

**KEY CONCEPTS**

welfare economics, p. 136  
 willingness to pay, p. 136  
 consumer surplus, p. 137

cost, p. 141  
 producer surplus, p. 141

efficiency, p. 145  
 equality, p. 146

**QUESTIONS FOR REVIEW**

1. Explain how buyers' willingness to pay, consumer surplus, and the demand curve are related.
2. Explain how sellers' costs, producer surplus, and the supply curve are related.
3. Why does a reduction in the price of a good increase consumer surplus?
4. What is efficiency? Is it the only goal of economic policymakers?
5. What does the invisible hand do?
6. Name two types of market failure. Explain why each may cause market outcomes to be inefficient.

**PROBLEMS AND APPLICATIONS**

1. Melissa buys an iPod for \$100 and gets consumer surplus of \$80.
  - a. What is her willingness to pay?
  - b. If she had bought the iPod on sale for \$70, what would her consumer surplus have been?
  - c. If the price of an iPod were \$200, what would her consumer surplus have been?
2. An early freeze in California sours the lemon crop. Explain what happens to consumer surplus in the market for lemons. Explain what happens to consumer surplus in the market for lemonade. Illustrate your answers with diagrams.
3. Suppose the demand for French bread rises. Explain what happens to producer surplus in the market for French bread. Explain what happens to producer surplus in the market for flour. Illustrate your answers with diagrams.
4. It is a hot day, and Bert is thirsty. Here is the value he places on a bottle of water:

Value of first bottle	\$7
Value of second bottle	5
Value of third bottle	3
Value of fourth bottle	1

- a. From this information, derive Bert's demand schedule. Graph his demand curve for bottled water.

- b. If the price of a bottle of water is \$4, how many bottles does Bert buy? How much consumer surplus does Bert get from his purchases? Show Bert's consumer surplus in your graph.
  - c. If the price falls to \$2, how does quantity demanded change? How does Bert's consumer surplus change? Show these changes in your graph.
5. Ernie owns a water pump. Because pumping large amounts of water is harder than pumping small amounts, the cost of producing a bottle of water rises as he pumps more. Here is the cost he incurs to produce each bottle of water:

Cost of first bottle	\$1
Cost of second bottle	3
Cost of third bottle	5
Cost of fourth bottle	7

- a. From this information, derive Ernie's supply schedule. Graph his supply curve for bottled water.
- b. If the price of a bottle of water is \$4, how many bottles does Ernie produce and sell? How much producer surplus does Ernie get from these sales? Show Ernie's producer surplus in your graph.
- c. If the price rises to \$6, how does quantity supplied change? How does Ernie's producer

surplus change? Show these changes in your graph.

6. Consider a market in which Bert from Problem 4 is the buyer and Ernie from Problem 5 is the seller.
  - a. Use Ernie's supply schedule and Bert's demand schedule to find the quantity supplied and quantity demanded at prices of \$2, \$4, and \$6. Which of these prices brings supply and demand into equilibrium?
  - b. What are consumer surplus, producer surplus, and total surplus in this equilibrium?
  - c. If Ernie produced and Bert consumed one fewer bottle of water, what would happen to total surplus?
  - d. If Ernie produced and Bert consumed one additional bottle of water, what would happen to total surplus?
7. Use the concept of total surplus to analyze the following statement: "You can't have too much of a good thing."
8. The cost of producing flat-screen TVs has fallen over the past decade. Let's consider some implications of this fact.
  - a. Draw a supply-and-demand diagram to show the effect of falling production costs on the price and quantity of flat-screen TVs sold.
  - b. In your diagram, show what happens to consumer surplus and producer surplus.
  - c. Suppose the supply of flat-screen TVs is very elastic. Who benefits most from falling production costs—consumers or producers of these TVs?
9. There are four consumers willing to pay the following amounts for haircuts:
 

Jerry: \$7	Oprah: \$2	Ellen: \$8	Phil: \$5
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There are four haircutting businesses with the following costs:

Firm A: \$3	Firm B: \$6	Firm C: \$4	Firm D: \$2
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Each firm has the capacity to produce only one haircut. For efficiency, how many haircuts should be given? Which businesses should cut hair and which consumers should have their hair cut? How large is the maximum possible total surplus?
10. Suppose a technological advance reduces the cost of making computers.
  - a. Draw a supply-and-demand diagram to show what happens to price, quantity, consumer surplus, and producer surplus in the market for computers.
  - b. Computers and typewriters are substitutes. Use a supply-and-demand diagram to show what happens to price, quantity, consumer surplus, and producer surplus in the market for typewriters. Should typewriter producers be happy or sad about the technological advance in computers?
  - c. Computers and software are complements. Draw a supply-and-demand diagram to show what happens to price, quantity, consumer surplus, and producer surplus in the market for software. Should software producers be happy or sad about the technological advance in computers?
  - d. Does this analysis help explain why software producer Bill Gates is one of the world's richest men?
11. A friend of yours is considering two cell phone service providers. Provider A charges \$120 per month for the service regardless of the number of phone calls made. Provider B does not have a fixed service fee but instead charges \$1 per minute for calls. Your friend's monthly demand for minutes of calling is given by the equation  $Q^D = 150 - 50P$ , where  $P$  is the price of a minute.
  - a. With each provider, what is the cost to your friend of an extra minute on the phone?
  - b. In light of your answer to (a), how many minutes would your friend talk on the phone with each provider?
  - c. How much would he end up paying each provider every month?
  - d. How much consumer surplus would he obtain with each provider? (Hint: Graph the demand curve and recall the formula for the area of a triangle.)
  - e. Which provider would you recommend that your friend choose? Why?
12. Consider how health insurance affects the quantity of healthcare services performed. Suppose that the typical medical procedure has a cost of \$100, yet a person with health insurance pays only \$20 out of pocket. Her insurance company pays the remaining \$80. (The insurance company recoups the \$80 through premiums, but the premium a person pays does not depend on how many procedures that person chooses to undertake.)
  - a. Draw the demand curve in the market for medical care. (In your diagram, the

horizontal axis should represent the number of medical procedures.) Show the quantity of procedures demanded if each procedure has a price of \$100.

- b. On your diagram, show the quantity of procedures demanded if consumers pay only \$20 per procedure. If the cost of each procedure to society is truly \$100, and if individuals have health insurance as just described, will the number of procedures performed maximize total surplus? Explain.

- c. Economists often blame the health insurance system for excessive use of medical care. Given your analysis, why might the use of care be viewed as "excessive"?
- d. What sort of policies might prevent this excessive use?

For further information on topics in this chapter, additional problems, applications, examples, online quizzes, and more, please visit our website at [www.cengage.com/international](http://www.cengage.com/international).