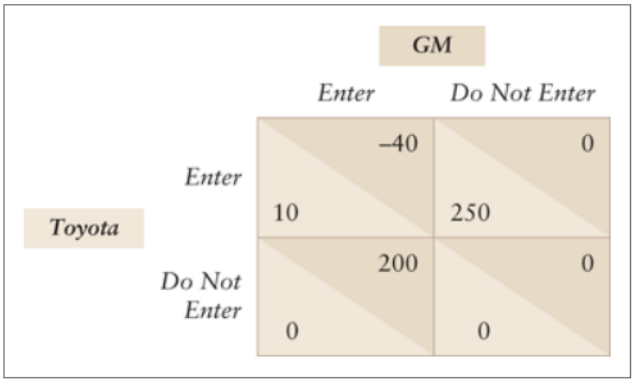
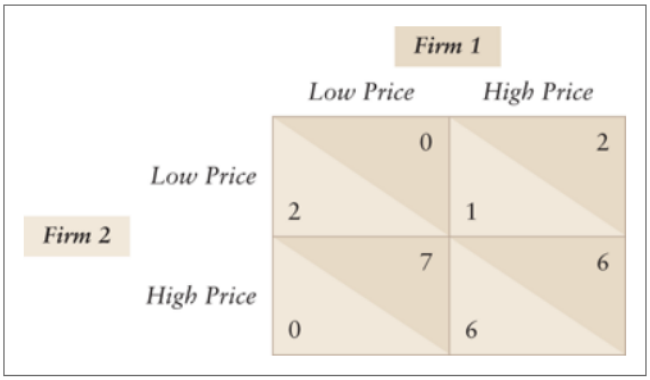
6 Game Theory

***1.4** Suppose that Toyota and GM are considering entering a new market for electric automobiles and that their profits (in millions of dollars) from entering or staying out of the market are



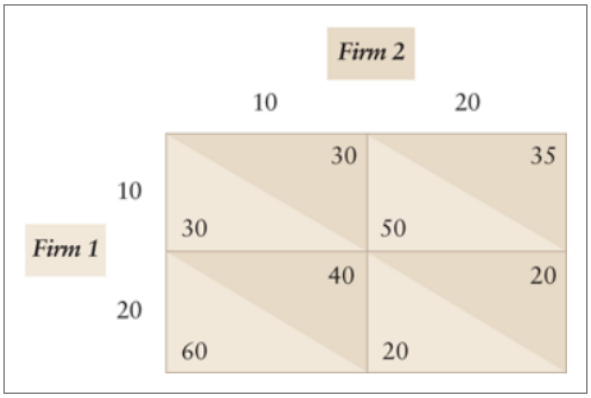
If the firms make their decisions simultaneously, do either or both firms enter? How would your answer change if the U.S. government committed to paying GM a lump-sum subsidy of $50 million on the condition that it would produce this new type of car?

***1.12** Two firms face the following payoff matrix:



Given these profits, Firm 2 wants to match Firm 1's price, but Firm 1 does not want to match Firm 2's price. Does either firm have a dominant strategy? Does this game have a unique, pure-strategy Nash equilibrium? Identify all pure- and mixed-strategy Nash equilibria. (*Hint*: See Solved Problems 14.1 and 14.2.) **A**

*3.1 Two firms are planning to sell 10 or 20 units of their goods and face the following profit matrix:



a. What is the Nash equilibrium if both firms make their decisions simultaneously?

b. Draw the game tree if Firm 1 can decide first. What is the outcome? Why?

c. Draw the game tree if Firm 2 can decide first. What is the outcome? Why?

*3.13 Before entry, the incumbent earns a monopoly profit of $\pi_m = \$10$ (million). If entry occurs, the incumbent and entrant each earn the duopoly profit, $\pi_d = \$3$. Suppose that the incumbent can induce the government to require all firms to install pollution-control devices that cost each firm \$4. Show the game tree. Should the incumbent urge the government to require pollution-control devices? Why or why not?