8. S = {A1, A2, A3, A4, B1, B2, B3, B4,
C1, C2, C3, C4}

13. Let G stand for an outcome of green and R stand for an outcome of red on spinner 1.

S = {GA1, GA2, GA3, GA4, GB1, GB2, GB3, GB4, GC1, GC2, GC3, GC4,
RA1, RA2, RA3, RA4, RB1, RB2, RB3, RB4, RC1, RC2, RC3, RC4}

18. Each time a die is tossed there are 6 possible outcomes, and each time a coin is tossed there are 2 possible outcomes. Using the Multiplication Principle there are $6 \cdot 6 \cdot 2 = 72$ outcomes in the sample space when 2 dice and then a coin are tossed.

23. Valid assignments must be nonnegative, and the sum of all probabilities in the sample space must equal one.
Assignments A, B, C, and F are valid.

24. Since the coin is fair and each outcome is equally likely, Assignment A should be used.

25. If the coin always comes up tails HH, HT, and TH are impossible events and have probabilities of 0. Assignment B should be used.

26. If tails is twice as likely as heads, tails will come up 2 out of 3 times and will have a probability of $\frac{2}{3}$. Assignment F should be used.

38. A regular deck of cards has 52 cards, so $n(S) = 52$.

Define event E: A red card is drawn. There are 26 red cards, making $n(E) = 26$, and

$$P(E) = \frac{n(E)}{n(S)} = \frac{26}{52} = \frac{1}{2}$$

40. A regular deck of cards has 52 cards, so $n(S) = 52$.

Define event E: A number card is drawn. There are 40 number cards, making $n(E) = 40$, and

$$P(E) = \frac{n(E)}{n(S)} = \frac{40}{52} = \frac{10}{13}$$

42. A regular deck of cards has 52 cards, so $n(S) = 52$.

Define event E: A card with a value of 10 or higher is drawn. There are 4 cards of value 10 or higher: 10, J, Q, K, and there are 4 of each card, making $n(E) = 16$, and

$$P(E) = \frac{n(E)}{n(S)} = \frac{16}{52} = \frac{4}{13}$$

58. Using the probability model before Problem 56,

P(MasterCard or Visa card) = 0.521 + 0.381 = 0.901.