1-1. Define economics. Explain briefly how the economic way of thinking—in terms of rational, self-interested people responding to incentives—relates to each of the following situations. (See pages 2, 6–7.)

a. A student deciding whether to purchase a text- book for a particular class
b. Government officials seeking more funding for mass transit through higher taxes
c. A municipality taxing hotel guests to obtain funding for a new sports stadium

Economics is the study of how individuals allocate limited resources to satisfy unlimited wants.

a. Among the factors that a rational, self-interested student will take into account are her income, the price of the textbook, her anticipation of how much she is likely to study the textbook, and how much studying the book is likely to affect her grade.

b. A rational, self-interested government official will, for example, recognize that higher taxes will raise more funds for mass transit while making more voters, who have limited resources, willing to elect other officials.

c. A municipality's rational, self-interested government will, for instance, take into account that higher hotel taxes will produce more funds if as many visitors continue staying at hotels, but that the higher taxes will also discourage some visitors from spending nights at hotels.

1-3. Does the phrase "unlimited wants and limited resources" apply to both a low-income household and a middle-income household? Can the same phrase be applied to a very high-income household? (See page 2.)

Because wants are unlimited, the phrase applies to very high-income households as well as low- and middle-income households. Consider, for instance, a household with a low income and unlimited wants at the beginning of the year. The household's wants will still remain unlimited if it becomes a high-income household later in the year.

1-5. One of your classmates, Sally, is a hardworking student, serious about her classes, and conscientious about her grades. Sally is also involved, however, in volunteer activities and an extracurricular sport. Is Sally displaying rational behavior? Based on what you read in this chapter, construct an argument supporting the conclusion that she is. (See pages 6–8.)

Sally is displaying rational behavior if all of these activities are in her self-interest. For example, Sally likely derives intrinsic benefit from volunteer and extracurricular activities and may believe that these activities, along with good grades, improve her prospects of finding a job after she completes her studies. Hence, these activities are in her self-interest even though they reduce some available study time.

1-7. Explain, in your own words, the rationality assumption, and contrast it with the assumption of bounded rationality proposed by adherents of behavioral economics. (See pages 6–7, 10–11.)

The rationality assumption states that people do not intentionally make choices that leave them worse off. The bounded rationality hypothesis suggests that people are *almost*, but not completely, rational.

1-9. Why does the assumption of bounded rationality suggest that people might use rules of thumb to guide their decision making instead of considering every possible choice available to them? (See page 10.)

Suppose that there is a change in the environment that a person faces, and the person adjusts to this change as predicted by the rationality assumption. If the new environment becomes predictable, then the individual who actually behaves as predicted by the traditional rationality assumption may settle into behavior that *appears* to involve repetitive applications of a rule of thumb.

1-11. For each of the following approaches that an economist might follow in examining a decision-making process, identify whether the approach relies on the rationality assumption or on the assumption of bounded rationality. (See page 10.)

    a. An economic study of the number of online searches that individuals conduct before selecting a particular item to purchase online presumes that people are interested only in their own satisfaction, pursue their ultimate objectives, and consider every relevant option.

    b. An economist seeking to predict the effect that an increase in a state's sales tax rate will have on consumers' purchases of goods and services presumes that people are limited in their ability to process information about how the tax-rate increase will influence the after-tax prices those consumers will pay.

    c. To evaluate the impact of an increase in the range of choices that an individual confronts when deciding among devices for accessing the Internet, an economic researcher makes the assumption that the individual is unable to take into account every new Internet-access option available to her.

    a. Rationality assumption
    b. Bounded rationality
    c. Bounded rationality

1-13. Consider two models for estimating, in advance of an election, the shares of votes that will go to rival candidates. According to one model, pollsters' surveys of a randomly chosen set of registered voters before an election can be used to forecast the percentage of votes that each candidate will receive. The above model relies on the assumption that unpaid survey respondents will give truthful responses about how they will vote and that they will actually cast a ballot in the election. The other model uses prices of financial assets (legally binding IOUs) issued by the Iowa Electronic Markets, operated by the University of Iowa, to predict electoral outcomes. The final payments received by owners of these assets, which can be bought or sold during the weeks and days preceding an election, depend on the shares of votes the candidates actually end up receiving. This second model assumes that owners of these assets wish to earn the highest possible returns, and it predicts that the market prices of these assets provide an indication of the percentage of votes that each candidate will actually receive on the day of the election. (See pages 8–9.)

    a. Which of these two models for forecasting electoral results is more firmly based on the rationality assumption of economics?

    b. How would an economist evaluate which is the better model for forecasting electoral outcomes?

    a. The model using prices from the Iowa Electronic Market is based more firmly on the rationality assumption because people who trade assets on this exchange based on poor forecasts actually experience losses. This gives them a strong incentive to make the best possible forecasts. Unpaid respondents to opinion polls have less incentive to give truthful answers about whether and how they will vote.

    b. An economist would develop a means of evaluating whether prices in the Iowa Electronic Market or results of opinion polls did a better job of matching actual electoral outcomes.

1-15. Based on your answer to Problem 1–14, categorize each of the following conclusions as resulting from positive analysis or normative analysis. (See pages 11–12.)

    a. A higher minimum wage will reduce employment opportunities for minimum wage workers.

    b. Increasing the earnings of minimum wage employees is desirable, and raising the minimum wage is the best way to accomplish this.

    c. Everyone should enjoy open access to health care at no explicit charge.

    d. Heath-care subsidies will increase the consumption of health care.

    a. Positive
    b. Normative
    c. Normative
    d. Positive

2-1. Define opportunity cost. What is your opportunity cost of attending a class at 11:00 A.M.? How does it differ from your opportunity cost of attending a class at 8:00 A.M.? (See pages 31–32.)

The opportunity cost of attending a class at 11:00 A.M. is the next-highest-valued use of that hour of the day. Likewise, the opportunity cost of attending an 8:00 A.M. class is the next-highest-valued use of that particular hour of the day. If you are an early riser, it is arguable that the opportunity cost of the 8:00 A.M. hour is lower because you will already be up at that time, but you will have fewer choices compared with the 11:00 A.M. hour when shops, recreation centers, and the like are open. If you are a late riser, it may be that the opportunity cost of the 8:00 A.M. hour is higher because you place a relatively high value on an additional hour of sleep in the morning.

2-3. You and a friend decide to spend $100 each on concert tickets. Each of you alternatively could have spent the $100 to purchase a textbook, a meal at a highly rated local restaurant, or several Internet movie downloads. As you are on the way to the concert, your friend tells you that if she had not bought the concert ticket, she would have opted for a restaurant meal, and you reply that you otherwise would have downloaded several movies. Identify the relevant opportunity costs for you and your friend of the concert tickets that you purchased. Explain briefly. (See pages 31–32.)

The opportunity cost is the cost of the single, next-highest-valued foregone alternative to the $100 spent on the concert ticket, which for your friend was a restaurant meal she otherwise could have purchased and which for you was movie downloads that you otherwise could have bought.

2-5. Recently, a woman named Mary Krawiec attended an auction in Troy, New York. At the auction, a bank was seeking to sell a foreclosed property: a large Victorian house suffering from years of neglect in a neighborhood in which many properties had been on the market for years yet remained unsold. Her $10 offer was the highest bid in the auction, and she handed over a $10 bill for a title to ownership. Once she acquired the house, however, she became responsible for all taxes on the property and for an overdue water bill of $2,000. In addition, to make the house habitable, she and her husband devoted months of time and unpaid labor to renovating the property. In the process, they incurred explicit expenses totaling $65,000. Why do you suppose that the bank was willing to sell the house to Ms. Krawiec for only $10? (Hint: Contemplate the bank's expected gain, net of all explicit and opportunity costs, if it had attempted to make the house habitable. (See pages 31–32.)

The bank apparently determined that the net gain that it anticipated receiving from trying to sell the house to someone else, taking into account the opportunity cost of resources that the bank would have had to devote to renovating the house, was less than $10.

2-7. Based on the information provided in Problem 2-6, what is the opportunity cost to this student of allocating enough additional study time on economics to move her grade up from a 90 to a 100? (See page 33.)

If the student allocates additional study time to economics in order to increase her score from 90 to 100, her biology score declines from 50 to 40, so the opportunity cost of earning 10 additional points in economics is 10 fewer points in biology.

2-9. Construct a production possibilities curve for a nation facing increasing opportunity costs for producing food and video games. Show how the PPC changes given the following events. (See page 35.)

a. **A new and better fertilizer is invented.**
b. **Immigration occurs, and immigrants' labor can be employed in both the agricultural sector and the video game sector.**
c. **People invent a new programming language that is much less costly to code and is more memory-efficient.**
d. **A heat wave and drought result in a 10 percent decrease in usable farmland.**

Video Games
(a)

Video Games
(b)

Video Games
(c)

Video Games
(d)
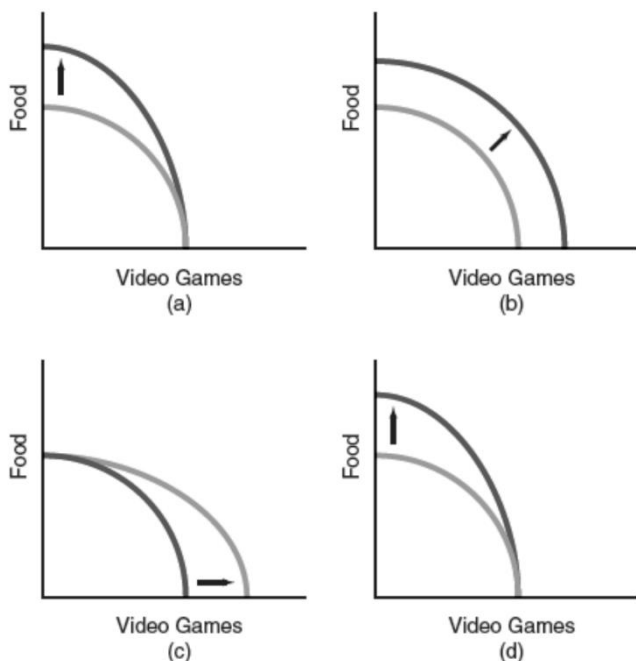
2-11. In response to Senator Creighton's statement reported in Problem 2-10, Senator Long replies, "We must remain at our current production combination if we want to be able to produce more consumption goods in the future." Of the labeled points on the diagram, which one could depict the future production combination Senator Long has in mind? (See page 35.)

Point D

2-13. A nation's residents can allocate their scarce resources either to producing consumption goods or to producing human capital—that is, providing themselves with training and education. (See pages 36–37.) The table at the top of next column displays the production possibilities for this nation:

   a. Suppose that the nation's residents currently produce combination A. What is the opportunity cost of increasing production of consumption goods by 10 units? By 60 units?
   b. Does the law of increasing additional cost hold true for this nation? Why or why not?

Production Combination	Units of Consumption Goods	Units of Human Capital
A	0	100
B	10	97
C	20	90
D	30	75
E	40	55
F	50	30
G	60	0

   a. If the nation's residents increase production of consumption goods from 0 units to 10 units, the opportunity cost is 3 units of human capital forgone. If the nation's residents increase