KEY TERMS[3]

constant-sum game (19)
cooperative game (24)
decision (16)
equilibrium (30)
evolutionary game (32)
expected payoff (26)
game (16)
information (21)
noncooperative game (24)
payoff (26)
rational behavior (27)
screening (22)
screening devices (22)
sequential moves (18)
signaling (22)
signals (22)
simultaneous moves (18)
strategies (25)
zero-sum game (19)

EXERCISES

1. Determine which of the following situations describe games and which describe decisions. In each case, indicate what specific features of the situation caused you to classify it as you did.
   (a) A group of grocery shoppers choosing what flavor of yogurt to purchase
   (b) A pair of teenage girls choosing dresses for their prom
   (c) A college student considering what type of postgraduate education to pursue
   (d) Microsoft and Netscape choosing prices for their Internet browsers
   (e) A state gubernatorial candidate picking a running mate

2. Consider the strategic games described below. In each case, state how you would classify the game according to the six dimensions outlined in the text: whether moves are sequential or simultaneous, whether the game is zero-sum, whether the game is repeated, whether there is full information, whether the rules are fixed, and whether cooperative agreements are possible. If you do not have enough information to classify a game in a particular dimension, explain why not.
   (a) *Rock–Paper–Scissors:* On the count of three, each player makes the shape of one of the three items with his hand. Rock beats scissors, scissors beats paper, and paper beats rock.
   (b) *Roll-call voting:* Voters cast their votes orally as their names are called. In a two-candidate election, the candidate with the most votes wins.
   (c) *Sealed-bid auction:* Bidders seal their bids in envelopes for a bottle of wine. The highest bidder wins the item and pays his bid.

[3]The number in parentheses after each key term represents the page where that term is defined or discussed.

3. "A game player would never prefer an outcome in which every player gets a little profit to an outcome in which he gets all the available profit." Is this statement true or false? Explain why in one or two sentences.

4. You and a rival are engaged in a game in which there are three possible outcomes: you win, your rival wins (you lose), and the two of you tie. You get a payoff of 50 if you win, a payoff of 20 if you tie, and a payoff of zero if you lose. What is your expected payoff in each of the following situations:
   (a) There is a 50% chance that the game ends in a tie, but only a 10% chance that you win. (There is thus a 40% chance that you lose.)
   (b) There is a 50-50 chance that you win or lose. There are no ties.
   (c) There is an 80% chance that you lose and a 10% chance that you win or that you tie.

5. Explain the difference between game theory's use as a predictive tool and its use as a prescriptive tool. In what types of real-world settings might these two uses be most important?