

## 4-4 Basic Skills and Concepts

### Statistical Literacy and Critical Thinking

**1. Notation** Let  $R$  be the event of randomly selecting a senator and getting a Republican, and let  $D$  represent the event of randomly selecting a second *different* senator and getting a Democrat. Use words to describe what the notation  $P(D | R)$  represents.

**2. Independent and Dependent Events** Are events  $R$  and  $D$  from Exercise 1 independent or dependent? Explain.

**3. Independent and Dependent Events** True or false: The event of finding that your car's radio works and the event of finding that your car's air conditioner works are independent events because they work separately from each other. Explain.

**4. Sample for a Poll** There are currently 28,741,346 adults in California, and they are all included in one large numbered list. The Gallup organization uses a computer to randomly select 1068 *different* numbers between 1 and 28,741,346 and then contacts the corresponding adults for a survey. Are the events of selecting the adults actually independent or dependent? If the events are dependent, can they be treated as being independent for the purposes of calculations?

**Independent and Dependent Events.** In Exercises 5–12, (a) determine whether events  $A$  and  $B$  are independent or dependent, and (b) find  $P(A \text{ and } B)$ , the probability that events  $A$  and  $B$  both occur.

**5. A:** When a month is randomly selected and ripped from a calendar and destroyed, it is July.

**B:** When a different month is randomly selected and ripped from a calendar, it is November.

**6. A:** When a baby is born, it is a girl.

**B:** When a second baby is born into a different family, it is also a girl.

**7. A:** When a baby is born, it is a girl.

**B:** When a single die is rolled, the outcome is 6.

**8. A:** When a day of the week is randomly selected, it is a Saturday.

**B:** When a second *different* day of the week is randomly selected, it is a Monday.

**9. A:** When one of the 222 coins listed in Data Set 21 is randomly selected, it is one of the 5 Indian pennies.

**B:** When another one of the 222 coins listed in Data Set 21 is randomly selected, it is also one of the 5 Indian pennies.

**10. A:** When the first digit (0 through 9) of a four-digit lottery number is chosen by someone buying a ticket, it is the same first digit that is later drawn in the official lottery.

**B:** When the second digit of a four-digit lottery number is chosen by someone buying a ticket, it is the same second digit that is later drawn in the official lottery.

**11. A:** When a survey subject is randomly selected from the 100 senators in the 111th Congress, it is one of the 58 Democrats.

**B:** When a second *different* senator is randomly selected, it is the one senator who is an Independent.

**12. A:** When an M&M is randomly selected from the 100 M&Ms listed in Data Set 20, it is one of the 8 yellow M&Ms.

**B:** When a second *different* M&M is randomly selected from those listed in Data Set 20, it is also a yellow M&M.