Name .

LESSON

Challenge Practice

For use with the lesson "Find Probabilities of Disjoint and Overlapping Events"

Date

In Exercises 1–4, determine whether the events are mutually exclusive. *Explain* your reasoning.

- Event A: Randomly select a college student taking a statistics course.
 Event B: Randomly select a college student taking an archeology course.
- **2.** Event *A*: Randomly select a person between 14 and 17 years old. Event *B*: Randomly select a person between 18 and 24 years old.
- **3.** Event *A*: Randomly select a person who likes cats. Event *B*: Randomly select a person who owns a dog.
- **4.** Event *A*: Randomly select a person who uses the Internet at least twice a week. Event *B*: Randomly select a person who has not used the Internet in 7 days.
- **5.** Twelve-sided dice can be constructed in the shape of regular dodecahedrons such that each of the integers 1–6 appears twice on the die. Suppose two twelve-sided dice are rolled.
 - **a.** What is the probability that the sum is greater than 5?
 - **b.** What is the probability that the sum is not prime?
 - **c.** What is the probability that the sum is 4 or 9 or 12?
 - **d.** Prove that these dice can be used in any game requiring standard six-sided dice without changing the probabilities or different outcomes.
- **6.** A box contains 36 pieces of fabric, some of which are pink and the rest of which are purple. Some of the fabric is satin and the rest is cotton. If a piece of fabric is

randomly selected from the box, the probability that it is pink is $\frac{1}{4}$, that it is cotton

is $\frac{7}{9}$, and that it is pink or cotton is $\frac{11}{12}$.

- **a.** How many pieces of fabric are purple?
- **b.** How many pieces of fabric are purple and cotton?