

11.6: Chapter Review

SECTION 11.6 PROBLEM SET: CHAPTER REVIEW

- Two dice are rolled. Find the probability that the sum of the dice is
 - four
 - five
- A jar contains 3 red, 4 white, and 5 blue marbles. If a marble is chosen at random, find the following probabilities:
 - $P(\text{red or blue})$
 - $P(\text{not blue})$
- A card is drawn from a standard deck. Find the following probabilities:
 - $P(\text{a jack or a king})$
 - $P(\text{a jack or a spade})$
- A basket contains 3 red and 2 yellow apples. Two apples are chosen at random. Find the following probabilities:
 - $P(\text{one red, one yellow})$
 - $P(\text{at least one red})$
- A basket contains 4 red, 3 white, and 3 blue marbles. Three marbles are chosen at random. Find the following probabilities:
 - $P(\text{two red, one white})$
 - $P(\text{first red, second white, third blue})$
 - $P(\text{at least one red})$
 - $P(\text{none red})$
- Given a family of four children. Find the following probabilities:
 - $P(\text{All boys})$
 - $P(1 \text{ boy and } 3 \text{ girls})$
- Consider a family of three children. Find the following:
 - $P(\text{children of both sexes} \mid \text{first born is a boy})$
 - $P(\text{all girls} \mid \text{children of both sexes})$
- Mrs. Rossetti is flying from San Francisco to New York. On her way to the San Francisco Airport she encounters heavy traffic and determines that there is a 20% chance that she will be late to the airport and will miss her flight. Even if she makes her flight, there is a 10% chance that she will miss her connecting flight at Chicago. What is the probability that she will make it to New York as scheduled?
- At a college, twenty percent of the students take history, thirty percent take math, and ten percent take both. What percent of the students take at least one of these two courses?
- In a T-maze, a mouse may run to the right (R) or may run to the left (L). A mouse goes up the maze three times, and events E and F are described as follows:

E: Runs to the right on the first trial F: Runs to the left two consecutive times

Determine whether the events E and F are independent.

- A college has found that 20% of its students take advanced math courses, 40% take advanced English courses and 15% take both advanced math and advanced English courses. If a student is selected at random, what is the probability that
 - he is taking English given that he is taking math?
 - he is taking math or English?
- If there are 35 students in a class, what is the probability that at least two have the same birthday?
- A student feels that her probability of passing accounting is .62, of passing mathematics is .45, and her passing accounting or mathematics is .85. Find the probability that the student passes both accounting and math.
- There are nine judges on the U. S. Supreme Court. Suppose that five are conservative and four are liberal. This year the court will act on six major cases. What is the probability that out of six cases the court will favor the conservatives in at least four?
- Five cards are drawn from a deck. Find the probability of obtaining
 - four cards of a single suit

- b. two cards of one suit, two of another suit, and one from the remaining
- c. a pair(e.g. two aces and three other cards)
- d. a straight flush(five in a row of a single suit but not a royal flush)

16. The following table shows a distribution of drink preferences by gender.

	Coke(C)	Pepsi(P)	Seven Up(S)	TOTALS
Male(M)	60	50	22	132
Female(F)	50	40	18	108
TOTALS	110	90	40	240

The events M, F, C, P and S are defined as Male, Female, Coca Cola, Pepsi, and Seven Up, respectively. Find the following:

- a. $P(F | S)$
 - b. $P(P | F)$
 - c. $P(C | M)$
 - d. $P(M | P \cup C)$
 - e. Are the events F and S mutually exclusive?
 - f. Are the events F and S independent?
17. At a clothing outlet 20% of the clothes are irregular, 10% have at least a button missing and 4% are both irregular and have a button missing. If Martha found a dress that has a button missing, what is the probability that it is irregular?
18. A trade delegation consists of four Americans, three Japanese and two Germans. Three people are chosen at random. Find the following probabilities:
- a. $P(\text{two Americans and one Japanese})$
 - b. $P(\text{at least one American})$
 - c. $P(\text{One of each nationality})$
 - d. $P(\text{no German})$
19. A coin is tossed three times, and the events E and F are as follows.

E: It shows a head on the first toss F: Never turns up a tail

Are the events E and F independent?

- 20. If $P(E) = .6$ and $P(F) = .4$ and E and F are mutually exclusive, find $P(E \text{ and } F)$.
- 21. If $P(E) = .5$ and $P(F) = .3$ and E and F are independent, find $P(E \cup F)$.
- 22. If $P(F) = .9$ and $P(E|F) = .36$ and E and F are independent, find $P(E)$.
- 23. If $P(E) = .4$ and $P(E \text{ or } F) = .9$ and E and F are independent, find $P(F)$.
- 24. If $P(E) = .4$ and $P(F|E) = .5$, find $P(E \text{ and } F)$.
- 25. If $P(E) = .6$ and $P(E \text{ and } F) = .3$, find $P(F|E)$.
- 26. If $P(E) = .3$ and $P(F) = .4$ and E and F are independent, find $P(E|F)$.

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