12-5 Skills Practice

Adding Probabilities

Eli has 10 baseball cards of 10 different players in his pocket. Three players are pitchers, 5 are outfielders, and 2 are catchers. If Eli randomly selects a card to trade, find each probability.

1. P(pitcher or outfielder) $\frac{4}{5}$ 2. P(pitcher or catcher) $\frac{1}{2}$ 3. P(outfielder or catcher) $\frac{7}{10}$

A die is rolled. Find each probability.

4. P(5 or 6) $\frac{1}{3}$ 5. P(at least a 3) $\frac{2}{3}$ 6. P(less than 4) $\frac{1}{2}$

Determine whether the events are *mutually exclusive* or *inclusive*. Then find the probability.

7. A die is rolled. What is the probability of rolling a 3 or a 4? mut. exclusive, $\boxed{\frac{1}{3}}$

8. A die is rolled. What is the probability of rolling an even number or a 4? inclusive, $\boxed{\frac{1}{2}}$
$\frac{3}{6} + \frac{1}{6} = \frac{1}{6} = 3/6$

9. A card is drawn from a standard deck of cards. What is the probability of drawing a king or a queen? mutually exclusive, $\frac{8}{52} = \boxed{\frac{2}{13}}$

10. A card is drawn from a standard deck of cards. What is the probability of drawing a jack or a heart? inclusive $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \boxed{\frac{4}{13}}$

11. The sophomore class is selling Mother's Day plants to raise money. Susan's prize for being the top seller of plants is a choice of a book, a CD, or a video. She can choose from 6 books, 3 CDs, and 5 videos. What is the probability that Susan selects a book or a CD?
mutually exclusive, $\frac{9}{14}$

A spinner numbered 1−10 is spun. Find each probability.

12. P(less than 5 or even)   13. P(even or odd)   14. P(prime or even)
$\frac{4}{10} + \frac{5}{10} - \frac{2}{10} = \boxed{\frac{7}{10}}$ $\frac{5}{10} + \frac{5}{10} = \frac{10}{10} = \boxed{1}$ $\frac{54}{10} + \frac{5}{10} - \frac{1}{10} = \frac{8}{10} = \boxed{\frac{4}{5}}$

Two cards are drawn from a standard deck of cards. Find each probability.

15. P(both red or both black) $25/51$ 16. P(both aces or both red) $\frac{26}{52} \cdot \frac{25}{51} + \frac{4}{52} \cdot \frac{3}{51} - \frac{2}{52} \cdot \frac{1}{51}$
$\frac{26}{52} \cdot \frac{25}{51} + \frac{26}{52} \cdot \frac{25}{51}$ $55/221$

17. P(both 2s or both less than 5)   18. P(both black or both less than 5)
$\frac{4}{52} \cdot \frac{3}{51} + \frac{12}{52} \cdot \frac{11}{51} - \frac{4}{52} \cdot \frac{3}{51}$ $11/221$ $\frac{26}{52} \cdot \frac{25}{51} + \frac{12}{52} \cdot \frac{11}{51} - \frac{6}{52} \cdot \frac{5}{51} = \boxed{\frac{188}{663}}$

For Exercises 19 and 20, use the Venn diagram that shows the number of participants in two different kinds of aerobic exercise classes that are offered at a health club. Determine each probability if a person is selected at random from the participants.

Step Aerobics 22 | 13 | Jazzercise 27
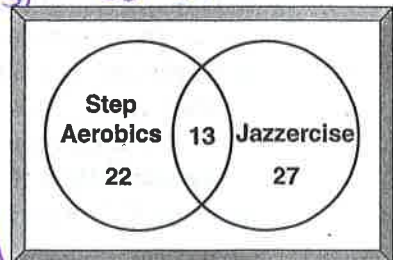
19. P(step aerobics or jazzercise, but not both)
$\frac{22}{62} + \frac{27}{62} = \boxed{\frac{49}{62}}$

20. P(step aerobics and jazzercise) $\boxed{\frac{13}{62}}$

Adding Probability p. 726

1. $\dfrac{7C4}{12C4} + \dfrac{5C4}{12C4} = \dfrac{8}{99}$

2. $\dfrac{7C3 \cdot 5C1}{12C4} = \dfrac{35}{99}$

3. $P(3 \text{ white}) + P(4 \text{ white})$

   $\dfrac{7C3 \cdot 5C1}{12C4} + \dfrac{7C4 \cdot 5C0}{12C4} = \dfrac{14}{33}$

4. $P(1 \text{ white}) + P(2 \text{ white}) + P(0 \text{ white})$

   $\dfrac{5C4}{12C4} + \dfrac{7C1 \cdot 5C3}{12C4} + \dfrac{7C2 \cdot 5C2}{12C4} = \dfrac{19}{33}$

5. $\dfrac{7C3 \cdot 5C1}{12C4} + \dfrac{5C3 \cdot 7C1}{12C4} = \dfrac{49}{99}$

6. $\dfrac{5C4}{12C4} + \dfrac{7C4}{12C4} = \dfrac{8}{99}$

13. mutually exclusive $\quad \dfrac{15C4 + 9C4}{24C4} = \dfrac{71}{506}$

14. inclusive $\quad \dfrac{12}{28} + \dfrac{10}{28} - \dfrac{6}{28} = \dfrac{4}{7}$

15. exclusive $\quad \dfrac{5+4}{12} = \dfrac{9}{12} = \dfrac{3}{4}$