Additional Practice

1. Kathy runs cross country and plays basketball and softball. For each sport, she received a uniform with a randomly assigned number between 0 and 99 printed on it.

  a. What is the probability that all of Kathy's uniforms have odd numbers? Explain your reasoning.

  b. What is the probability that all of Kathy's uniforms have even numbers?

  c. What is the probability that one of Kathy's uniforms has an even number and the other two have odd numbers? Explain.

2. To play the Nickel Game, a player tosses two nickels at the same time. If both nickels land tails up, the player wins $1. If both nickels land heads up, the player wins $2. Otherwise, the player wins nothing.

  a. If it costs $1 to play the Nickel Game, how much could a player expect to win or lose if he or she plays the game 12 times? Explain.

  b. At next year's carnival, the game committee wants to charge prices that will allow players to break even. How much should they charge to play the Nickel Game? Explain.

3. In the Ring Toss game, a player tosses a ring at a group of bottles. If the ring goes over a bottle, the player wins a prize. The attendant at the Ring Toss game tells Ben that his chances of winning are 50% because when Ben tosses a ring, it will either go over a bottle or it will not. Do you believe the attendant? Explain.

Additional Practice *(continued)*

4. Two teams, Eagles and Falcons, are going to play a championship series of 3 games. The teams are evenly matched, so they have the same chance of winning each game.

   a. What is the probability that the Eagles win the first game? The Falcons?

   b. If the Eagles win the first game, what is the probability that the Eagles win the second game? The Falcons?

   c. If the Eagles win the first game, what is the probability that the series ends in two games?

   d. If the Eagles win the first game and the Falcons win the second game, what is the probability that the Eagles win the series?

   e. If the Eagles win the first game and the Falcons win the second game, what is the probability that the Falcons win the series?

5. Suppose the Eagles are twice as likely as the Falcons to win each game.

   a. What is the probability that the Eagles win the first game? The Falcons?

   b. If the Eagles win the first game, what is the probability that the Eagles win the second game? The Falcons?

   c. If the Eagles win the first game, what is the probability that the series ends in two games?

   d. If the Eagles win the first game and the Falcons win the second game, what is the probability that the Eagles win the series?

   e. If the Eagles win the first game and the Falcons win the second game, what is the probability that the Falcons win the series?

Additional Practice (continued)

6. a. Suppose the Crawfords have three children. Assume that the probability of a boy or a girl is $\frac{1}{2}$ for each birth. List the possible outcomes.

b. What is the probability that exactly two of the Crawfords' children are boys and the boys are born in a row?

c. What is the probability that the Crawfords have at least two boys born in a row?

d. Explain why the answers to parts (b) and (c) are not the same.

7. a. Suppose the Crawfords have four children. Assume that the probability of a boy or a girl is $\frac{1}{2}$ for each birth. List the possible outcomes.

b. What is the probability that exactly two of the Crawfords' children are boys and the boys are born in a row?

c. What is the probability that the Crawfords have at least two boys born in a row?

d. Explain why the answers to parts (b) and (c) are not the same.