

I. 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. Express as a percent.

- 1.) P (pitcher or outfielder) $\frac{3}{10} + \frac{5}{10} = \frac{8}{10} = 80\%$ 2.) P (catcher or pitcher) $\frac{2}{10} + \frac{3}{10} = \frac{5}{10} = 50\%$ 3.) P (outfielder or catcher) $\frac{5}{10} + \frac{2}{10} = \frac{7}{10} = 70\%$

II. A die is rolled. Find each probability. Express as a percent.

- 4.) P (5 or 6) $\frac{1}{6} + \frac{1}{6} = \frac{2}{6} = 33.3\%$ 5.) P (at least a 3) $P(3) + P(4) + P(5) + P(6) = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{4}{6} = 66.7\%$ 6.) P (less than 4) $P(1) + P(2) + P(3) = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6} = 50\%$

III. A spinner numbered 1 – 10 is spun. Find each probability. Express as a percent.

- 7.) P (less than 5 or even) $\frac{4}{10} + \frac{5}{10} - \frac{2}{10} = \frac{7}{10} = 70\%$ 8.) P (even or odd) $\frac{5}{10} + \frac{5}{10} = \frac{10}{10} = 100\%$ 9.) P (prime or even) $\frac{4}{10} + \frac{5}{10} - \frac{1}{10} = \frac{8}{10} = 80\%$

IV. Two cards are drawn from a standard deck of cards. Find each probability. Express as a percent.

- 10.) P (both red or both black) $\frac{26C2}{52C2} + \frac{26C2}{52C2} = \frac{650}{1326} = 49\%$ 11.) P (both aces or both red) $\frac{4C2}{52C2} + \frac{26C2}{52C2} - \frac{2C2}{52C2} = \frac{330}{1326} = 24.9\%$ 12.) P (both 2's or both less than 5) $\frac{4C2}{52C2} + \frac{12C2}{52C2} - \frac{4C2}{52C2} = \frac{376}{1326} = 28.4\%$ 13.) P (both black or both less than 5) $\frac{26C2}{52C2} + \frac{12C2}{52C2} - \frac{4C2}{52C2} = \frac{376}{1326} = 28.4\%$

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

- 14.) A die is rolled. What is the probability of rolling an even number or a 4? $\frac{3}{6} + \frac{1}{6} - \frac{1}{6} = \frac{3}{6} = 50\%$
- 15.) A card is drawn from a standard deck of cards. What is the probability of drawing a king or a queen? $\frac{4}{52} + \frac{4}{52} = \frac{8}{52} = 15.4\%$
- 16.) A card is drawn from a standard deck of cards. What is the probability of drawing a jack or a heart? $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52} = 30.8\%$
- 17.) A clerk chooses 4 CD players at random for floor displays from a shipment of 24 CD players. If 15 of the players have a blue case and the rest have a red case, what is the probability of choosing 4 players with a blue case or 4 players with a red case? $\frac{15C4}{24C4} + \frac{9C4}{24C4} = \frac{1365}{10626} + \frac{126}{10626} = \frac{1491}{10626} = 14\%$
- 18.) A department store employs 28 high school students, all juniors and seniors. Six of the 12 seniors are females and 12 of the juniors are males. One student employee is chosen at random. What is the probability of selecting a senior or a female? $\frac{12}{28} + \frac{10}{28} - \frac{6}{28} = \frac{16}{28} = 57.1\%$
- 19.) A restaurant has 5 pieces of apple pie, 4 pieces of chocolate cream pie, and 3 pieces of blueberry pie. If Janine selects a piece of pie at random for dessert, what is the probability that she selects either apple or chocolate cream? $\frac{5}{12} + \frac{4}{12} = \frac{9}{12} = 75\%$
- 20.) At a statewide meeting, there are 20 school superintendents, 13 principals, and 6 assistant principals. If one of these people is chosen at random, what is the probability that he or she is either a principal or an assistant principal? $\frac{13}{39} + \frac{6}{39} = \frac{19}{39} = 48.7\%$

VI. Use the Venn Diagram that shows the number of participation in extracurricular activities for a junior class of 324 students. Determine the probability if a student is selected at random from the class.

- 21.) P (drama or music) $P(D) + P(M) - P(D \cap M) = \frac{51 + 15 + 12 + 11}{324} + \frac{63 + 7 + 12 + 11}{324} - \frac{12 + 11}{324} = \frac{89 + 93 - 23}{324} = \frac{159}{324} = 49.1\%$
- 22.) P (drama or athletics) $P(D) + P(A) - P(D \cap A) = \frac{51 + 15 + 12 + 11}{324} + \frac{108 + 15 + 7 + 12}{324} - \frac{15 + 12}{324} = \frac{89 + 142 - 27}{324} = \frac{204}{324} = 63\%$

