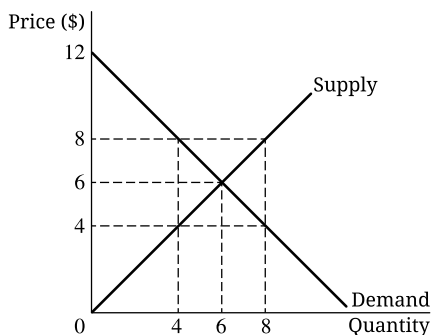


## Answer E

Correct. An increase in the price of a complement in consumption (lamp oil) will decrease demand for antique lanterns.

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5.



Apples are produced in a perfectly competitive market with no government intervention. Which of the following price changes will cause the total economic surplus to increase for the apple market depicted in the graph provided?

- (A) A decrease in price from 8 to 6 ✓
- (B) A decrease in price from 6 to 4
- (C) A decrease in price from 6 to 0
- (D) An increase in price from 6 to 8
- (E) An increase in price from 8 to 12

**Answer A**

Correct. Total economic surplus is maximized at the market equilibrium price of 6. Since a price of 8 is a disequilibrium price causing deadweight loss to occur, a decrease in price from 8 to 6 will cause total economic surplus to increase.

6. Assume that the government imposes a binding price ceiling on a market for an inferior good. Which of the following is most likely to occur in the market if consumers' incomes increase?

- (A) The market demand will shift to the right.
- (B) The market supply will shift to the right.
- (C) The shortage in the market will decrease. ✓
- (D) The surplus in the market will increase.
- (E) The market price will increase.

**Answer C**

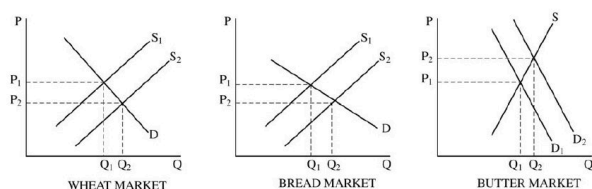
Correct. A binding price ceiling means that there is a legal maximum price below the equilibrium price which creates a shortage, as the quantity demanded will exceed the quantity supplied. An increase in consumers' incomes causes a decrease in the demand for an inferior good, the demand curve will shift to the left, and the shortage will decrease.

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7. Assume that bread and butter are complementary goods. The government begins to subsidize the production of wheat, which is an input in the production of bread.
- For each of the following markets, draw correctly labeled supply and demand graphs and show the effect of the subsidy on the equilibrium price and quantity in the short run.
    - The wheat market
    - The bread market
    - The butter market
  - If the demand for bread is price elastic, how will total revenues for the bread producers change as a result of the government subsidy?

Respond to all parts of the question.

## Part A



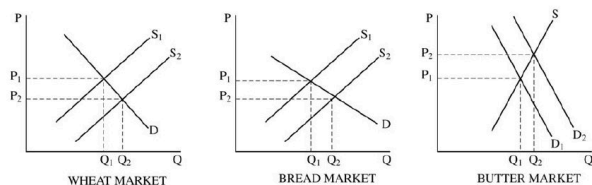
4 points:

- One point is earned for correctly labeled supply and demand graphs for all three markets.
- One point is earned for showing a rightward shift of the supply curve in the wheat market with price decreasing and quantity increasing.
- One point is earned for showing a rightward shift of the supply curve in the bread market with price decreasing and quantity increasing.
- One point is earned for showing a rightward shift of the demand curve in the butter market with price increasing and quantity increasing.



|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

Student receives 4/4 point(s)



4 points:

- One point is earned for correctly labeled supply and demand graphs for all three markets.
- One point is earned for showing a rightward shift of the supply curve in the wheat market with price decreasing and quantity increasing.
- One point is earned for showing a rightward shift of the supply curve in the bread market with price decreasing and quantity increasing.
- One point is earned for showing a rightward shift of the demand curve in the butter market with price increasing and quantity increasing.

## Part B

1 point:

- One point is earned for concluding that the total revenue will increase.

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0

1

Student receives 1/1 point(s)

1 point:

- One point is earned for concluding that the total revenue will increase.

8. Which of the following changes in the demand for and the supply of a good will necessarily result in an increase in both the equilibrium price and quantity of the good in a market?

|     |               |               |
|-----|---------------|---------------|
| (A) | <b>Demand</b> | <b>Supply</b> |
|     | Increase      | Increase      |

|     |               |               |   |
|-----|---------------|---------------|---|
| (B) | <b>Demand</b> | <b>Supply</b> | ✓ |
|     | Increase      | No change     |   |

|     |               |               |
|-----|---------------|---------------|
| (C) | <b>Demand</b> | <b>Supply</b> |
|     | No change     | Increase      |

|     |               |               |
|-----|---------------|---------------|
| (D) | <b>Demand</b> | <b>Supply</b> |
|     | Decrease      | Increase      |

|     |               |               |
|-----|---------------|---------------|
| (E) | <b>Demand</b> | <b>Supply</b> |
|     | No change     | Decrease      |

9. If the supply of fish increases, there will be

- (A) an increase in the demand for chicken, a substitute good  
 (B) an increase in the demand for fish  
 (C) an increase in the price of fish tacos

(D) a decrease in the price of fish

(E) a decrease in the supply of potatoes, a complementary good

**Answer D**

Correct. An increase in the supply of fish will shift the supply curve to the right, decreasing the price of fish and increasing the quantity supplied of fish.

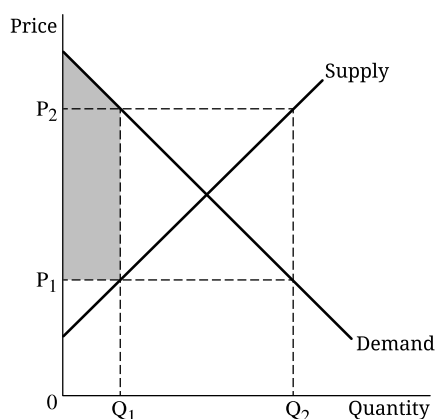
## Unit 2.5-2.9 Practice APTest Questions

10. What will happen to the price and quantity of footballs as a result of an increase in the price of leather used to make footballs?
- (A) Price will increase, and quantity will increase.
- (B) Price will increase, and quantity will decrease. ✓
- (C) Price will decrease, and quantity will increase.
- (D) Price will decrease, and quantity will decrease.
- (E) Price will not change, and quantity will not change.

## Answer B

Correct. Leather is an input for footballs. If the price of leather increases, the supply curve of footballs will shift to the left along a downward sloping demand curve; equilibrium quantity will decrease, and price will increase.

11.



Consumer surplus could be the shaded area in which of the following situations?

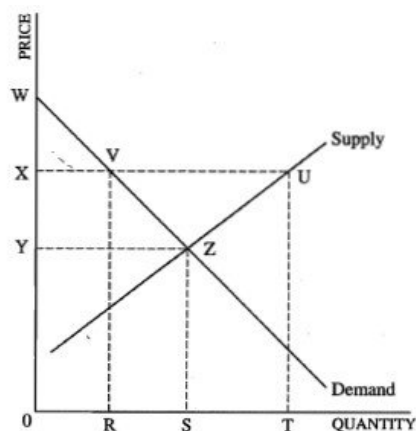
- (A) A price floor set at  $P_1$  in the market
- (B) A price floor set at  $P_2$  in the market
- (C) A price ceiling set at  $P_1$  in the market ✓
- (D) A per-unit subsidy equal to  $P_2 - P_1$  granted to producers
- (E) A per-unit tax equal to  $P_2 - P_1$  imposed on producers

## Answer C

Correct. The price ceiling set at  $P_1$  is binding and will thus result in only a quantity of  $Q_1$  of the good being exchanged in the market. Consumer surplus is represented by the difference between the price consumers are willing to pay (represented by the demand curve) and the price they have to pay ( $P_1$ ) for all units consumed ( $Q_1$ ).

**Unit 2.5-2.9 Practice APTest Questions**

The following questions refer to the graph below. The market is currently in equilibrium



12. In a competition equilibrium consumer surplus is the area of

(A) UVZ  
(B) WYZ  
(C) RVUT  
(D) XVZY  
(E) OYZS



13. If a price floor is set at X, the quantity demanded will

(A) increase from 0R to 0S  
(B) increase from 0R to 0T  
(C) decrease from 0S to 0R  
(D) decrease from 0T to 0R  
(E) not change



## Unit 2.5-2.9 Practice APTest Questions

14. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The following is a table showing Dana's marginal benefit from purchasing bottles of water and good X from a grocery store.

| Quantity of Water(in bottles) | Marginal Benefit of Water(in dollars) | Quantity of Good X(in units) | Marginal Benefit of Good X(in dollars) |
|-------------------------------|---------------------------------------|------------------------------|----------------------------------------|
| 1                             | 24                                    | 1                            | 24                                     |
| 2                             | 18                                    | 2                            | 18                                     |
| 3                             | 12                                    | 3                            | 12                                     |
| 4                             | 6                                     | 4                            | 6                                      |
| 5                             | 3                                     | 5                            | 3                                      |

- (a) What is Dana's total benefit from purchasing 2 bottles of water and 1 unit of good X? Show your work.
- (b) Assume the price of a unit of good X is \$5. Calculate the total consumer surplus if Dana purchases 3 units of good X. Show your work.
- (c) Now assume the price of a bottle of water is 3 and the price of a unit of good X is 6. Dana spends her entire budget of \$30 on bottles of water and good X.
- (i) Explain why Dana does not maximize her benefit when she purchases 2 bottles of water and 4 units of good X. Use marginal analysis to explain your answer.
- (ii) What are the optimal quantities of good X and bottles of water at these prices?
- (iii) Suppose the price of a unit of good X drops to \$3. Calculate Dana's cross-price elasticity of demand for bottles of water with respect to the price of good X, and state whether the two goods are substitutes or complements. Show your work.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates Dana's total benefit from purchasing 2 bottles of water and 1 unit of good X as \$66 and shows the work.

$$\cdot \$24 + \$18 + \$24 = \$66$$

$$\cdot \$42 + \$24 = \$66$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates Dana's total consumer surplus from purchasing 3 units of good X as \$39 and shows the work.

$$\cdot (\$24 - \$5) + (\$18 - \$5) + (\$12 - \$5) = \$39$$

$$\cdot \$54 - \$15 = \$39$$

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### Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response to part (c) (i) must use marginal analysis in the explanation in order to receive the point.

The response to part (c) (iii) must show appropriate work in order to receive the point.

The response to part (c) (iii) must be consistent with (c)(ii).



|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

The response does all the following.

- ☐ Explains that Dana does not maximize her benefit because the marginal utility per dollar spent on bottles of water is greater than the marginal utility per dollar spent on good X.  
( $18/\$3 > 6/\$6$ ; OR  $6 > 1$ ; OR  $6 \neq 1$ ; OR  $MB_W/P_W > MB_X/P_X$ )
- ☐ States that the optimal quantities of good X and bottles of water are 3 units and 4 bottles respectively.  
Calculates the cross-price elasticity of demand for bottles of water with respect to the price of good X, shows the work, and states that the goods are complements.
- ☐ ( $\% \text{ change in the quantity of bottles of water} / \% \text{ change in the price of good X}$ )  
 $= (25\% / -50\%) = -0.5$   
(Using the mid-point formula is also acceptable:  $(1/4.5) / (-3/4.5) = -0.33$ )

## Unit 2.5-2.9 Practice APTest Questions

15. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Courtney derives from consuming two goods, Good F and candy bars.

| Quantity of Good F | Total Benefit of Good F | Quantity of Candy Bars | Total Benefit of Candy Bars |
|--------------------|-------------------------|------------------------|-----------------------------|
| 0                  | \$0                     | 0                      | \$0                         |
| 1                  | \$40                    | 1                      | \$80                        |
| 2                  | \$70                    | 2                      | \$120                       |
| 3                  | \$90                    | 3                      | \$140                       |
| 4                  | \$100                   | 4                      | \$152                       |
| 5                  | \$103                   | 5                      | \$156                       |
| 6                  | \$105                   | 6                      | \$156                       |

Courtney has a limited weekly income of 20, and she spends it all on Good F and candy bars. Assume the price of Good F is 2 per unit and the price of a candy bar is \$4.

- (a) Identify the quantity of Good F and the quantity of candy bars that will maximize Courtney’s total benefit given her weekly income. Explain using marginal analysis.
- (b) Calculate Courtney’s consumer surplus from the fourth candy bar. Show your work.
- (c) If Courtney’s weekly income decreases from 20 to 18, would Courtney be able to buy 5 units of Good F and 2 candy bars? Explain using numbers.
- (d) Suppose that candy bars are produced in a perfectly competitive market and the price of sugar, an input to the production of candy bars, increases. If candy bars are a normal good, will the quantity of candy bars that will maximize Courtney’s total benefit increase, decrease, or stay the same? Explain.
- (e) Suppose instead that the price of Good F increases by 9% and Courtney buys 6% less of Good F and 3% less of Good W. Based on this change, identify whether Good F and Good W are substitutes, complements, or not related. Explain using numbers.
- Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 4 units of Good F and 3 candy bars will maximize Courtney’s total benefit given her weekly income of \$20 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good F (5) is equal to the ratio of the marginal benefit to the price of candy bars (5), or

$$\frac{MB_{\text{Good F}}}{\text{Price}_{\text{Good F}}} = \frac{MB_{\text{Candy Bars}}}{\text{Price}_{\text{Candy Bars}}}$$

$$\frac{\$10}{\$2} = \frac{\$20}{\$4}$$

$$5 = 5$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates consumer surplus as \$8 and shows the work.

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Consumer Surplus = Marginal Benefit – Price = \$12 – \$4 = \$8

### Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that yes, Courtney would be able to buy 5 units of Good F and 2 candy bars and explains that her total expenditures would be \$18 ( $= \$2 \times 5 + \$4 \times 2$ ), which is equal to her weekly income of \$18.

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that the quantity of candy bars that will maximize Courtney's total benefit will decrease and explains that an increase in the price of an input to the production of candy bars would decrease the supply of candy bars, which would increase the price of candy bars and decrease the marginal benefit per dollar spent for each additional unit consumed.

### Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies Good F and Good W as complements and explains that the cross-price elasticity of demand is negative because a 9% increase in the price of Good F led to a 3% decrease in the demand for Good W.

16. The cross-price elasticity of demand for Goods X and Y is  $-2.8$ . Based on this information, what is true about Good X and Good Y?

- (A) Good X is a normal good and Good Y is an inferior good.
- (B) The goods are inferior.
- (C) The goods are substitutes.
- (D) The goods are complements.
- (E) The goods have upward-sloping demand curves.



### Answer D

Correct. A negative cross-price elasticity of demand coefficient indicates that Goods X and Y are complements. Since the two goods are consumed together, an increase in the price of one good will cause a decrease in the demand, and therefore the quantity demanded, for the other good.

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17. In relation to tacos, the cross-price elasticity of demand for Good X is negative. What would be the result if the price of tacos increases?
- (A) There will be a movement up the demand curve for Good X because it is a complement to tacos.
- (B) There will be a movement down the demand curve for Good X because it is a complement to tacos.
- (C) The demand for Good X will increase because it is a substitute for tacos.
- (D) The demand for Good X will decrease because it is a complement to tacos. ✓
- (E) The demand for Good X will increase because tacos and Good X are normal goods.

**Answer D**

Correct. When the cross-price elasticity is negative, this means that the two products are complements. Therefore, an increase in the price of tacos will decrease the demand for Good X.

18. A decrease in raw material prices will change the equilibrium price and quantity in a market in which of the following ways?

(A)

| Price    | Quantity |
|----------|----------|
| Increase | Increase |

(B)

| Price    | Quantity |
|----------|----------|
| Increase | Decrease |

(C)

| Price    | Quantity |
|----------|----------|
| Decrease | Increase |

✓

(D)

| Price    | Quantity |
|----------|----------|
| Decrease | Decrease |

(E)

| Price     | Quantity |
|-----------|----------|
| No change | Increase |

19. If the market demand for a good is inelastic and the supply is elastic, which of the following is true when there is an increase in sales tax?

- (A) Consumers will bear most of the burden of the tax. ✓
- (B) Producers will bear all of the burden of the tax.
- (C) Producers will bear most of the burden of the tax or risk losing sales.
- (D) Both consumers and producers will share the burden of the tax equally.
- (E) The price of the good will not change.

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20. Ice cream is a normal good. Ice cream and hot fudge are complementary goods, while ice cream and gelato are substitute goods. Which of the following could lead to an increase in the equilibrium price and an indeterminate change in the equilibrium quantity of ice cream?
- (A) Consumer incomes rise, and the price of hot fudge increases.
  - (B) Bacteria in ice cream facilities leads to a number of consumers being hospitalized, and increased dairy production leads to lower input costs for ice cream.
  - (C) The price of gelato increases, and new technology increases efficiency of ice cream production.
  - (D) A new study indicates that ice cream is associated with improved bone health, and a leading ice cream producer declares bankruptcy. ✓
  - (E) A newly popular diet includes avoiding dairy products, and the government begins to subsidize ice cream production.

**Answer D**

Correct. A study indicating that ice cream can improve bone health would increase demand for ice cream, causing an increase in the equilibrium price and quantity of ice cream. The bankruptcy of a leading ice cream producer would decrease the supply of ice cream, causing an increase in the equilibrium price and a decrease in the equilibrium quantity of ice cream. Both changes would cause an increase in the equilibrium price of ice cream and an indeterminate effect on the equilibrium quantity of ice cream.

21. A nation engages in international trade with its trading partners and is currently an importer of aluminum. Imposing an import tariff on aluminum will affect the domestic market for aluminum in which of the following ways?

|   | Domestic Quantity Supplied | Domestic Consumer Surplus | Domestic Producer Surplus |
|---|----------------------------|---------------------------|---------------------------|
| A | Increase                   | Decrease                  | Decrease                  |
| B | Increase                   | Decrease                  | Increase                  |
| C | No change                  | Decrease                  | Decrease                  |
| D | Decrease                   | Increase                  | Decrease                  |
| E | Decrease                   | Increase                  | Increase                  |

(A) A

(B) B ✓

(C) C

(D) D

(E) E

**Answer B**

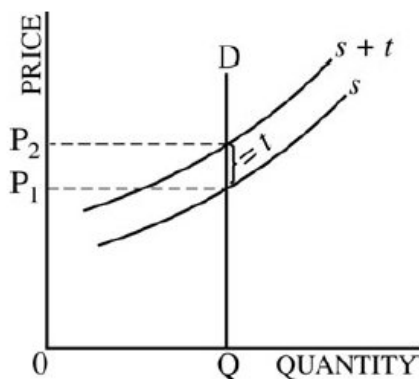
Correct. An import tariff on aluminum will increase the price of imported aluminum, incentivizing domestic firms to increase their quantity supplied. This increase in the price of aluminum will decrease domestic consumer surplus and increase domestic producer surplus.

## Unit 2.5-2.9 Practice APTest Questions

22. In each part below, assume that the government imposes a per-unit sales tax and that the supply curve is upward-sloping.
- In industry X, consumers buy the same quantity no matter what the price is.
    - Using a correctly labeled graph, show what happens to the quantity sold when the tax is imposed.
    - How will the burden of the tax be distributed between buyers and sellers?
  - In industry Y, the market demand curve is perfectly elastic.
    - Using a correctly labeled graph, show what happens to the price of the good that the consumers pay when the tax is imposed.
    - How will the burden of the tax be distributed between buyers and sellers?
  - In industry Z, the market demand curve is downward-sloping. Using a correctly labeled graph, shade the area that represents total tax revenues.

Respond to all parts of the question.

## Part A



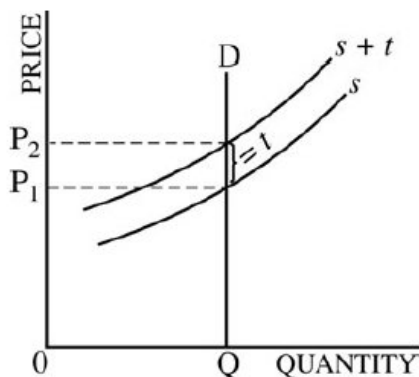
1 point - Perfectly inelastic demand curve showing that Q does not change

1 point - Since producers can raise the price by the full amount of the tax, the tax falls entirely on buyers

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

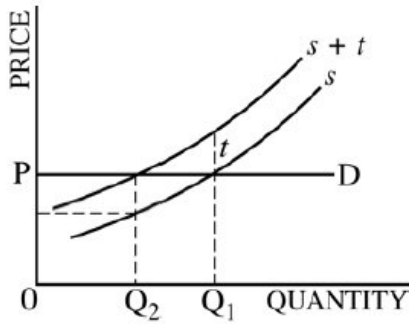


1 point - Perfectly inelastic demand curve showing that Q does not change

1 point - Since producers can raise the price by the full amount of the tax, the tax falls entirely on buyers

## Unit 2.5-2.9 Practice APTest Questions

### Part B



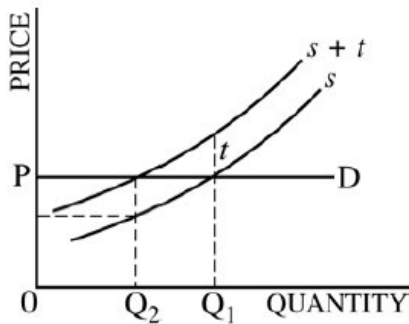
1 point – Horizontal demand curve showing that price does not change

1 point – The tax falls entirely on sellers, since they can't charge more and thus must absorb the entire amount of the tax

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

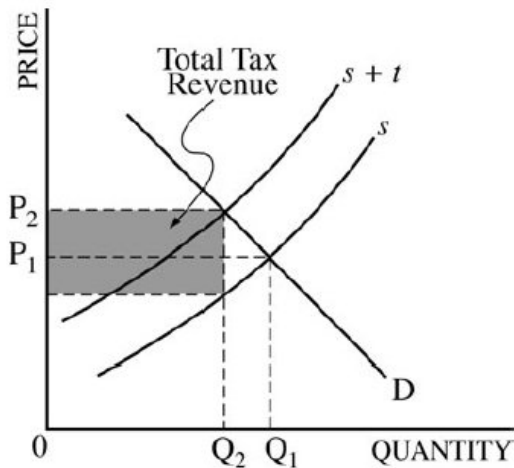
Student receives 2/2 point(s)



1 point – Horizontal demand curve showing that price does not change

1 point – The tax falls entirely on sellers, since they can't charge more and thus must absorb the entire amount of the tax

### Part C



## Unit 2.5-2.9 Practice APTest Questions

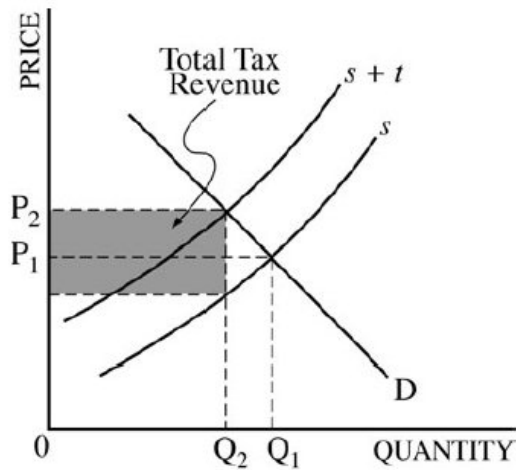
1 point - For shifting either the supply curve *or* the demand curve inward to the left

1 point - For shading the correct profits area

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)



1 point - For shifting either the supply curve *or* the demand curve inward to the left

1 point - For shading the correct profits area

## Unit 2.5-2.9 Practice APTest Questions

23. Assume all of the following about imported and domestically produced shoes.

- They are sold in two separate and perfectly competitive markets.
- They are close substitutes
- The demand for both is price elastic

Now assume that a tariff is imposed on imported shoes.

a. Using a correctly labeled graph, show the impact of the tariff on each of the following in the market for imported shoes.

- Price
- Output

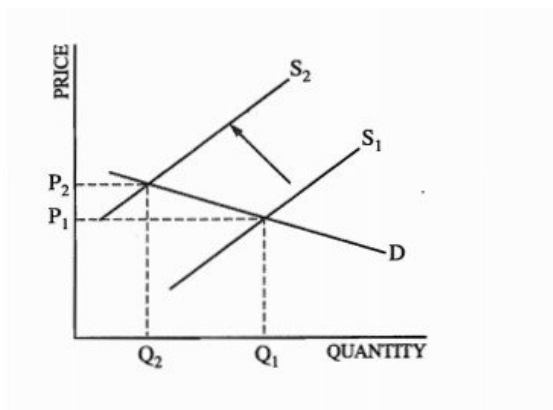
b. Using a new correctly labeled graph, show the impact of the tariff on each of the following in the market for domestically produced shoes.

- Price
- Output

c. Given that the demand for imported shoes is price elastic, will expenditures on imported shoes by consumers increase, decrease, or remain the same How do you know?

Respond to all parts of the questions.

### Part A



2 Points

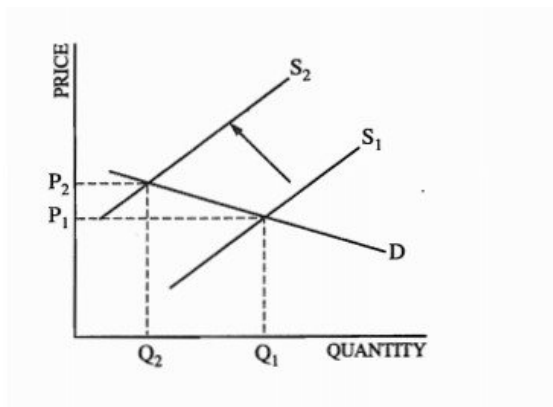
- **1 point:** (i) Correct graph (Labels D, S, P, &Q) that includes an inward shift in supply.
- **1 point:** (ii) P and Q changes correctly explained using the student's graph of (a)(i)

✓

|   |   |   |
|---|---|---|
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|---|---|---|

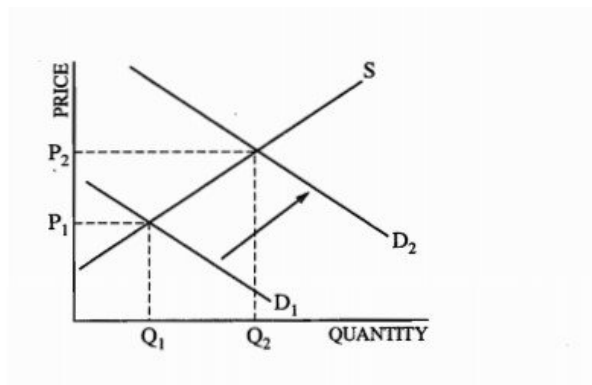
The student earns all of the following points:

## Unit 2.5-2.9 Practice APTest Questions



- **1 point:** (i) Correct graph (Labels D, S, P, & Q) that includes an inward shift in supply.
- **1 point:** (ii) P and Q changes correctly explained using the student's graph of (a)(i)

## Part B



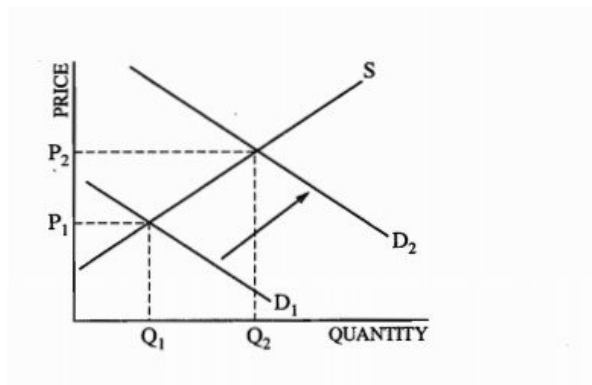
- **1 point:** Correct graph that includes a demand shift consistent with the price change in part (a) with both P and Q consistent with the graph drawn.

✓

0

1

The student earns all of the following points:



- **1 point:** Correct graph that includes a demand shift consistent with the price change in part (a) with both P and Q consistent with the graph drawn.

## Unit 2.5-2.9 Practice APTest Questions

## Part C

## 2 Points

- **1 point:** (i) With elastic demand for imported shoes, the increased price of imported shoes will lead to a reduction in total expenditures.
- **1 point:** (ii) Discussion of the proportional change in P and Q to explain the expenditure change.

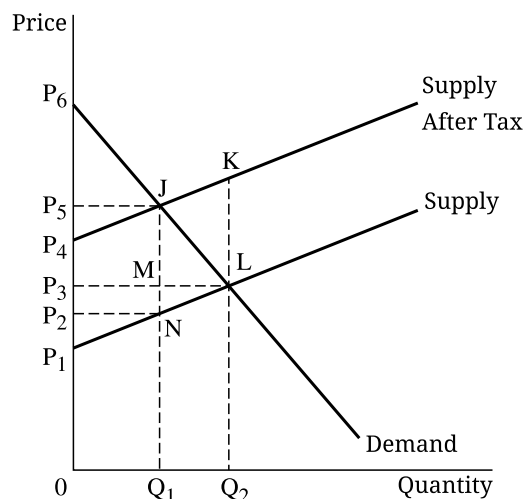


|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The student earns all of the following points:

- **1 point:** (i) With elastic demand for imported shoes, the increased price of imported shoes will lead to a reduction in total expenditures.
- **1 point:** (ii) Discussion of the proportional change in P and Q to explain the expenditure change.

24.



The graph provided shows the imposition of a per-unit tax on producers. Which areas represent government tax revenue, producer surplus, and deadweight loss after the imposition of the tax?

- (A) The government tax revenue is  $P_5P_3MJ$ ; The producer surplus is  $P_3P_1L$ ; The deadweight loss is  $JNL$ .
- (B) The government tax revenue is  $P_5P_2NJ$ ; The producer surplus is  $P_6P_5J$ ; The deadweight loss is  $P_4P_5J$ .
- (C) The government tax revenue is  $JNL$ ; The producer surplus is  $P_3P_1NM$ ; The deadweight loss is  $MLN$ .
- (D) The government tax revenue is  $P_5P_2NJ$ ; The producer surplus is  $P_2P_1N$ ; The deadweight loss is  $JNL$ .
- (E) The government tax revenue is  $P_5P_3MJ$ ; The producer surplus is  $P_3P_1L$ ; The deadweight loss is  $JML$ .



## Answer D

Correct. The per-unit tax creates a wedge between the price paid by consumers and the price received by producers, resulting in a higher equilibrium price ( $P_5$ ) and a lower equilibrium quantity ( $Q_1$ ). Government tax revenue is the difference between the price consumers pay ( $P_5$ ) and the price producers receive ( $P_2$ ) multiplied by the new equilibrium quantity exchanged after the tax ( $Q_1$ ), which is  $(P_5 - P_2) \times Q_1$  or area  $P_5P_2NJ$ . Producer surplus after the tax is the area of the triangle above the supply curve and below the price received by the producers  $P_2$ , which is area  $P_2P_1N$ . Deadweight loss is the sum of the lost consumer surplus (area  $JML$ ) and the lost producer surplus (area  $NML$ ) that were not offset by the government because of the decrease in the equilibrium quantity from  $Q_2$  to  $Q_1$  after the tax, which is area  $JNL$ .

## Unit 2.5-2.9 Practice APTest Questions

25. When Tom's income increases from \$100 to \$120, the quantity of golf balls he purchases increases from 10 to 12. What is Tom's income elasticity of demand, and what type of good is a golf ball for Tom?

- (A) Income elasticity of demand is 1, and golf balls are a normal good for Tom. ✓
- (B) Income elasticity of demand is  $-1$ , and golf balls are an inferior good for Tom.
- (C) Income elasticity of demand is 10, and golf balls are a normal good for Tom.
- (D) Income elasticity of demand is  $-10$ , and golf balls are an inferior good for Tom.
- (E) Income elasticity of demand is 20, and golf balls are a normal good for Tom.

**Answer A**

Correct. Income elasticity is calculated as the percentage change in quantity demanded/percentage change in income. Tom's quantity demanded increased by  $20\% [= (\frac{12-10}{10} \times 100)]$  and Tom's income increased by  $20\% [= (\frac{120-100}{100} \times 100)]$ . Thus, Tom's income elasticity of demand is  $1 [= \frac{20\%}{20\%}]$ . A positive income elasticity of demand indicates that golf balls are a normal good.

26. The cross-price elasticity of demand for flashlights and Good H is  $-2.5$ . This indicates which of the following?

- (A) Flashlights and Good H are inferior goods.
- (B) Flashlights and Good H are normal goods.
- (C) Flashlights and Good H are substitutes in consumption.
- (D) Flashlights and Good H are complements in consumption. ✓
- (E) Flashlights and Good H both have elastic demand.

**Answer D**

Correct. Cross-price elasticity of demand is used to determine whether goods are substitutes, complements, or unrelated in consumption. When the cross-price elasticity coefficient is negative, the two goods are complements in consumption.

27. If the imposition of a per-unit tax on a good reduces the total consumer surplus by more than the reduction of total producer surplus in a competitive market, then which of the following must be true?

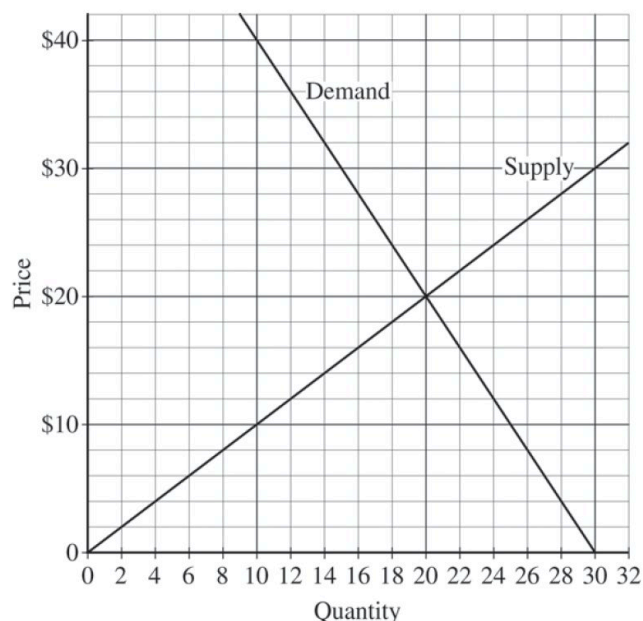
- (A) The price sellers receive decreases by more than the amount of the tax.
- (B) The price buyers pay increases by more than the amount of the tax.
- (C) Demand is less elastic than supply. ✓
- (D) Demand is more elastic than supply.
- (E) Demand and supply are both unit elastic.

**Answer C**

Correct. If the demand is less elastic than the supply, then the burden of the tax lies more on the consumer than on the seller. As a result, consumer surplus will decrease by more than the decrease in producer surplus.

## Unit 2.5-2.9 Practice APTest Questions

28. The graph below shows the market for widgets. The government is considering intervening in this market.



- Calculate the total producer surplus at the market equilibrium price and quantity. Show your work.
- If the government imposes a price floor at \$16, is there a shortage, a surplus, or neither? Explain.
- If instead the government imposes a price ceiling at \$12, is there a shortage, a surplus, or neither? Explain.
- If instead the government restricts the market output to 10 units, calculate the deadweight loss. Show your work.
- Assume the price decreases from 20 to 12.
  - Calculate the price elasticity of demand. Show your work.
  - In this price range, is demand perfectly elastic, relatively elastic, unit elastic, relatively inelastic, or perfectly inelastic?

Respond to all parts of the question.

## Part A

1 point:

- One point is earned for calculating the total producer surplus as  $(1/2 \times 20 \times 20) = \$200$ .



|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for calculating the total producer surplus as  $(1/2 \times 20 \times 20) = \$200$ .

## Part B

1 point:

- One point is earned for stating that imposing a price floor at \$16 is ineffective and will not create a surplus or a shortage in the market because it is set below the equilibrium price, or because it is not binding.

## Unit 2.5-2.9 Practice APTest Questions

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for stating that imposing a price floor at \$16 is ineffective and will not create a surplus or a shortage in the market because it is set below the equilibrium price, or because it is not binding.

**Part C**

1 point:

- One point is earned for stating that imposing a price ceiling at \$12 will create a shortage because quantity demanded is greater than quantity supplied, or because the price ceiling is binding.

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for stating that imposing a price ceiling at \$12 will create a shortage because quantity demanded is greater than quantity supplied, or because the price ceiling is binding.

**Part D**

1 point:

- One point is earned for calculating the deadweight loss as \$150 and for showing:

$$(1/2 \times 30 \times 10)$$

or

$$(1/2 \times 10 \times 10) + (1/2 \times 20 \times 10)$$

or

$$50 + 100$$

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for calculating the deadweight loss as \$150 and for showing:

$$(1/2 \times 30 \times 10)$$

or

$$(1/2 \times 10 \times 10) + (1/2 \times 20 \times 10)$$

or

## Unit 2.5-2.9 Practice APTest Questions

50+100

### Part E

2 points:

- One point is earned for calculating the price elasticity of demand as  $[(24-20)/20 / (12-20)/20] = -0.5$ , or for correctly using the midpoint formula.
- One point is earned for stating that in this price range the demand is relatively inelastic.

✓

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|---|---|---|
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|---|---|---|

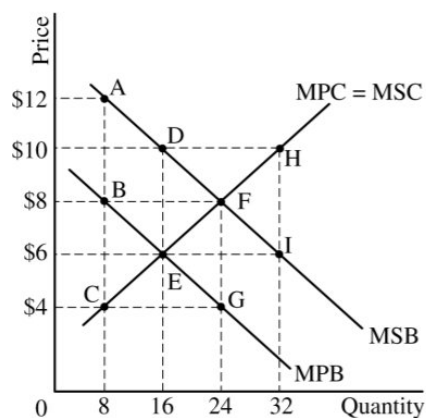
Student receives 2/2 point(s)

2 points:

- One point is earned for calculating the price elasticity of demand as  $[(24-20)/20 / (12-20)/20] = -0.5$ , or for correctly using the midpoint formula.
- One point is earned for stating that in this price range the demand is relatively inelastic.

## Unit 2.5-2.9 Practice APTest Questions

29. Modern-day word processing software gives consumers the ability to create and save documents in different file formats that can then be accessed by multiple computer operating systems. The graph below depicts a perfectly competitive market for word processing software. In the graph, MSB is the marginal social benefit, MPB is the marginal private benefit, MPC is the marginal private cost, and MSC is the marginal social cost.



- Identify the type of market failure illustrated by the graph. Explain.
- Using the numbers on the graph, identify the market equilibrium price and quantity.
- Using the labeling on the graph, identify the area representing the deadweight loss at the quantity identified in part (b).
- Suppose the government is considering granting a subsidy to correct the market failure. What is the dollar value of the per-unit subsidy that would achieve the socially optimal quantity?
- Suppose the government does not grant the subsidy and instead imposes a price floor at \$8.
  - How many units will consumers and producers exchange at the price floor?
  - Does the price floor correct the market failure? Explain.

Respond to all parts of the question.

## Part A

1 point(s) maximum

**1 point(s) earned for:** stating positive externality, and for explaining that either marginal social benefit is greater than marginal private benefit ( $MSB > MPB$ ) or the equilibrium quantity is less than the socially optimal quantity.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The student response earns one of the following points:

1 point(s) maximum

**1 point(s) earned for:** stating positive externality, and for explaining that either marginal social benefit is greater than marginal private benefit ( $MSB > MPB$ ) or the equilibrium quantity is less than the socially optimal quantity.

## Part B

1 point(s) maximum

**1 point(s) earned for:** identifying the market equilibrium price as \$6 and the market equilibrium quantity as 16 units.

## Unit 2.5-2.9 Practice APTest Questions

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

The student response earns one of the following points:

**1 point(s) maximum**

**1 point(s) earned for:** identifying the market equilibrium price as \$6 and the market equilibrium quantity as 16 units.

## Part C

**1 point(s) maximum**

**1 point(s) earned for:** identifying the area of the deadweight loss as DEF.

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

The student response earns one of the following points:

**1 point(s) maximum**

**1 point(s) earned for:** identifying the area of the deadweight loss as DEF.

## Part D

**1 point(s) maximum**

**1 point(s) earned for:** identifying \$4 as the dollar value of the per-unit subsidy.

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

The student response earns one of the following points:

**1 point(s) maximum**

**1 point(s) earned for:** identifying \$4 as the dollar value of the per-unit subsidy.

## Part E

**2 point(s) maximum**

**1 point(s) earned for:** identifying 8 units.

**1 point(s) earned for:** stating no and explaining with one of the following reasons:

- The quantity exchanged in the market will be less than the socially optimal quantity.
- $MSB > MSC$  at a quantity of 8 units.
- Deadweight loss increased after the price floor.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

## Unit 2.5-2.9 Practice APTest Questions

The student response earns two of the following points:

**2 point(s) maximum**

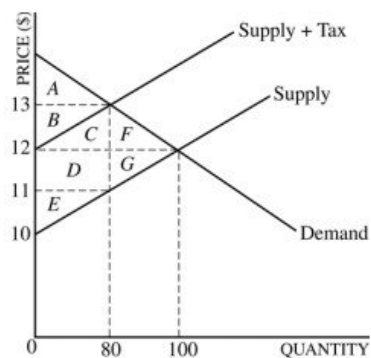
**1 point(s) earned for:** identifying 8 units.

**1 point(s) earned for:** stating no and explaining with one of the following reasons:

- The quantity exchanged in the market will be less than the socially optimal quantity.
- $MSB > MSC$  at a quantity of 8 units.
- Deadweight loss increased after the price floor.

## Unit 2.5-2.9 Practice APTest Questions

30.

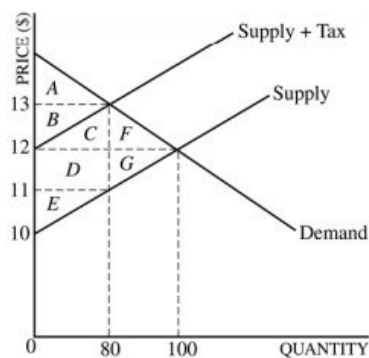


The graph above shows the market for a good that is subject to a per-unit tax. The letters in the graph represent the enclosed areas.

- a. Using the labeling on the graph, identify each of the following.
  - i. The equilibrium price and quantity before the tax
  - ii. The area representing the consumer surplus before the tax
  - iii. The area representing the producer surplus before the tax
- b. Assume that the tax is now imposed. Based on the graph, does the price paid by the buyers rise by the full amount of the tax? Explain.
- c. Using the labeling on the graph, identify each of the following after the imposition of the tax.
  - i. The net price received by the sellers
  - ii. The amount of tax revenue
  - iii. The area representing the consumer surplus
  - iv. The area representing the deadweight loss

Respond to all parts of the question.

## Part A



## 3 Points

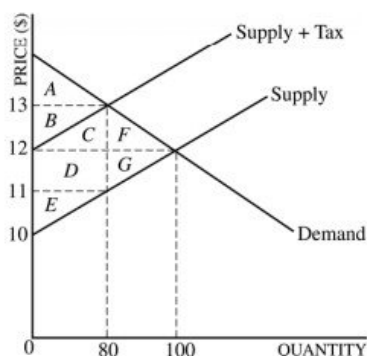
- One point is earned for identifying  $P = \$12$  and  $Q = 100$  units.
- One point is earned for identifying the consumer surplus before the tax,  $A + B + C + F$ .
- One point is earned for identifying the producer surplus before the tax,  $D + E + G$  or \$100.

## Unit 2.5-2.9 Practice APTest Questions

✓

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

The student earns all of the following points:



- One point is earned for identifying  $P = \$12$  and  $Q = 100$  units.
- One point is earned for identifying the consumer surplus before the tax,  $A + B + C + F$ .
- One point is earned for identifying the producer surplus before the tax,  $D + E + G$  or \$100.

## Part B

## 2 Points

- One point is earned for stating that the price paid by the buyers does not rise by the full amount of the tax.
- One point is earned for a correct explanation:  $P$  increases by  $1$  and  $\frac{1}{2}$  per unit; or a correct elasticity explanation, such as  $S$  is not perfectly elastic, or  $D$  is not perfectly inelastic.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The student earns all of the following points:

- One point is earned for stating that the price paid by the buyers does not rise by the full amount of the tax.
- One point is earned for a correct explanation:  $P$  increases by  $1$  and  $\frac{1}{2}$  per unit; or a correct elasticity explanation, such as  $S$  is not perfectly elastic, or  $D$  is not perfectly inelastic.

## Part C

## 4 Points

- One point is earned for identifying the net price received by the sellers, \$11.
- One point is earned for identifying the tax revenue,  $B + C + D$  or \$160.
- One point is earned for identifying consumer surplus,  $A$ .
- One point is earned for identifying the deadweight loss,  $F + G$  or \$20.

## Unit 2.5-2.9 Practice APTest Questions



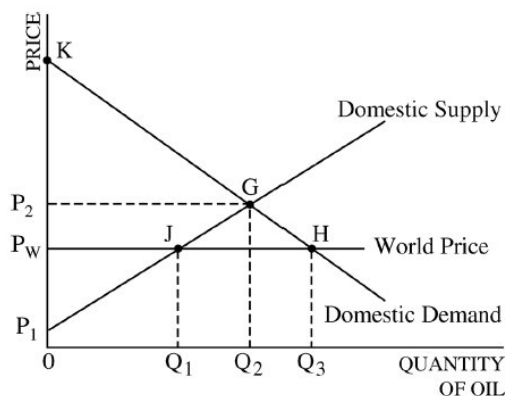
|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

The student earns all of the following points:

- One point is earned for identifying the net price received by the sellers, \$11.
- One point is earned for identifying the tax revenue,  $B + C + D$  or \$160.
- One point is earned for identifying consumer surplus, A.
- One point is earned for identifying the deadweight loss,  $F + G$  or \$20.

## Unit 2.5-2.9 Practice APTest Questions

31.



The graph above shows the demand for oil by United States residents, the supply of oil by United States producers, and the world price of oil. Use the labeling of the graph to answer the following questions.

- a. Identify the following before international trade occurs.
  - i. Price of oil in the United States market
  - ii. Quantity of oil produced in the United States
- b. Now assume that the United States begins to import oil at the world market price of  $P_w$ . Identify the quantity imported by the United States.
- c. Identify the consumer surplus in the United States market for each of the following cases.
  - i. Before international trade
  - ii. After international trade
- d. Identify the producer surplus in the United States market for each of the following cases.
  - i. Before international trade
  - ii. After international trade
- e. Identify the net gain in total surplus from trade.

Respond to all parts of the question.

**Part A**

As shown on the graph,  $P_2$  and  $Q_2$  were the price and quantity of oil before trade in the US market.

1 point - Identifying  $P_2$

1 point - Identifying  $Q_2$

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

1 point - Identifying  $P_2$

1 point - Identifying  $Q_2$

**Part B**

The amount of oil imported into the US market after trade would be equal to  $Q_3 - Q_1$ . US production drops to  $Q_1$  but quantity demanded rises to  $Q_3$ .

1 point: (Imports) Identifying  $(Q_3 - Q_1)$  or  $(H - J)$

## Unit 2.5-2.9 Practice APTest Questions



|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point: (Imports) Identifying (Q3 - Q1) or (H-J)

**Part C**

The triangle P2KG represents consumer surplus before trade, while triangle PWKH represents consumer surplus after trade.

1 point - Identifying P2KG (before)

1 point - Identifying PWKH (after)



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

1 point - Identifying P2KG (before)

1 point - Identifying PWKH (after)

**Part D**

The triangle P1P2G represents producer surplus before trade, while triangle P1PWJ represents producer surplus after trade.

1 point - Identifying P1P2G (before)

1 point - Identifying P1PWJ (after)



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

1 point - Identifying P1P2G (before)

1 point - Identifying P1PWJ (after)

**Part E**

The triangle JGH shows the net gain in total surplus from trade.

1 point: (Net gain in surplus) Identifying JGH



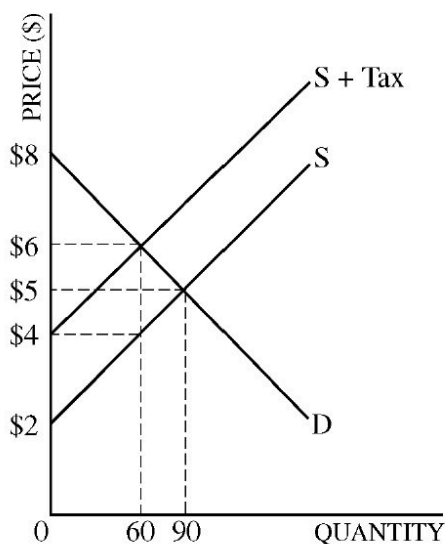
|   |   |
|---|---|
| 0 | 1 |
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Student receives 1/1 point(s)

1 point: (Net gain in surplus) Identifying JGH

## Unit 2.5-2.9 Practice APTest Questions

32.



The graph above illustrates the market for calculators. S denotes the current supply curve, and D denotes the demand curve.

- Calculate the producer surplus before the tax.
- Now assume a per-unit tax of \$2 is imposed whose impact is shown in the graph above.
  - Calculate the amount of tax revenue.
  - What is the after-tax price that the sellers now keep?
  - Calculate the producer surplus after the tax.
- Is the demand price elastic, inelastic, or unit elastic between the prices of 5 and 6? Explain.
- Assuming no externalities, how does the tax affect allocative efficiency? Explain.

Respond to all parts of the question.

**Part A**

1 point:

- One point is earned for the correct calculation of the producer surplus:  $(1/2) \times 3 \times 90 = 135$ .



|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for the correct calculation of the producer surplus:  $(1/2) \times 3 \times 90 = 135$ .

**Part B**

3 points:

- One point is earned for the correct calculation of the amount of tax revenue:  $2 \times 60 = 120$ .
- One point is earned for the correct calculation of the after-tax price received by sellers: \$4.
- One point is earned for the correct calculation of the producer surplus:  $(1/2) \times 2 \times 60 = 60$ .

## Unit 2.5-2.9 Practice APTest Questions

✓

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

Student receives 3/3 point(s)

3 points:

- One point is earned for the correct calculation of the amount of tax revenue:  $2 \times 60 = 120$ .
- One point is earned for the correct calculation of the after-tax price received by sellers: \$4.
- One point is earned for the correct calculation of the producer surplus:  $(1/2) \times 2 \times 60 = 60$ .

**Part C**

1 point:

- One point is earned for concluding that the demand price is elastic AND showing the correct calculation of the elasticity coefficient using endpoint or midpoint method, or the correct calculation using the total revenue formula.

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for concluding that the demand price is elastic AND showing the correct calculation of the elasticity coefficient using endpoint or midpoint method, or the correct calculation using the total revenue formula.

**Part D**

1 point:

- One point is earned for concluding that, owing to the tax, the market is no longer allocatively efficient AND that total surplus decreases or the tax creates a dead-weight loss.

✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point:

- One point is earned for concluding that, owing to the tax, the market is no longer allocatively efficient AND that total surplus decreases or the tax creates a dead-weight loss.

## Unit 2.5-2.9 Practice APTest Questions

33. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Kareem derives from consuming two goods, Good X and cereal.

| Quantity of Good X | Marginal Benefit of Good X | Quantity of Cereal | Marginal Benefit of Cereal |
|--------------------|----------------------------|--------------------|----------------------------|
| 1                  | \$18                       | 1                  | \$32                       |
| 2                  | \$16                       | 2                  | \$28                       |
| 3                  | \$12                       | 3                  | \$24                       |
| 4                  | \$6                        | 4                  | \$20                       |
| 5                  | \$2                        | 5                  | \$16                       |
| 6                  | \$0                        | 6                  | \$12                       |

Kareem has a limited weekly income of 18, and he spends it all on Good X and cereal. Assume the price of Good X is 2 per unit and the price of cereal is \$4 per unit.

- (a) Given his weekly income, would Kareem be able to buy 3 units of Good X and 5 units of cereal? Explain using numbers.
- (b) Calculate the total consumer surplus from Good X if Kareem consumes 4 units of Good X. Show your work.
- (c) Identify the quantity of Good X and the quantity of cereal that will maximize Kareem’s total benefit given his weekly income. Explain using marginal analysis.
- (d) Assume Good X is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good X.
- (i) Will the quantity of Good X that will maximize Kareem’s total benefit increase, decrease, or stay the same? Explain.
- (ii) Would Kareem’s total consumer surplus from Good X if he consumes 4 units of Good X increase, decrease, or stay the same compared to your answer in part (b)? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that no, Kareem would not be able to buy 3 units of Good X and 5 units of cereal and explains that his total expenditures would be \$26 ( $= \$2 \times 3 + \$4 \times 5$ ), which is greater than his weekly income of \$18.

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total consumer surplus as \$44 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = \$52 - \$8 = \$44$$

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

## Unit 2.5-2.9 Practice APTest Questions



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies 3 units of Good X and 3 units of cereal will maximize Kareem's total benefit given his weekly income of \$18 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good X (6) is equal to the ratio of the marginal benefit to the price of cereal (6), or

$$\frac{MB_{\text{Good X}}}{\text{Price}_{\text{Good X}}} = \frac{MB_{\text{Cereal}}}{\text{Price}_{\text{Cereal}}}$$

$$\frac{\$12}{\$2} = \frac{\$24}{\$4}$$

$$6 = 6$$

**Part D**

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response does both of the following:

- States that the quantity of Good X that will maximize Kareem's total benefit will increase and explains that a decrease in the number of consumers in the market for Good X will decrease the demand for Good X, which will decrease the price of Good X and increase the marginal benefit per dollar spent that Kareem gets from each additional unit of the good.

- States that Kareem's total consumer surplus would increase and explains that a decrease in the price of Good X would decrease the total cost of consuming 4 units of Good X while the total benefit of consuming 4 units of cereal remains the same.

34. Leather and beef are jointly produced such that an increase in the production of one results in an equal increase in the production of the other. An increase in the demand for leather will most likely cause

(A) a decrease in the price of leather

(B) a decrease in the price of beef



(C) a decrease in the equilibrium quantity of beef sold

(D) an increase in the demand for beef in the short run

(E) an increase in the supply of leather

## Unit 2.5-2.9 Practice APTest Questions

35. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Maria derives from consuming two goods, bandanas and Good G.

| Quantity of Bandanas | Total Benefit of Bandanas | Quantity of Good G | Total Benefit of Good G |
|----------------------|---------------------------|--------------------|-------------------------|
| 0                    | \$0                       | 0                  | \$0                     |
| 1                    | \$10                      | 1                  | \$38                    |
| 2                    | \$17                      | 2                  | \$70                    |
| 3                    | \$21                      | 3                  | \$96                    |
| 4                    | \$24                      | 4                  | \$116                   |
| 5                    | \$26                      | 5                  | \$130                   |
| 6                    | \$26                      | 6                  | \$138                   |

Maria has a limited weekly income of 9, and she spends it all on bandanas and Good G. Assume the price of each bandana is 1 and the price of Good G is \$2 per unit.

- (a) Calculate Maria’s consumer surplus from the fifth unit of Good G. Show your work.
- (b) Identify the quantity of bandanas and the quantity of Good G that will maximize Maria’s total benefit given her weekly income. Explain using marginal analysis.
- (c) If Maria’s weekly income increases from 9 to 12, would Maria be able to buy 3 bandanas and 4 units of Good G? Explain using numbers.
- (d) Suppose the price of Good G decreases by 5% and Maria buys 2% more of Good G and 4% more of Good R. Based on this change, identify whether Good G and Good R are substitutes, complements, or not related. Explain using numbers.
- (e) Suppose instead that bandanas are produced in a perfectly competitive market and the price of the fabric used to make bandanas decreases. If bandanas are a normal good, will the quantity of bandanas that will maximize Maria’s total benefit increase, decrease, or stay the same? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates consumer surplus as \$12 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \$14 - \$2 = \$12$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that that 1 bandana and 4 units of Good G will maximize Maria’s total benefit given her weekly income of \$9 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good G (10) is equal to the ratio of the marginal benefit to the price of bandanas (10), or

$$\frac{MB_{\text{Bandana}}}{\text{Price}_{\text{Bandana}}} = \frac{MB_{\text{Good G}}}{\text{Price}_{\text{Good G}}}$$

$$\frac{\$10}{\$1} = \frac{\$20}{\$2}$$

$$10 = 10$$

## Unit 2.5-2.9 Practice APTest Questions

### Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that yes, Maria would be able to buy 3 bandanas and 4 units of Good G and explains that her total expenditures would be \$11 ( $= \$3 \times 1 + \$2 \times 4$ ), which is less than her weekly income of \$12.

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies Good G and Good R as complements and explains that the cross-price elasticity of demand is negative because a 5% decrease in the price of Good G led to a 4% increase in the demand for Good R.

### Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that the quantity of bandanas that will maximize Maria's total benefit will increase and explains that a decrease in the price of an input to production will increase the supply of bandanas, which will decrease the price of bandanas and increase the marginal benefit per dollar spent for each additional unit consumed.

## Unit 2.5-2.9 Practice APTest Questions

36.

| Price | Quantity Demanded<br>(units) | Quantity Supplied<br>(units) |
|-------|------------------------------|------------------------------|
| \$1   | 500                          | 100                          |
| \$2   | 400                          | 200                          |
| \$3   | 300                          | 300                          |
| \$4   | 200                          | 300                          |
| \$5   | 100                          | 500                          |

The table provided shows the market demand and supply schedules for wheat. Which of the following is true?

- (A) At a price of \$1, there is excess supply of wheat and the price will decrease.
- (B) At a price of \$2, there is excess demand for wheat and the price will decrease.
- (C) At a price of \$3, there is excess demand for wheat and the price will increase.
- (D) At a price of \$4, there is excess supply of wheat and the price will decrease. ✓
- (E) At a price of \$5, there is excess demand for wheat and the price will increase.

**Answer D**

Correct. At the price of \$4, there is a surplus or excess supply, as the quantity supplied exceeds the quantity demanded ( $300 > 200$ ), which causes the price to decrease.

37. The market for Good Z has relatively elastic supply and demand curves. Market efficiency is attained when

- (A) total labor cost is minimized for each firm
- (B) each firm experiences economies of scale
- (C) consumer surplus is greater than producer surplus
- (D) producer surplus is zero
- (E) deadweight loss is zero ✓

**Answer E**

Correct. Market efficiency is attained when total economic surplus is maximized and thus deadweight loss is zero, that is, the price and quantity at which supply equals demand in a free-market equilibrium.

## Unit 2.5-2.9 Practice AP Test Questions

38. *Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.*

*The markets for bananas, muffins, and coffee are interrelated, and each market is perfectly competitive.*

- a. In the market for bananas, the equilibrium price is 1.00 per pound, and the equilibrium quantity is 1,000 pounds per week. Suppose the government imposes a price floor on bananas at 1.20 per pound, causing the quantity supplied to increase to 1,500 pounds per week.
  - i. Would the price floor result in a shortage, a surplus, or neither? Explain.
  - ii. Calculate the price elasticity of supply if the price increases from 1 to 1.20. Show your work.
  - iii. Between 1 and 1.20, is the supply elastic, unit elastic, or inelastic? Explain.
- b. Bananas are an input for muffins.
  - i. Draw a correctly labeled graph of the market for muffins indicating the equilibrium price and quantity, labeled  $P_0$  and  $Q_0$ , respectively.
  - ii. On the graph drawn in part (b)(i), show the impact of an increase in the price of bananas on the muffin market, labeling the new equilibrium price and quantity  $P_1$  and  $Q_1$ , respectively.
  - iii. On the same graph, completely shade the area that represents the **change** in the consumer surplus caused by the increase in the price of bananas.
- c. In the market for coffee, the equilibrium price is \$3.00 per cup and the equilibrium quantity is 100 cups per week. The cross-price elasticity of coffee with respect to muffins is  $-2$ .
  - i. Are coffee and muffins normal goods, inferior goods, complementary goods, or substitute goods?
  - ii. Assume the supply of coffee is perfectly elastic. Using the equilibrium price and quantity given above, draw a correctly labeled graph for the coffee market, and show the impact of an increase in the price of muffins on the coffee market.
  - iii. Given the original quantity of 100 cups of coffee per week, if the increase in the price of muffins is 10%, calculate the new equilibrium quantity in the coffee market. Show your work.

Respond to all parts of the question.

## Part A

**1 point is earned for:** stating that the quantity supplied exceeds the quantity demanded at the price floor **or** the price floor would result in a surplus because the price floor is binding or effective.

**1 point is earned for:** correctly calculating the price elasticity of supply. Students can use either the mid-point formula or the point elasticity formula.

$$E = (500/1250) / (0.2/1.1) = 2.2$$

$$E = (50\%/20\%) = 2.5 \quad E = (500/0.2) \times (1/1000) = 2.5$$

$$E = [(1500 - 1000)/1000] / [(1.2 - 1)/1] = 0.5/0.2 = 2.5$$

$$E = (500/0.2) \times (1.2/1500) = 2$$

**1 point is earned for:** stating that the supply is elastic and for explaining that the **percentage** change in quantity supplied exceeds the **percentage** change in price or because price elasticity of supply is greater than one. (Other equivalent explanations are accepted.)



|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

The student response earns all of the following points:

**1 point is earned for:** stating that the quantity supplied exceeds the quantity demanded at the price floor **or** the price floor would result in a surplus because the price floor is binding or effective.

## Unit 2.5-2.9 Practice APTest Questions

**1 point is earned for:** correctly calculating the price elasticity of supply. Students can use either the mid-point formula or the point elasticity formula.

$$E = (500/1250) / (0.2/1.1) = 2.2$$

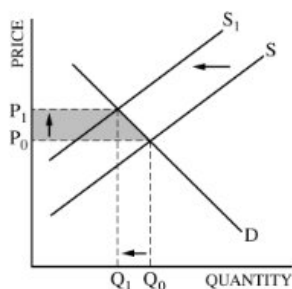
$$E = (50\%/20\%) = 2.5 \quad E = (500/0.2) \times (1/1000) = 2.5$$

$$E = [(1500 - 1000)/1000] / [(1.2 - 1)/1] = 0.5/0.2 = 2.5$$

$$E = (500/0.2) \times (1.2/1500) = 2$$

**1 point is earned for:** stating that the supply is elastic and for explaining that the **percentage** change in quantity supplied exceeds the **percentage** change in price or because price elasticity of supply is greater than one. (Other equivalent explanations are accepted.)

## Part B



**1 point is earned for:** drawing a correctly labeled graph and for showing the equilibrium price and quantity, labeled P0 and Q0, respectively.

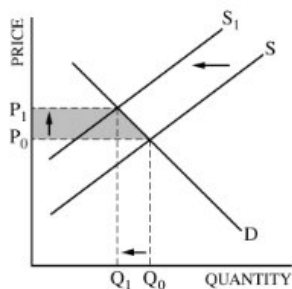
**1 point is earned for:** shifting the supply curve to the left and for showing the new equilibrium price and quantity, labeled P1 and Q1, respectively.

**1 point is earned for:** completely shading on the graph the area representing the change in consumer surplus.



|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

The student response earns all of the following points:



**1 point is earned for:** drawing a correctly labeled graph and for showing the equilibrium price and quantity, labeled P0 and Q0, respectively.

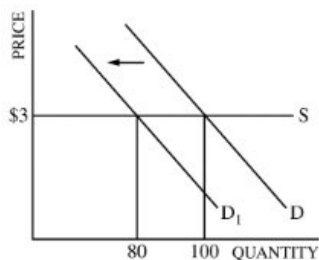
**1 point is earned for:** shifting the supply curve to the left and for showing the new equilibrium price and quantity, labeled P1 and Q1, respectively.

**1 point is earned for:** completely shading on the graph the area representing the change in consumer surplus.

## Part C

**1 point is earned for:** stating that coffee and muffins are complementary goods.

## Unit 2.5-2.9 Practice APTest Questions



**1 point is earned for:** drawing a correctly labeled graph for the coffee market and showing a horizontal supply curve(S)and a downward sloping demand curve(D).

**1 point is earned for:** shifting the demand curve to the left and for showing a decrease in the equilibrium quantity and no change in the equilibrium price of coffee.

**1 point is earned for:** correctly calculating the new equilibrium quantity and showing the work.

$$\% \Delta Q = (10\% \times -2) = -20\%$$

$$\text{New Equilibrium Quantity} = 100 \times (-20\%) = 80$$

OR

$$\text{New Equilibrium Quantity} = 100 - (0.2 \times 100) = 80$$

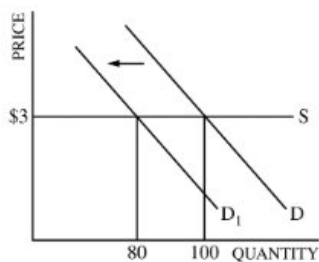
(Using the midpoint formula is also acceptable.)



|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

The student response earns all of the following points:

**1 point is earned for:** stating that coffee and muffins are complementary goods.



**1 point is earned for:** drawing a correctly labeled graph for the coffee market and showing a horizontal supply curve(S)and a downward sloping demand curve(D).

**1 point is earned for:** shifting the demand curve to the left and for showing a decrease in the equilibrium quantity and no change in the equilibrium price of coffee.

**1 point is earned for:** correctly calculating the new equilibrium quantity and showing the work.

$$\% \Delta Q = (10\% \times -2) = -20\%$$

$$\text{New Equilibrium Quantity} = 100 \times (-20\%) = 80$$

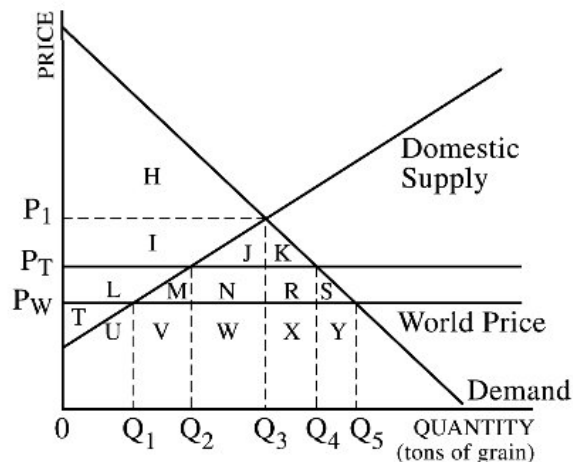
OR

$$\text{New Equilibrium Quantity} = 100 - (0.2 \times 100) = 80$$

(Using the midpoint formula is also acceptable.)

## Unit 2.5-2.9 Practice APTest Questions

39.



The diagram above illustrates the domestic market for grain in Country X before and after international trade. The letters inside the diagram represent areas, not points.

- Using the labeling of the graph, identify each of the following before any trade occurs.
  - Equilibrium price and quantity
  - Area of consumer surplus
  - Area of producer surplus
- Using the labeling of the graph, identify the amount of grain that Country X will import if it engages in trade and the world price of grain is at  $P_W$ .
- Now assume that Country X imposes a tariff that raises the price of grain from the free-trade case to  $P_T$ . Using the labeling of the graph, identify the change in each of the following.
  - Domestic production
  - Domestic consumption
  - Consumer surplus
  - Producer surplus

Respond to all parts of the question.

**Part A**

(a) Before trade, the relevant curves are the domestic supply curve and the demand curve. The intersection of domestic supply and demand determines the equilibrium price and quantity,  $P_1$  and  $Q_3$ . Consumer surplus is area H, above the price line and below the demand curve. Producer surplus is area  $I + L + T$ , above the domestic supply curve and below the price line.

1 point - for identifying  $Q_3$  and  $P_1$

1 point - for identifying H

1 point - for identifying  $I+L+T$

✓

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

Student receives 3/3 point(s)

(a) Before trade, the relevant curves are the domestic supply curve and the demand curve. The intersection of domestic supply and demand determines the equilibrium price and quantity,  $P_1$  and  $Q_1$ . Consumer surplus is area H, above the price line and below the demand curve. Producer surplus is area  $I + L + T$ , above the domestic supply curve and below the price line.

## Unit 2.5-2.9 Practice APTest Questions

1 point - for identifying Q3 and P1

1 point - for identifying H

1 point - for identifying I+L+T

### Part b

(b) With free trade and a world price of PW, domestic suppliers are unable to charge more than PW because consumers can purchase all that they want at the world price. At PW, domestic suppliers are willing to supply quantity Q1 and demanders will purchase quantity Q5. The difference between these quantities,  $Q5 - Q1$ , will be imported by Country X.

1 point - for identifying Q5-Q1



|   |   |
|---|---|
| 0 | 1 |
|---|---|

Student receives 1/1 point(s)

1 point - for identifying Q5-Q1

### Part C

(c) At the post-tariff price PT, the domestic supply curve indicates that domestic suppliers will produce the quantity Q2 rather than Q1, so the change is  $Q2 - Q1$ . The demand curve indicates that domestic consumers will demand the quantity Q4 rather than Q5, so the change is  $Q4 - Q5$ . Consumer surplus shrinks from  $(H+I+J+K+L+M+N+R+S)$  to  $(H+I+J+K)$ , a loss of  $(L+M+N+R+S)$ . Producer surplus increases from T to T+L, a gain of L.

1 for identifying Q2-Q1; *Q2 is acceptable if part (b) is correct.*

1 for identifying Q4-Q5; *Q4 is acceptable if part (b) is correct.*

1 for identifying the loss:  $L+M+N+R+S$ ; (*retain H+I+J+K not acceptable—must identify the CHANGE*).

1 for identifying the gain: L; (*T + L not acceptable—must identify the CHANGE*).



|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

Student receives 4/4 point(s)

1 for identifying Q2-Q1; *Q2 is acceptable if part (b) is correct.*

1 for identifying Q4-Q5; *Q4 is acceptable if part (b) is correct.*

1 for identifying the loss:  $L+M+N+R+S$ ; (*retain H+I+J+K not acceptable—must identify the CHANGE*).

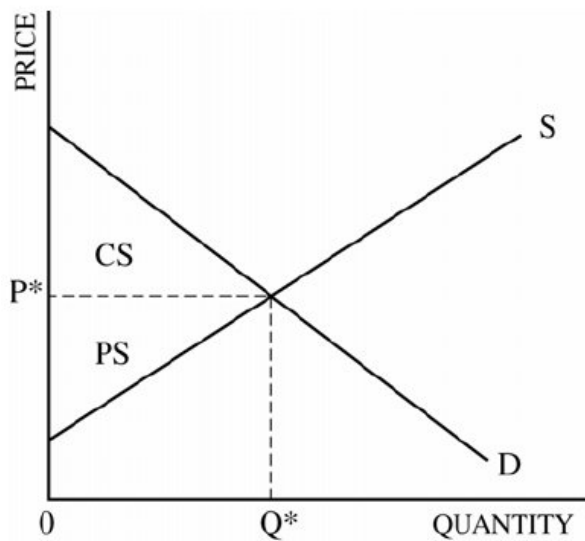
1 for identifying the gain: L; (*T + L not acceptable—must identify the CHANGE*).

## Unit 2.5-2.9 Practice APTest Questions

40. Assume that the market for home security systems is perfectly competitive and currently in equilibrium.
- Using a correctly labeled graph of supply and demand, show each of the following.
    - The equilibrium price and quantity, labeled as  $P^*$  and  $Q^*$ , respectively
    - The area representing consumer surplus, labeled as CS
    - The area representing producer surplus, labeled as PS
  - Suppose that the government imposes an effective (binding) price ceiling. Redraw your graph in part (a), and label the ceiling price as  $P_2$ . Completely shade the area representing the sum of the consumer surplus and the producer surplus after the imposition of the price ceiling.
  - Suppose the demand for home security systems decreases and the price ceiling remains binding. Indicate what will happen to each of the following.
    - Consumer surplus
    - Producer surplus

Respond to all parts of the question.

## Part A



3 points:

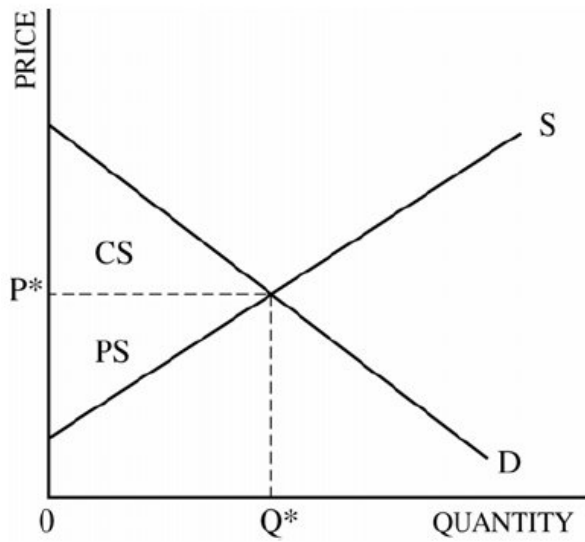
- One point is earned for a correctly labeled graph with equilibrium price and quantity.
- One point is earned for showing the correct area of consumer surplus.
- One point is earned for showing the correct area of producer surplus.

✓

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

Student receives 3/3 point(s)

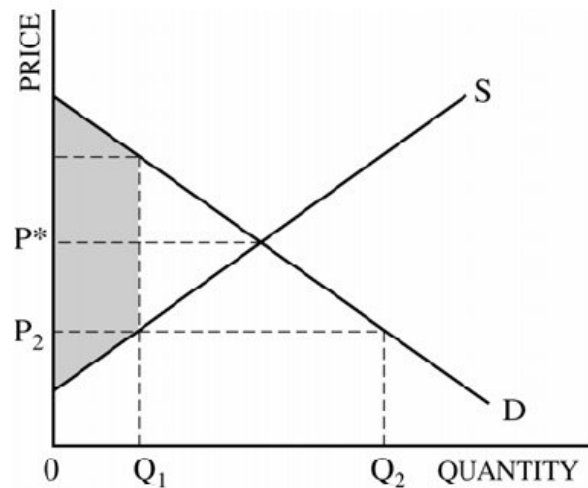
## Unit 2.5-2.9 Practice APTest Questions



3 points:

- One point is earned for a correctly labeled graph with equilibrium price and quantity.
- One point is earned for showing the correct area of consumer surplus.
- One point is earned for showing the correct area of producer surplus.

## Part B



2 points:

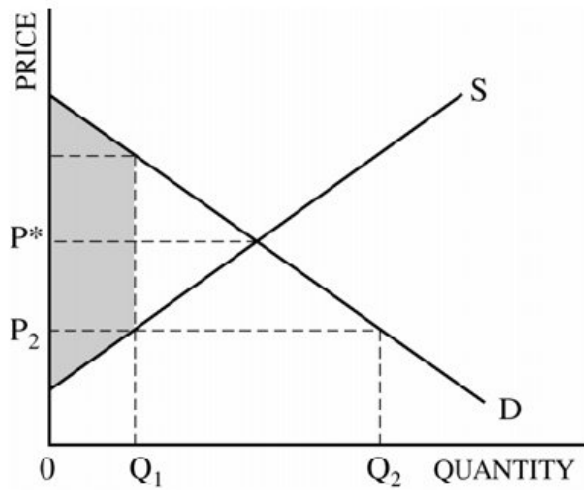
- One point is earned for showing the price ceiling below the equilibrium.
- One point is earned for shading the correct area of consumer surplus and producer surplus.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

## Unit 2.5-2.9 Practice APTest Questions



2 points:

- One point is earned for showing the price ceiling below the equilibrium.
- One point is earned for shading the correct area of consumer surplus and producer surplus.

**Part C**

2 points:

- One point is earned for indicating that consumer surplus will decrease.
- One point is earned for indicating that producer surplus will not change.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

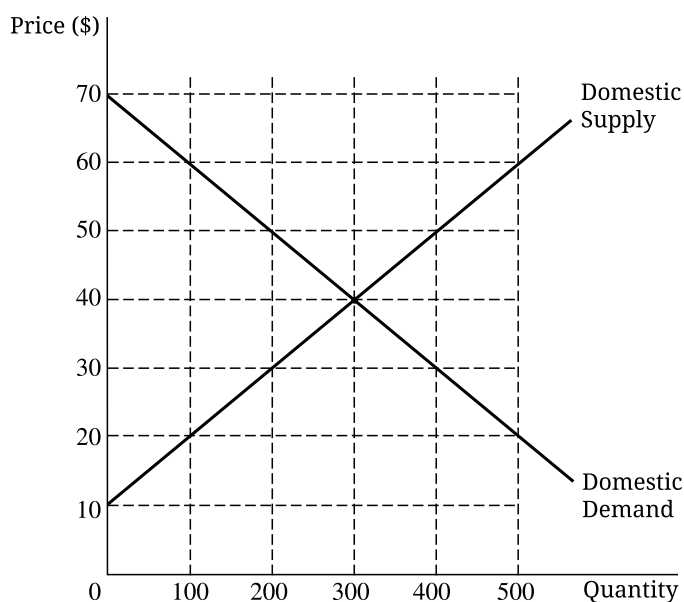
Student receives 2/2 point(s)

2 points:

- One point is earned for indicating that consumer surplus will decrease.
- One point is earned for indicating that producer surplus will not change.

## Unit 2.5-2.9 Practice APTest Questions

41. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.



The graph provided depicts New Zealand’s domestic supply and demand for wool.

(a) Calculate the consumer surplus if New Zealand does not trade with the rest of the world. Show your work.

(b) Instead, assume New Zealand decides to trade wool in the world market. The current world price of wool is \$60 per unit, and New Zealand is a price taker in the world market.

(i) How many units of wool will New Zealand export?

(ii) What will happen to the consumer surplus of wool consumers in New Zealand when New Zealand begins to trade with the rest of the world? Explain.

(iii) Will total economic surplus in New Zealand increase, decrease, or remain unchanged when New Zealand begins to trade wool in the world market? Explain using numbers.

(c) Now assume domestic demand in New Zealand increases. Will New Zealand’s exports increase, decrease, or stay the same?

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response accurately includes the criterion below.

☐  $\text{Consumer Surplus} = \frac{1}{2} \times 300 \times (\$70 - \$40) = \frac{1}{2} \times 300 \times \$30 = \frac{\$9,000}{2} = \$4,500$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

## Unit 2.5-2.9 Practice AP Test Questions

The response accurately includes three of the criteria below.

- ☐ On that New Zealand will export 400 units of wool.
- ☐ States that consumer surplus in New Zealand will decrease and explains with **ONE** of the following.
  - The domestic price will increase to the world price, which decreases the domestic quantity demanded of wool.
  - The consumer surplus decreased from 4,500 before trade to 500 after trade.
- ☐ States that total economic surplus in New Zealand will increase by 4,000 and explains that producer surplus will increase by 8,000 while consumer surplus will decrease by \$4,000, resulting in an increase in total economic surplus.

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

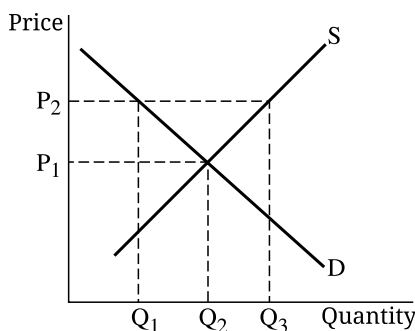


|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response accurately includes the criterion below

- ☐ States that New Zealand's exports will decrease.

42.



The graph shows the market supply (S) and demand (D) curves for a particular product. If the government imposes a price ceiling at  $P_2$ , which of the following statements is true?

- (A) The quantity sold in the market falls from  $Q_2$  to  $Q_1$ .
- (B) The quantity sold in the market remains at  $Q_2$  because the price ceiling is not binding.
- (C) The price ceiling results in a shortage of  $(Q_3 - Q_1)$ .
- (D) The price ceiling results in a surplus of  $(Q_3 - Q_1)$ .
- (E) The price ceiling will benefit sellers at the expense of buyers.

## Answer B

Correct. For a price ceiling to be binding, it must be set below the equilibrium market price.  $P_2$  is set above the equilibrium market price, and therefore it is not binding.

**Unit 2.5-2.9 Practice APTest Questions**

43. Following a decrease in the supply of oranges, the price of orange juice increased by 20 percent, which resulted in a 10 percent increase in the quantity of apple juice consumed. This implies that the cross elasticity of demand between orange juice and apple juice is
- (A) 0
  - (B) 0.5
  - (C) 1
  - (D) 2
  - (E) indeterminate



## Unit 2.5-2.9 Practice APTest Questions

44. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Patrick derives from consuming two goods, apples and Good B.

| Quantity of Apples | Marginal Benefit of Apples | Quantity of Good B | Marginal Benefit of Good B |
|--------------------|----------------------------|--------------------|----------------------------|
| 1                  | \$14                       | 1                  | \$36                       |
| 2                  | \$6                        | 2                  | \$28                       |
| 3                  | \$4                        | 3                  | \$20                       |
| 4                  | \$3                        | 4                  | \$12                       |
| 5                  | \$1                        | 5                  | \$2                        |
| 6                  | \$0                        | 6                  | \$0                        |

Patrick has a limited weekly income of 30, and he spends it all on apples and Good B. Assume the price of each apple is 2 and the price of Good B is \$4 per unit.

- Calculate the total consumer surplus from Good B if Patrick consumes 2 units of Good B. Show your work.
- Given his weekly income, would Patrick be able to buy 2 apples and 3 units of Good B? Explain using numbers.
- Identify the quantity of apples and the quantity of Good B that will maximize Patrick’s total benefit given his weekly income. Explain using marginal analysis.
- Assume Good B is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good B.
  - Would Patrick’s total consumer surplus from Good B if he consumes 2 units of Good B increase, decrease, or stay the same compared to your answer in part (a)? Explain.
  - Will the quantity of Good B that will maximize Patrick’s total benefit increase, decrease, or stay the same? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total consumer surplus as \$56 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = \$64 - \$8 = \$56$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that yes, Patrick would be able to buy 2 apples and 3 units of Good B and explains that his total expenditures would be \$16 ( $= \$2 \times 2 \times \$4 \times 3$ ), which is less than his weekly income of \$30.

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

## Unit 2.5-2.9 Practice APTest Questions

The response identifies that 5 apples and 5 units of Good B will maximize Patrick's total benefit given his weekly income of \$30 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of apples (0.5) is equal to the ratio of the marginal benefit to the price of Good B (0.5), or

$$\frac{MB_{Apples}}{Price_{Apples}} > \frac{MB_{Good\ B}}{Price_{Good\ B}}$$

$$\frac{\$1}{\$2} = \frac{\$2}{\$4}$$

$$0.5 = 0.5$$

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response does both of the following:

- States that Patrick's total consumer surplus would increase and explains that a decrease in the number of consumers in the market for Good B would decrease the demand for Good B, which would decrease the price of Good B, and a decrease in the price of Good B would decrease the total cost of consuming 2 units of Good B while the total benefit of consuming 2 units of Good B remains the same.

- States that the quantity of Good B that will maximize Patrick's total benefit will increase and explains that there has been a decrease in the price of Good B and an increase in the marginal benefit per dollar spent that Patrick gets from each additional unit of the good.

45. Assume that both the supply of and the demand for a good are relatively price elastic. The imposition of a per-unit excise tax on the sale of the good would cause the equilibrium price and quantity to change in which of the following ways?

|     |              |                 |
|-----|--------------|-----------------|
| (A) | <b>Price</b> | <b>Quantity</b> |
|     | Increase     | Increase        |
| (B) | <b>Price</b> | <b>Quantity</b> |
|     | Increase     | No change       |
| (C) | <b>Price</b> | <b>Quantity</b> |
|     | Increase     | Decrease        |
| (D) | <b>Price</b> | <b>Quantity</b> |
|     | Decrease     | No change       |
| (E) | <b>Price</b> | <b>Quantity</b> |
|     | Decrease     | Decrease        |



## Unit 2.5-2.9 Practice APTest Questions

46. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Polina derives from consuming two goods, sandwiches and Good E.

| Quantity of Sandwiches | Total Benefit of Sandwiches | Quantity of Good E | Total Benefit of Good E |
|------------------------|-----------------------------|--------------------|-------------------------|
| 0                      | \$0                         | 0                  | \$0                     |
| 1                      | \$120                       | 1                  | \$120                   |
| 2                      | \$210                       | 2                  | \$180                   |
| 3                      | \$270                       | 3                  | \$210                   |
| 4                      | \$300                       | 4                  | \$222                   |
| 5                      | \$310                       | 5                  | \$225                   |
| 6                      | \$315                       | 6                  | \$225                   |

Polina has a limited weekly income of 24, and she spends it all on sandwiches and Good E. Assume the price of each sandwich is 3 and the price of Good E is \$6 per unit.

- (a) Calculate Polina’s consumer surplus from the third unit of Good E. Show your work.
- (b) Identify the quantity of Good E and the quantity of sandwiches that will maximize Polina’s total benefit given her weekly income. Explain using marginal analysis.
- (c) If Polina’s weekly income increases from 24 to 28, will Polina be able to buy 4 sandwiches and 3 units of Good E? Explain using numbers.
- (d) Suppose the price of Good E increases by 8% and Polina buys 2% less of Good E and 4% more of Good Y. Based on this change, identify whether Good E and Good Y are substitutes, complements, or not related. Explain using numbers.
- (e) Suppose instead that sandwiches are produced in a perfectly competitive market and the price of bread, an input to the production of sandwiches, decreases. If sandwiches are a normal good, will the quantity of sandwiches that will maximize Polina’s total benefit increase, decrease, or stay the same? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates consumer surplus as \$24 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \$30 - 6 = \$24$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 4 sandwiches and 2 units of Good E will maximize Polina’s total benefit given her weekly income of \$24 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good E (10) is equal to the ratio of the marginal benefit to the price of sandwiches (10), or

$$\frac{MB_{\text{Good E}}}{\text{Price}_{\text{Good E}}} = \frac{MB_{\text{Sandwich}}}{\text{Price}_{\text{Sandwich}}}$$

$$\frac{\$30}{\$3} = \frac{\$60}{\$6}$$

$$10 = 10$$

## Unit 2.5-2.9 Practice APTest Questions

### Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that no, Polina would not be able to buy 4 sandwiches and 3 units of Good E and explains that her total expenditures would be \$30 ( $= \$3 \times 4 + \$6 \times 3$ ), which is greater than her weekly income of \$28.

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that Good E and Good Y are substitutes and explains that the cross-price elasticity of demand is positive because an 8% increase in the price of Good E led to a 4% increase in the demand for Good Y.

### Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that the quantity of sandwiches that will maximize Polina's total benefit will increase and explains that a decrease in the price of an input to the production of sandwiches would increase the supply of sandwiches, which would decrease the price of sandwiches and increase the marginal benefit per dollar spent for each additional unit consumed.

## Unit 2.5-2.9 Practice APTest Questions

47. Assume that consumers consider potatoes to be an inferior good, but consider rice to be a normal good. An increase in consumers' incomes will most likely affect the equilibrium price and quantity of potatoes and rice in which of the following ways?

|     |                 |                 |              |                 |   |
|-----|-----------------|-----------------|--------------|-----------------|---|
| (A) | <b>Potatoes</b> |                 | <b>Rice</b>  |                 | ✓ |
|     | <i>Price</i>    | <i>Quantity</i> | <i>Price</i> | <i>Quantity</i> |   |
|     | Decrease        | Decrease        | Increase     | Increase        |   |

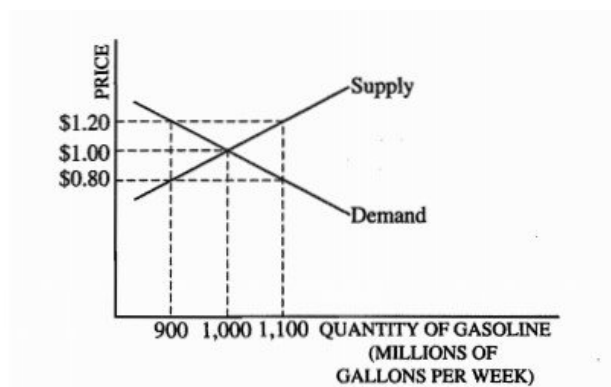
|     |                 |                 |              |                 |
|-----|-----------------|-----------------|--------------|-----------------|
| (B) | <b>Potatoes</b> |                 | <b>Rice</b>  |                 |
|     | <i>Price</i>    | <i>Quantity</i> | <i>Price</i> | <i>Quantity</i> |
|     | Decrease        | Increase        | Increase     | Decrease        |

|     |                 |                 |              |                 |
|-----|-----------------|-----------------|--------------|-----------------|
| (C) | <b>Potatoes</b> |                 | <b>Rice</b>  |                 |
|     | <i>Price</i>    | <i>Quantity</i> | <i>Price</i> | <i>Quantity</i> |
|     | Decrease        | Decrease        | Decrease     | Decrease        |

|     |                 |                 |              |                 |
|-----|-----------------|-----------------|--------------|-----------------|
| (D) | <b>Potatoes</b> |                 | <b>Rice</b>  |                 |
|     | <i>Price</i>    | <i>Quantity</i> | <i>Price</i> | <i>Quantity</i> |
|     | Increase        | Increase        | Decrease     | Decrease        |

|     |                 |                 |              |                 |
|-----|-----------------|-----------------|--------------|-----------------|
| (E) | <b>Potatoes</b> |                 | <b>Rice</b>  |                 |
|     | <i>Price</i>    | <i>Quantity</i> | <i>Price</i> | <i>Quantity</i> |
|     | Increase        | Decrease        | Increase     | Decrease        |

48.



The graph above shows the supply and demand curves for gasoline. Which of the following will occur if the government establishes a price ceiling of \$1.20 per gallon?

- (A) A shortage of 900 million gallons  
 (B) A shortage of 200 million gallons  
 (C) A shortage of 100 million gallons  
 (D) A surplus of 100 million gallons  
 (E) Neither a surplus nor a shortage

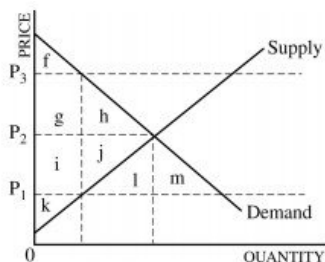
✓

## Unit 2.5-2.9 Practice APTest Questions

49. Which of the following will occur if the government imposes a price ceiling below the equilibrium price of a good?

- (A) The quantity sold will exceed the equilibrium quantity.  
 (B) Firms' total revenues will increase if demand is price elastic.  
 (C) There will be a shortage in the market. ✓  
 (D) All firms will shut down, since price is below the equilibrium price.  
 (E) Price will exceed the marginal cost of producing the last unit sold.

The following questions refer to the diagram below. The letters on the graph represent enclosed areas.



50. If a price ceiling is set at  $P_1$ , which of the following areas represent the resulting consumer surplus, producer surplus, and deadweight loss?

|     |                         |                         |                        |
|-----|-------------------------|-------------------------|------------------------|
| (A) | <b>Consumer Surplus</b> | <b>Producer Surplus</b> | <b>Deadweight Loss</b> |
|     | f                       | k                       | $l + m$                |
| (B) | <b>Consumer Surplus</b> | <b>Producer Surplus</b> | <b>Deadweight Loss</b> |
|     | $f + g + h$             | $k + l$                 | $h + j$                |
| (C) | <b>Consumer Surplus</b> | <b>Producer Surplus</b> | <b>Deadweight Loss</b> |
|     | $f + g + h$             | $i + j + k$             | $l + m$                |
| (D) | <b>Consumer Surplus</b> | <b>Producer Surplus</b> | <b>Deadweight Loss</b> |
|     | $f + g + i$             | k                       | $h + j$                |
| (E) | <b>Consumer Surplus</b> | <b>Producer Surplus</b> | <b>Deadweight Loss</b> |
|     | $f + g + i$             | $h + j$                 | $l + m$                |

51. When the market is in equilibrium, the total economic surplus is equal to area

- (A)  $f + k$   
 (B)  $f + g + i + k$   
 (C)  $g + h + i + j$   
 (D)  $f + g + h + i + j + k$  ✓  
 (E)  $f + g + h + i + j + k + l + m$

**Unit 2.5-2.9 Practice APTest Questions**

52. An effective price floor placed on a market for a good will have which of the following effects on the quantity purchased by consumers and the consumer surplus?
- (A) Quantity will decrease, and consumer surplus will increase
  - (B) Quantity will decrease, and consumer surplus will decrease ✓
  - (C) Quantity will increase, and consumer surplus will not change
  - (D) Quantity will increase, and consumer surplus will increase
  - (E) Quantity will not change, and consumer surplus will decrease

**Answer B**

Correct. An effective price floor is a price control set above the equilibrium price resulting in a decrease in the quantity purchased by consumers. Consumer surplus is determined by the difference between the price consumers are willing to pay (determined by the demand curve) and the price they must pay (determined by the price floor in this case) across all units consumed. Therefore, as the price increases because of the price floor, the higher price results in a decrease in quantity purchased by consumers and a decrease in consumer surplus.

53. An increase in which of the following will most likely result in a long-run surplus of a product?
- (A) The number of suppliers of the product
  - (B) A price is set by law above the equilibrium price ✓
  - (C) The demand for the product
  - (D) The costs of resources used to produce the product
  - (E) The future expected price of the product
54. Which of the following is true in the market for a certain product if producers consistently are willing to sell more at the going price than consumers are willing to buy?
- (A) Demand is highly inelastic
  - (B) Supply is highly elastic.
  - (C) The product is inferior.
  - (D) There is a price ceiling on the product.
  - (E) There is a price floor on the product. ✓
55. Which of the following will occur in the market for bicycles if the government establishes a binding price floor?
- (A) A market shortage
  - (B) A decrease in the demand for bicycles
  - (C) A decrease in the quantity of bicycles purchased ✓
  - (D) An increase in consumer surplus
  - (E) An increase in the equilibrium quantity of bicycles

**Answer C**

Correct. A binding price floor imposed on bicycles will cause the price of bicycles to increase above their equilibrium price; this will decrease the quantity of bicycles purchased according to the law of demand.

**Unit 2.5-2.9 Practice APTest Questions**

56. Which of the following is true of a price floor?
- (A) The intention of the government in creating the price floor is to assist the producers of the good. ✓
  - (B) To have an impact in the market for the good, the price floor should be set below the existing market price of the good.
  - (C) An effective price floor will increase the quantity demanded of the good.
  - (D) The price floor would tend to create a shortage of the good in the market.
  - (E) The creation of the price floor would not change the quantity supplied of the good if the supply curve were upward-sloping to the right.
57. Which of the following will result in the short run if the government imposes a binding quota?
- (A) A decrease in the price paid by consumers
  - (B) A rightward shift in the supply curve
  - (C) A leftward shift in the demand curve
  - (D) An increase in consumer surplus
  - (E) A deadweight loss ✓

**Answer E**

Correct. A binding quota limits the quantity exchanged in the market to the quantity supplied that is less than the equilibrium quantity. As a result, the price paid by the buyers will be higher than that received by the sellers at the limited quantity, moving the market away from allocative efficiency and creating deadweight loss.

58. Assume that popcorn and movie attendance are complements and that Salty Concession grows corn suitable for popping. Mr Concession will most likely sell a greater quantity of popping corn at a higher price if which of the following occurs?
- (A) The wages of farm workers and movie theater employees increase.
  - (B) A technological improvement results in less expensive and more efficient harvesting of corn.
  - (C) The introduction of new fat-free potato chips provides new competition in the snack-food market.
  - (D) The release of three summer movies sets records for movie attendance ✓
  - (E) New government regulations force movie theaters to hire more security guards at each theater.
59. Removing a binding price floor on milk will affect the quantity of milk demanded and the quantity of milk supplied in the market in which of the following ways?
- (A) There will be no change to quantity demanded, and quantity supplied will decrease.
  - (B) Quantity demanded will decrease, and quantity supplied will decrease.
  - (C) Quantity demanded will decrease, and quantity supplied will increase.
  - (D) Quantity demanded will increase, and there will be no change to quantity supplied.
  - (E) Quantity demanded will increase, and quantity supplied will decrease. ✓

**Answer E**

Correct. Binding price floors are prices set above the equilibrium market price; removing a binding price floor will increase the quantity demanded for milk and decrease the quantity supplied of milk.

## Unit 2.5-2.9 Practice APTest Questions

60. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Sam derives from consuming two goods, Good C and candles.

| Quantity of Good C | Marginal Benefit of Good C | Quantity of Candles | Marginal Benefit of Candles |
|--------------------|----------------------------|---------------------|-----------------------------|
| 1                  | \$20                       | 1                   | \$30                        |
| 2                  | \$16                       | 2                   | \$27                        |
| 3                  | \$12                       | 3                   | \$24                        |
| 4                  | \$8                        | 4                   | \$21                        |
| 5                  | \$6                        | 5                   | \$18                        |
| 6                  | \$4                        | 6                   | \$12                        |

Sam has a limited weekly income of 21, and he spends it all on Good C and candles. Assume the price of Good C is 2 per unit and the price of each candle is \$3.

- Given his weekly income, would Sam be able to buy 3 units of Good C and 3 candles? Explain using numbers.
- Calculate the total consumer surplus from Good C if Sam consumes 6 units of Good C. Show your work.
- Identify the quantity of Good C and the quantity of candles that will maximize Sam’s total benefit given his weekly income. Explain using marginal analysis.
- Assume Good C is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good C.
  - Will the quantity of Good C that will maximize Sam’s total benefit increase, decrease, or stay the same? Explain.
  - Would Sam’s total consumer surplus from Good C if he consumes 6 units of Good C increase, decrease, or stay the same compared to your answer in part (b)? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that yes, Sam would be able to buy 3 units of Good C and 3 candles and explains that his total expenditures would be \$15 ( $= \$2 \times 3 + \$3 \times 3$ ), which is less than his weekly income of \$21.

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total consumer surplus as \$54 and shows the work.

$$\begin{aligned} \text{Total Consumer Surplus} &= \text{Total Benefit} - \text{Total Expenditures} \\ &= \$66 - \$12 = \$54 \end{aligned}$$

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

## Unit 2.5-2.9 Practice APTest Questions



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 3 units of Good C and 5 candles will maximize Sam's total benefit given his weekly income of \$21 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good C (6) is equal to the ratio of the marginal benefit to the price of candles (6), or

$$\frac{MB_{\text{Good C}}}{Price_{\text{Good C}}} = \frac{MB_{\text{Candles}}}{Price_{\text{Candles}}}$$

$$\frac{\$12}{\$2} = \frac{\$18}{\$3}$$

$$6 = 6$$

**Part D**

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response does both of the following:

- States that the quantity of Good C that will maximize Sam's total benefit will increase and explains that a decrease in the number of consumers in the market for Good C will decrease the demand for Good C, which will decrease the price of Good C and increase the marginal benefit per dollar spent that Sam gets from each additional unit of the good.
- States that Sam's total consumer surplus would increase and explains that a decrease in the price of Good C would decrease the total cost of consuming 6 units of Good C while the total benefit of consuming 6 units of candles remains the same.

## Unit 2.5-2.9 Practice APTest Questions

61. Sasha is a utility-maximizing consumer who spends all of her income on peanuts and bananas, both of which are normal goods.
- Assume that the last unit of peanuts consumed increased Sasha's total utility from 40 utils to 48 utils and that the last unit of bananas consumed increased her total utility from 52 utils to 56 utils.
    - If the price of a unit of peanuts is \$1 and Sasha is maximizing utility, calculate the price of a unit of bananas.
    - If the price of a unit of peanuts increases and the price of a unit of bananas remains unchanged from the price you determined in part (a)(i), how will Sasha's purchase of peanuts change?
  - Assume that the cross-price elasticity of demand between peanuts and bananas is positive. A widespread disease has destroyed the banana crop. What will happen to the equilibrium price and quantity of peanuts in the short run? Explain.
  - Assume that the price of bananas increases.
    - Will the substitution effect increase, decrease, or have no effect on the quantity of bananas demanded?
    - What happens to Sasha's real income?

## Part A

2 points:

- One point is earned for calculating the price of a unit of bananas,  $4/8 = 0.50$ .
- One point is earned for stating that Sasha will purchase fewer peanuts.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

2 points:

- One point is earned for calculating the price of a unit of bananas,  $4/8 = 0.50$ .
- One point is earned for stating that Sasha will purchase fewer peanuts.

## Part B

2 points:

- One point is earned for stating that the equilibrium price and quantity of peanuts will both increase.
- One point is earned for explaining that peanuts and bananas are substitutes, and since the price of bananas increased, it would cause the demand for peanuts to increase.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

2 points:

- One point is earned for stating that the equilibrium price and quantity of peanuts will both increase.
- One point is earned for explaining that peanuts and bananas are substitutes, and since the price of bananas increased, it would cause the demand for peanuts to increase.

## Part C

2 points:

## Unit 2.5-2.9 Practice APTest Questions

- One point is earned for stating that the substitution effect causes the quantity of bananas demanded to decrease.
- One point is earned for stating that Sasha's real income will decrease.

✓

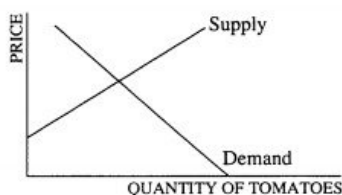
|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

2 points:

- One point is earned for stating that the substitution effect causes the quantity of bananas demanded to decrease.
- One point is earned for stating that Sasha's real income will decrease.

62.



On the basis of the graph above, which of the following statements concerning changes in the demand for and supply of tomatoes is correct?

- (A) If both the demand and supply increase, the price of tomatoes will definitely increase.
- (B) If both the demand and supply decrease, the quantity of tomatoes sold will definitely increase.
- (C) If the demand decreases while the supply increases, the price of tomatoes sold will definitely increase.
- (D) If the demand decreases while the supply increases, the quantity of tomatoes sold will definitely decrease.
- (E) If the demand increases while the supply decreases, the price of tomatoes will definitely increase. ✓

63. A decrease in the supply of pencils results in which of the following?

- (A) A surplus of pencils in the market
- (B) An increase in the demand for erasers, a complement in consumption
- (C) An increase in the quantity demanded of pencils
- (D) A decrease in the consumer surplus of pencil buyers ✓
- (E) A decrease in the demand for pencils

**Answer D**

Correct. A decrease in the supply of pencils will increase the equilibrium price of pencils and decrease the equilibrium quantity of pencils. Since consumer surplus represents the difference between the maximum price consumers are willing to pay and the equilibrium price consumers must pay (for all units consumed), this increase in equilibrium price and decrease in equilibrium quantity must reduce consumer surplus.

## Unit 2.5-2.9 Practice APTest Questions

64.

a. The table below gives the quantity of good X demanded and supplied at various prices.

| Price (dollars) | Quantity Demanded (units) | Quantity Supplied (units) |
|-----------------|---------------------------|---------------------------|
| 30              | 1                         | 3                         |
| 20              | 3                         | 3                         |
| 10              | 4                         | 3                         |

- i. Is the demand for good X relatively elastic, relatively inelastic, unit elastic, perfectly elastic, or perfectly inelastic when the price decreases from 30 to 20? Explain.
  - ii. Is the supply of good X relatively elastic, relatively inelastic, unit elastic, perfectly elastic, or perfectly inelastic when the price decreases from 30 to 20? Explain.
  - iii. If a per-unit tax is imposed on good X, how is the burden of the tax distributed between the buyers and sellers of good X?
- b. Assume that the income elasticity of demand for good Y is  $-2$ . Using a correctly labeled graph of the market for good Y, show the effect of a significant increase in income on the equilibrium price of good Y in the short run.

Respond to all parts of the question.

**Part A**

3 points:

- One point is earned for stating that the demand for good X is relatively elastic, because the elasticity coefficient  $> 1$  OR because total revenue rises as price decreases from 30 to 20.
- One point is earned for stating that supply is perfectly inelastic, because there is no change in the quantity supplied as the price changes OR because the supply elasticity is zero.
- One point is earned for stating that all of the burden of a per-unit tax falls on sellers.

✓

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | 2 | 3 |
|---|---|---|---|

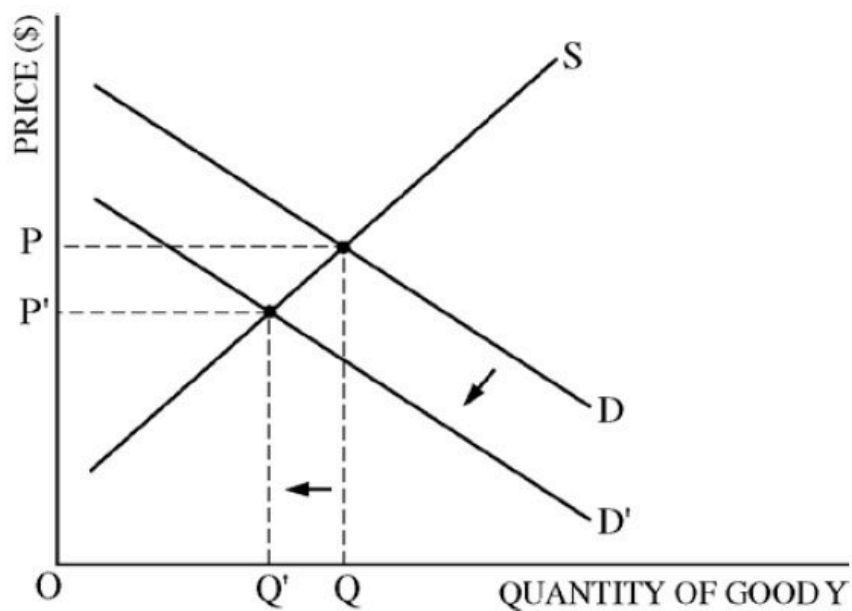
Student receives 3/3 point(s)

3 points:

- One point is earned for stating that the demand for good X is relatively elastic, because the elasticity coefficient  $> 1$  OR because total revenue rises as price decreases from 30 to 20.
- One point is earned for stating that supply is perfectly inelastic, because there is no change in the quantity supplied as the price changes OR because the supply elasticity is zero.
- One point is earned for stating that all of the burden of a per-unit tax falls on sellers.

**Part B**

## Unit 2.5-2.9 Practice APTest Questions



2 points:

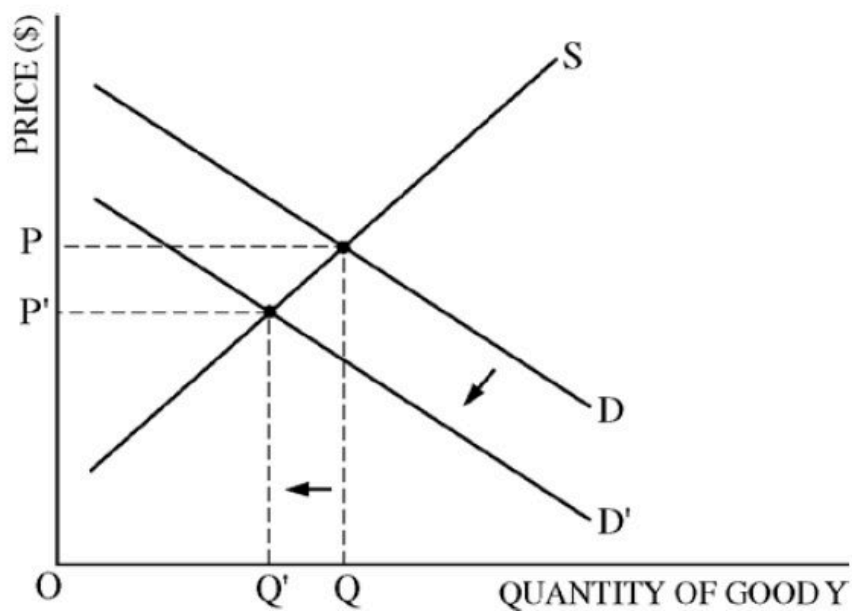
- One point is earned for a correctly labeled graph of supply and demand.
- One point is earned for showing a leftward shift of the demand curve and a decrease in the equilibrium price.

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

Student receives 2/2 point(s)

## Unit 2.5-2.9 Practice APTest Questions



2 points:

- One point is earned for a correctly labeled graph of supply and demand.
- One point is earned for showing a leftward shift of the demand curve and a decrease in the equilibrium price.

## Unit 2.5-2.9 Practice APTest Questions

65. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

In the small country of Anconia, shoes are produced in a perfectly competitive industry. The equilibrium market price for shoes is \$50 per pair. Anconia does not currently trade with other countries.

(a) Draw a correctly labeled graph of the shoe market in Anconia and indicate the following.

- (i) The equilibrium price in Anconia, labeled \$50
- (ii) The equilibrium quantity in Anconia, labeled  $Q_F$

(b) Now assume that Anconia opens its shoe market to international trade and starts trading shoes with other countries at the world price of \$30 per pair.

(i) On your graph in part (a), show each of the following for the shoe market in Anconia.

- The world price of shoes, labeled \$30
- The quantity of shoes supplied by producers in Anconia, labeled  $Q_P$
- The total quantity of shoes purchased by domestic consumers in Anconia, labeled  $Q_C$

(ii) Using labels from your graph, identify the quantity of shoes imported by Anconia.

(iii) Did consumers of shoes in Anconia benefit from opening up the shoe market to trade? Explain.

(iv) On your graph in part (a), show the domestic producer surplus in Anconia with trade, shaded completely.

(c) Now assume that the government of Anconia places a tariff on imported shoes. Relative to the free-trade outcomes in part (b), identify whether the following would increase, decrease, or remain the same as a result of the implementation of the tariff.

- (i) The price of shoes in Anconia
- (ii) The producer surplus of domestic shoe producers in Anconia

(d) Explain why a government might prefer to impose a tariff rather than an import quota.

Respond to all parts of the question:

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

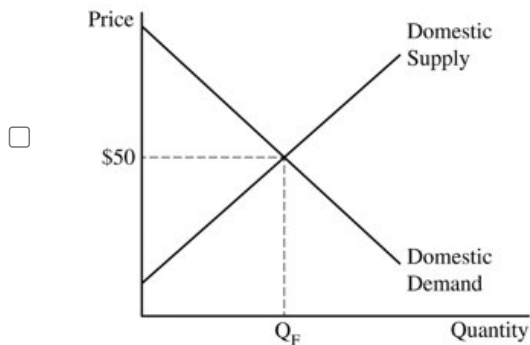


0

1

The response accurately includes the criterion below.

Draws a correctly labeled graph of the market for shoes in Anconia, with the equilibrium price labeled \$50, and the equilibrium quantity labeled  $Q_F$ .



## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

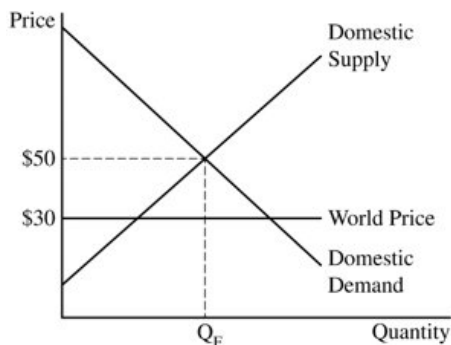
## Unit 2.5-2.9 Practice APTest Questions

✓

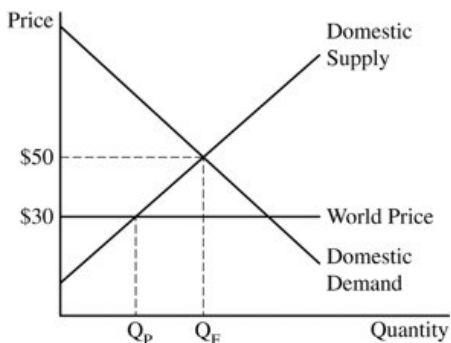
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|

The response accurately includes six of the criteria below.

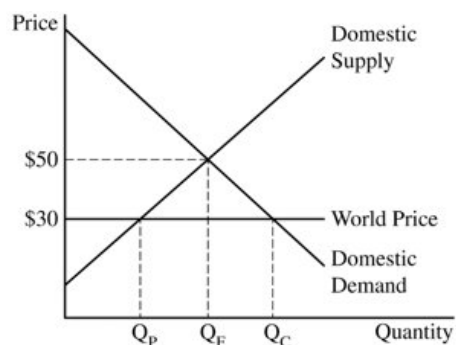
On the graph in part (a), shows the world price for shoes, labeled \$30.

☐

On the graph in part (a), shows the quantity of shoes supplied by domestic producers in Anconia, labeled  $Q_P$ .

☐

On the graph in part (a), shows the total quantity of shoes purchased by domestic consumers in Anconia, labeled  $Q_C$ .

☐☐

State that the quantity of shoes imported by Anconia is  $Q_C - Q_P$ .

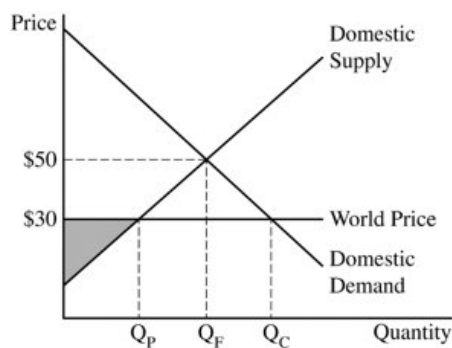
☐

State that yes, consumers of Anconia benefit from opening up the shoe market to trade and explains that the consumers will be able to buy more shoes at the lower world price.

On the graph in part (a), shows the area of domestic producer surplus, completely shaded.

☐

## Unit 2.5-2.9 Practice APTest Questions



## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response accurately includes two of the criteria below.

- ☐ States that the price of shoes will increase.
- ☐ States that the producer surplus of domestic shoe producers will increase.

## Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response accurately includes the criteria below.

- ☐ Explains that tariffs increase government revenue more than quotas do.

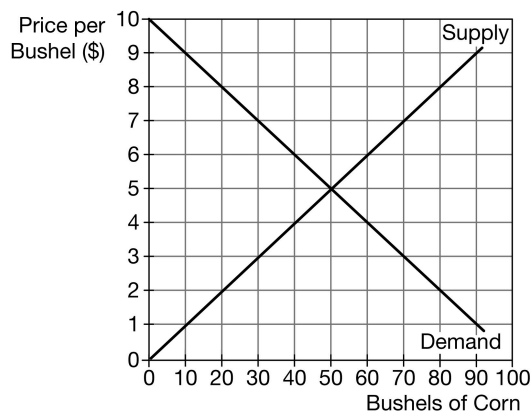
66. The fresh fish market is in equilibrium, and the demand is perfectly elastic. The imposition of a per-unit tax on sellers by the government will result in which of the following?
- (A) The equilibrium price will increase by the full amount of the tax, and consumers will bear the entire burden of the tax.
  - (B) The equilibrium price will remain unchanged, and consumers will bear the entire burden of the tax.
  - (C) The equilibrium price will increase by the full amount of the tax, and suppliers will bear the entire burden of the tax.
  - (D) The equilibrium price will remain unchanged, and suppliers will bear the entire burden of the tax. ✓
  - (E) The equilibrium price will increase by the full amount of the tax, and suppliers and consumers will bear the burden of the tax equally.

## Answer D

Correct. When the demand curve is perfectly elastic, the market price is determined by the demand. The imposition of a per-unit tax will cause the supply curve to shift up by the amount of the per-unit tax, resulting in a decrease in the equilibrium quantity with no change in the equilibrium price, since the demand is perfectly elastic. The share of the tax burden consumers and suppliers incur as the result of a tax is determined by the relative elasticities of supply and demand (whichever group has the lower elasticity bears the greatest burden of the tax).

## Unit 2.5-2.9 Practice APTest Questions

67. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.



The diagram above shows the market for corn in the country of Microland. Corn is produced and sold in a constant-cost, perfectly competitive market.

- (a) Calculate the total revenue earned by corn farmers at the market equilibrium price. Show your work.
- (b) In an attempt to assist corn farmers in Microland, the government sets a \$7 price floor on corn.
- (i) How many bushels of corn will be exchanged at the price floor?
- (ii) Calculate the deadweight loss associated with the price floor. Show your work.
- (iii) Assume the government agrees to buy the unsold quantity at \$7. Calculate the producer surplus. Show your work.
- (iv) Assume the price floor and the government buying program remain in effect. In addition, assume the demand for corn does not change. In the long run, will the quantity of corn purchased by the government increase, decrease, or remain the same? Explain.

Respond to all parts of the question:

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total revenue at the market price as \$250 and shows the work.

$$\text{Total Revenue} = (P \times Q) = (\$5 \times 50) = \$250$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.



|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

The response accurately includes the four criteria below.

- ☐ States that the quantity exchanged at the price floor will be 30 bushels.

Calculates the deadweight loss as \$40 and shows the work.

☐ 
$$\text{Deadweight loss} = \frac{(\$7 - \$3) \times (50 - 30)}{2} = \frac{\$80}{2} = \$40$$

## Unit 2.5-2.9 Practice AP Test Questions

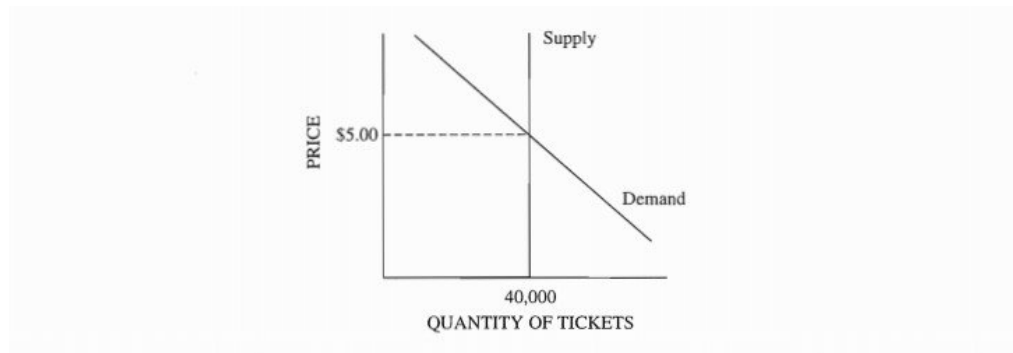
- ☐ Calculates the producer surplus as \$245 and shows the work.
- ☐ Producer surplus =  $\frac{(\$7 - \$0) \times (70 - \$0)}{2} = \frac{\$490}{2} = \$245$
- ☐ States that the quantity of corn purchased by the government will increase and explains that this happens because the price floor leads to short-run economic profits for typical firms, which incentivizes new firms to enter the market, leading to an increase in the market supply of corn and/or because the market supply becomes more elastic in the long run.

68. Which of the following best illustrates the concept of consumer surplus?

- (A) A thirsty athlete pays 0.85 for a cold drink when she would have gladly paid 1.50 for the drink. ✓
- (B) An individual who is willing to accept a job at 7.50 per hour is offered 7.00 per hour.
- (C) An individual pays the sale price of 15.00 for the same shirt that the individual refused to purchase earlier at 18.00.
- (D) An individual finds that the price of artichokes, a food she dislikes, has been reduced by 50 percent.
- (E) A wood-carver has a marginal cost of 5.00 for a unit of output, but sells that unit at 6.00.

## Unit 2.5-2.9 Practice APTest Questions

69.



The Toledo arena holds a maximum of 40,000 people, as indicated in the graph above. Each year the circus holds eight performances, all of which are sold out.

- a. Analyze the effect on each of the following of the addition of a fantastic new death-defying trapeze act that increases the demand for tickets.
  - i. The price of tickets
  - ii. The quantity of tickets sold
- b. The city of Toledo institutes an effective price ceiling on tickets. Explain where the price ceiling would be set. Explain the impact of the ceiling on each of each of the following.
  - i. The quantity of tickets demanded
  - ii. The quantity of tickets supplied
- c. Will everyone who attends the circus pay the ceiling price set by the city of Toledo? Why or why not?

Respond to all parts of the question.

**Part A****2 Points**

- 1 - Price increases as a result of the demand increase
- 1 - Quantity remains the same



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The student earns all of the following points:

- 1 - Price increases as a result of the demand increase
- 1 - Quantity remains the same

**Part B****2 Points**

- 1 - Setting the price ceiling below the equilibrium price.
- 1 - Quantity demanded increases
- 1/2 - Quantity supplied unchanged

## Unit 2.5-2.9 Practice APTest Questions

✓

|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The student earns all of the following points:

- 1 - Setting the price ceiling below the equilibrium price.
- 1 - Quantity demanded increases
- 1/2 - Quantity supplied unchanged

## Part C

## 1 Point

1 - for no, a secondary market or reselling of tickets or scalping of tickets will have some circus-goers paying more than the ceiling price.

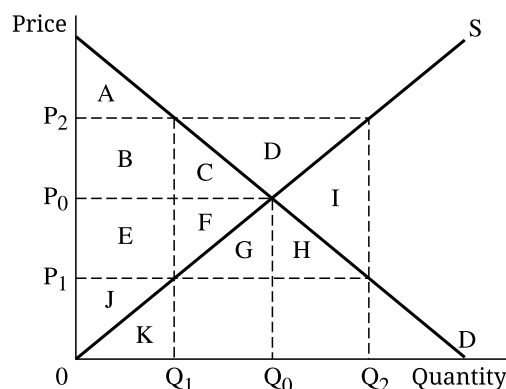
✓

|   |   |
|---|---|
| 0 | 1 |
|---|---|

The student earns all of the following points:

- 1 - for no, a secondary market or reselling of tickets or scalping of tickets will have some circus-goers paying more than the ceiling price.

70.



The efficient market outcome shown in the graph provided is

- (A) at price  $P_1$ , quantity  $Q_1$ , and total economic surplus is  $J + K$
- (B) at price  $P_2$ , quantity  $Q_2$ , and total economic surplus is  $B + C + D + E + F + G + H + I$
- (C) at price  $P_0$ , quantity  $Q_0$ , and total economic surplus is  $B + C + E + F$
- (D) at price  $P_0$ , quantity  $Q_0$ , and total economic surplus is  $A + B + C + E + F$
- (E) at price  $P_0$ , quantity  $Q_0$ , and total economic surplus is  $A + B + C + E + F + J$

✓

## Answer E

Correct. The efficient market outcome occurs at the intersection of the supply and demand curves  $P_0$  and  $Q_0$  and where the sum of consumer surplus ( $A + B + C$ ) and producer surplus ( $E + F + J$ ) is maximized, which comprises total economic surplus.

## Unit 2.5-2.9 Practice APTest Questions

71. A decrease in the cost of land devoted for building townhouses will most likely cause which of the following?

- (A) The supply curve of townhouses will shift to the left.
- (B) The demand curve for townhouses will become more elastic.
- (C) The price of townhouses will increase.
- (D) The supply of townhouses will increase.
- (E) There will be less incentive to build townhouses.

**Answer D**

Correct. A decrease in the cost of land represents a decrease in input costs for developers and will therefore cause the supply of townhouses to increase.

72. Consumer surplus is defined as

- (A) opportunity cost minus total revenue
- (B) total revenue minus opportunity cost
- (C) the difference between the resource costs and the price that consumers pay
- (D) the difference between the value that consumers place on a good and the price they pay
- (E) the sum of external costs and benefits

73. The American Heart Association has just issued a report warning consumers about the negative health effects of eating beef. Which of the following changes in the beef market is most likely to occur as a result?

- (A) The supply curve will shift to the left, increasing the price of beef.
- (B) The demand curve will shift to the left, decreasing the price of beef.
- (C) The demand curve will shift to the right, increasing the price of beef.
- (D) Neither the supply nor demand curve will shift; only quantity will increase as price decreases.
- (E) Neither the supply nor demand curve will shift; only quantity will decrease as prices increases.

74. In a perfectly competitive market, which of the following shifts in the supply and demand curves will definitely cause both equilibrium price and quantity to decrease?

| (A) | Supply Curve        | Demand Curve        |
|-----|---------------------|---------------------|
|     | Shifts to the left  | Shifts to the left  |
| (B) | Supply Curve        | Demand Curve        |
|     | Shifts to the left  | No shift            |
| (C) | Supply Curve        | Demand Curve        |
|     | Shifts to the right | Shifts to the right |
| (D) | Supply Curve        | Demand Curve        |
|     | No shift            | Shifts to the right |
| (E) | Supply Curve        | Demand Curve        |
|     | No shift            | Shifts to the left  |

## Unit 2.5-2.9 Practice APTest Questions

75. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Yanick derives from consuming two goods, Good A and shirts.

| Quantity of Good A | Marginal Benefit of Good A | Quantity of Shirts | Marginal Benefit of Shirts |
|--------------------|----------------------------|--------------------|----------------------------|
| 1                  | \$64                       | 1                  | \$48                       |
| 2                  | \$40                       | 2                  | \$40                       |
| 3                  | \$24                       | 3                  | \$32                       |
| 4                  | \$12                       | 4                  | \$24                       |
| 5                  | \$4                        | 5                  | \$16                       |
| 6                  | \$0                        | 6                  | \$8                        |

Yanick has a limited weekly income of 10, and he spends it all on Good A and shirts. Assume the price of Good A is 2 per unit and the price of each shirt is \$4.

- Given his weekly income, would Yanick be able to buy 2 units of Good A and 2 shirts? Explain using numbers.
- Calculate the total consumer surplus from Good A if Yanick consumes 3 units of Good A. Show your work.
- Identify the quantity of Good A and the quantity of shirts that will maximize Yanick’s total benefit given his weekly income. Explain using marginal analysis.
- Assume Good A is produced in a perfectly competitive market and that there is an increase in the number of consumers in the market for Good A.
  - Will the quantity of Good A that will maximize Yanick’s total benefit increase, decrease, or stay the same? Explain.
  - Would Yanick’s total consumer surplus from Good A if he consumes 3 units of Good A increase, decrease, or stay the same compared to your answer in part (b)? Explain.

Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that no Yanick would not be able to consume 2 units of Good A and 2 shirts and explains that his total expenditures would be \$12 ( $= \$2 \times 2 + \$4 \times 2$ ), which is greater than his weekly income of \$10.

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response calculates the total consumer surplus as \$128 and shows the work.

$$\begin{aligned}\text{Total Consumer Surplus} &= \text{Total Benefit} - \text{Total Expenditures} \\ &= \$128 - \$6 = \$122\end{aligned}$$

## Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

## Unit 2.5-2.9 Practice APTest Questions



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 3 units of Good A and 1 shirt will maximize Yanick's total benefit given his weekly income of \$10 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good A (12) is equal to the ratio of the marginal benefit to the price of shirts (12), or

$$\frac{MB_{\text{Good A}}}{Price_{\text{Good A}}} = \frac{MB_{\text{Shirts}}}{Price_{\text{Shirts}}}$$

$$\frac{\$24}{\$2} = \frac{\$48}{\$4}$$

$$12 = 12$$

**Part D**

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |   |
|---|---|---|
| 0 | 1 | 2 |
|---|---|---|

The response does both of the following:

- States that the quantity of Good A that will maximize Yanick's total benefit will decrease and explains that an increase in the number of consumers in the market for Good A will increase the demand for Good A, which will increase the price of Good A and decrease the marginal benefit per dollar spent that Yanick gets from each additional unit of the good.
- States that Yanick's total consumer surplus would decrease and explains that an increase in the price of Good A would increase the total cost of consuming 3 units of Good A while the total benefit of consuming 3 units of Good A remains the same.

## Unit 2.5-2.9 Practice APTest Questions

76. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to “Calculate,” you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Zeynep derives from consuming two goods, Good H and slices of pizza.

| Quantity of Good H | Total Benefit of Good H | Slices of Pizza | Total Benefit of Pizza |
|--------------------|-------------------------|-----------------|------------------------|
| 0                  | \$0                     | 0               | \$0                    |
| 1                  | \$100                   | 1               | \$15                   |
| 2                  | \$148                   | 2               | \$27                   |
| 3                  | \$172                   | 3               | \$36                   |
| 4                  | \$184                   | 4               | \$42                   |
| 5                  | \$190                   | 5               | \$45                   |
| 6                  | \$192                   | 6               | \$45                   |

Zeynep has a limited weekly income of 12, and she spends it all on Good H and slices of pizza. Assume the price of Good H is 2 per unit and the price of a slice of pizza is \$1.

- (a) Identify the quantity of Good H and slices of pizza that will maximize Zeynep’s total benefit given her weekly income. Explain using marginal analysis.
- (b) Calculate Zeynep’s consumer surplus from the second slice of pizza. Show your work.
- (c) If Zeynep’s weekly income decreases from 12 to 10, would Zeynep be able to buy 5 units of Good H and 3 slices of pizza? Explain using numbers.
- (d) Suppose that pizza is produced in a perfectly competitive market and the price of cheese, an input to the production of pizza, increases. If pizza is a normal good, will the number of slices of pizza that will maximize Zeynep’s total benefit increase, decrease, or stay the same? Explain.
- (e) Suppose instead that the price of Good H decreases by 3% and Zeynep buys 6% more of Good H and 2% less of Good Z. Based on this change, identify whether Good H and Good Z are substitutes, complements, or not related. Explain using numbers.
- Respond to all parts of the question.

## Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies that 4 units of Good H and 4 slices of pizza will maximize Zeynep’s total benefit given her weekly income of \$12 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good H (6) is equal to the marginal benefit to the price of slices of pizza (6), or

$$\frac{MB_{\text{Good H}}}{\text{Price}_{\text{Good H}}} = \frac{MB_{\text{Slices of Pizza}}}{\text{Price}_{\text{Slices of Pizza}}}$$

$$\frac{\$12}{\$2} = \frac{\$6}{\$1}$$

$$6 = 6$$

## Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

## Unit 2.5-2.9 Practice APTest Questions

The response calculates consumer surplus as \$11 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \$12 - 1 = \$11$$

### Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that no, Zeynep would not be able to buy 5 units of Good H and 3 slices of pizza and explains that her total expenditures would be \$13 ( $= \$2 \times 5 + \$1 \times 3$ ), which is greater than her weekly income of \$10.

### Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response states that the number of slices of pizza that will maximize Zeynep's total benefit will decrease and explains that an increase in the price of an input to production will decrease the supply of pizza, which will increase the price of pizza, and an increase in the price of pizza would increase the total cost of pizza purchased while the total benefit remains the same.

### Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.



|   |   |
|---|---|
| 0 | 1 |
|---|---|

The response identifies Good H and Good Z as substitutes and explains that the cross-price elasticity of demand is positive because a 3% decrease in the price of Good H led to a 2% decrease in the demand for Good Z.