Practice 2-7

1. Suppose you have a dark closet containing seven blue shirts, five yellow shirts, and eight white shirts. You pick two shirts at random from the closet. Find each probability.
   a. \(P(\text{blue then yellow})\) with replacing
   b. \(P(\text{blue then yellow})\) without replacing
   c. \(P(\text{yellow then yellow})\) with replacing
   d. \(P(\text{yellow then yellow})\) without replacing
   e. \(P(\text{yellow then white})\) with replacing
   f. \(P(\text{yellow then white})\) without replacing
   g. \(P(\text{blue then blue})\) with replacing
   h. \(P(\text{blue then blue})\) without replacing

A and \(B\) are independent events. Find the missing probability.

2. \(P(A) = \frac{3}{7}, P(A \text{ and } B) = \frac{1}{3}\). Find \(P(B)\).

3. \(P(B) = \frac{1}{3}, P(A \text{ and } B) = \frac{2}{13}\). Find \(P(A)\).

4. \(P(B) = \frac{15}{16}, P(A \text{ and } B) = \frac{3}{4}\). Find \(P(A)\).

5. \(P(A) = \frac{8}{15}, P(B) = \frac{3}{4}\). Find \(P(A \text{ and } B)\).

6. Suppose you draw two tennis balls at random from a bag containing seven pink, four white, three yellow, and two striped balls. Find each probability.
   a. \(P(\text{pink then pink})\) with replacing
   b. \(P(\text{pink then pink})\) without replacing
   c. \(P(\text{pink then pink})\) with replacing
   d. \(P(\text{pink then pink})\) without replacing
   e. \(P(\text{striped then striped})\) with replacing
   f. \(P(\text{striped then striped})\) without replacing
   g. \(P(\text{pink then white})\) with replacing
   h. \(P(\text{pink then white})\) without replacing

A and \(B\) are independent events. Find the missing probability.

7. \(P(A) = \frac{3}{4}, P(A \text{ and } B) = \frac{1}{2}\). Find \(P(B)\).

8. \(P(A) = \frac{3}{5}, P(B) = \frac{1}{6}\). Find \(P(A \text{ and } B)\).

9. \(P(B) = \frac{9}{10}, P(A \text{ and } B) = \frac{3}{5}\). Find \(P(A)\).

10. \(P(B) = \frac{1}{4}, P(A \text{ and } B) = \frac{3}{20}\). Find \(P(A)\).

Use an equation to solve each problem.

11. A bag contains green and yellow color tiles. You pick two tiles at random without replacing the first one. The probability that the first tile is yellow is \(\frac{2}{3}\). The probability of drawing two yellow tiles is \(\frac{12}{35}\). Find the probability that the second tile you pick is yellow.

12. A bag contains red and blue marbles. You pick two marbles at random without replacing the first one. The probability of drawing a blue and then a red is \(\frac{4}{15}\). The probability that your second marble is red if your first marble is blue is \(\frac{3}{5}\). Find the probability that the first marble is blue.