**5.10** Given *P*(*A*) = *.*70, *P*(*B*) = *.*30, and *P*(*A* ∩ *B*) = *.*00, find (a) *P*(*A* ∪ *B*) and (b) *P*(*A* | *B*).

(c) Sketch a Venn diagram and describe it in words

**5.16** Given *P*(*A*) = .40, *P*(*B*) = .50. If *A* and *B* are independent, find *P*(*A* ∩ *B*).

**6.4** Pepsi and Mountain Dew products sponsored a contest giving away a Lamborghini sports car

worth $215,000. The probability of winning from a single bottle purchase was .00000884. Find

the expected value. Show your calculations clearly. (Data are from J. Paul Peter and Jerry C.

Olson, *Consumer Behavior and Marketing Strategy,* 7th ed. [McGraw-Hill/Irwin, 2005], p. 226.)

**6.16** Calculate each binomial probability:

a. *X* = 2, *n* = 8, *π* = .10

b. *X* = 1, *n* = 10, *π* = .40

c. *X* = 3, *n* = 12, *π* = .70

d. *X* = 5, *n* = 9, *π* = .90

**6.18** Calculate each binomial probability:

a. Fewer than 4 successes in 12 trials with a 10 percent chance of success.

b. At least 3 successes in 7 trials with a 40 percent chance of success.

c. At most 9 successes in 14 trials with a 60 percent chance of success.

d. More than 10 successes in 16 trials with an 80 percent chance of success.