10 CHAPTER REVIEW

10.4 Probabilities of Disjoint and Overlapping Events *pp. 707–713*

EXAMPLE

Let A and B be events such that $P(A) = \frac{2}{3}$, $P(B) = \frac{1}{2}$, and $P(A \text{ and } B) = \frac{1}{3}$. Find $P(A \text{ or } B)$.

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) = \frac{2}{3} + \frac{1}{2} - \frac{1}{3} = \frac{5}{6}$$

EXERCISES

EXAMPLES 2 and 4 on pp. 708–709 for Exs. 20–22

Let A and B be events such that $P(A) = 0.32$, $P(B) = 0.48$, and $P(A \text{ and } B) = 0.12$. Find the indicated probability.

20. $P(A \text{ or } B)$ **21.** $P(\overline{A})$ **22.** $P(\overline{B})$

10.5 Probabilities of Independent and Dependent Events *pp. 717–723*

EXAMPLE

Find the probability of selecting a club and then another club from a standard deck of 52 cards if (a) you replace the first card before selecting the second, and (b) you do *not* replace the first card.

Let event A be "the first card is a club" and B be "the second card is a club."

a. $P(A \text{ and } B) = P(A) \cdot P(B) = \frac{13}{52} \cdot \frac{13}{52} = \frac{1}{16} = 0.0625$

b. $P(A \text{ and } B) = P(A) \cdot P(B|A) = \frac{13}{52} \cdot \frac{12}{51} = \frac{1}{17} \approx 0.0588$

EXERCISES

EXAMPLE 5 on p. 719 for Exs. 23–25

Find the probability of randomly selecting the given marbles from a bag of 5 red, 8 green, and 3 blue marbles if (a) you replace the first marble before drawing the second and (b) you do *not* replace the first marble.

23. red, then green **24.** blue, then red **25.** green, then green

10.6 Construct and Interpret Binomial Distributions *pp. 724–730*

EXAMPLE

Find the probability of tossing a coin 12 times and getting exactly 4 heads.

$$P(k = 4) = {}_nC_k p^k (1 - p)^{n-k} = {}_{12}C_4 (0.5)^4 (1 - 0.5)^8 = 495(0.5)^4(0.5)^8 \approx 0.121$$

EXERCISES

EXAMPLE 3 on p. 726 for Exs. 26–29

Find the probability of tossing a coin 8 times and getting the given number of heads.

26. 6 **27.** 4 **28.** 7 **29.** 0