(c) in the event that none of the team members considers himself or herself an Independent?

8. Suppose that A and B are mutually exclusive events for which $P(A) = .3$ and $P(B) = .5$. What is the probability that
(a) either A or B occurs?
(b) A occurs but B does not?
(c) both A and B occur?

9. A retail establishment accepts either the American Express or the VISA credit card. A total of 24 percent of its customers carry an American Express card, 61 percent carry a VISA card, and 11 percent carry both cards. What percentage of its customers carry a credit card that the establishment will accept?

10. Sixty percent of the students at a certain school wear neither a ring nor a necklace. Twenty percent wear a ring and 30 percent wear a necklace. If one of the students is chosen randomly, what is the probability that this student is wearing
(a) a ring or a necklace?
(b) a ring and a necklace?

11. A total of 28 percent of American males smoke cigarettes, 7 percent smoke cigars, and 5 percent smoke both cigars and cigarettes.
(a) What percentage of males smokes neither cigars nor cigarettes?
(b) What percentage smokes cigars but not cigarettes?

12. An elementary school is offering 3 language classes: one in Spanish, one in French, and one in German. The classes are open to any of the 100 students in the school. There are 28 students in the Spanish class, 26 in the French class, and 16 in the German class. There are 12 students that are in both Spanish and French, 4 that are in both Spanish and German, and 6 that are in both French and German. In addition, there are 2 students taking all 3 classes.
(a) If a student is chosen randomly, what is the probability that he or she is not in any of the language classes?
(b) If a student is chosen randomly, what is the probability that he or she is taking exactly one language class?
(c) If 2 students are chosen randomly, what is the probability that at least 1 is taking a language class?

13. A certain town with a population of 100,000 has 3 newspapers: I, II, and III. The proportions of townspeople who read these papers are as follows:

I: 10 percent   I and II: 8 percent   I and II and III: 1 percent
II: 30 percent   I and III: 2 percent
III: 5 percent   II and III: 4 percent

(The list tells us, for instance, that 8000 people read newspapers I and II.)
(a) Find the number of people who read only one newspaper.
(b) How many people read at least two newspapers?
(c) If I and III are morning papers and II is an evening paper, how many people read at least one morning paper plus an evening paper?
(d) How many people do not read any newspapers?
(e) How many people read only one morning paper and one evening paper?

14. The following data were given in a study of a group of 1000 subscribers to a certain magazine: In reference to job, marital status, and education, there were 312 professionals, 470 married persons, 525 college graduates, 42 professional college graduates, 147 married college graduates, 86 married professionals, and 25 married professional college graduates. Show that the numbers reported in the study must be incorrect.
Hint: Let M, W, and G denote, respectively, the set of professionals, married persons, and college graduates. Assume that one of the 1000 persons is chosen at random, and use Proposition 4.4 to show that if the given numbers are correct, then $P(M \cup W \cup G) > 1$.

15. If it is assumed that all $\binom{52}{5}$ poker hands are equally likely, what is the probability of being dealt
(a) a flush? (A hand is said to be a flush if all 5 cards are of the same suit.)
(b) one pair? (This occurs when the cards have denominations a, a, b, c, d, where $a, b, c,$ and d are all distinct.)
(c) two pairs? (This occurs when the cards have denominations a, a, b, b, c, where $a, b,$ and c are all distinct.)
(d) three of a kind? (This occurs when the cards have denominations a, a, a, b, c, where $a, b,$ and c are all distinct.)
(e) four of a kind? (This occurs when the cards have denominations a, a, a, a, b.)

16. Poker dice is played by simultaneously rolling 5 dice. Show that
(a) $P\{\text{no two alike}\} = .0926$;
(b) $P\{\text{one pair}\} = .4630$;
(c) $P\{\text{two pair}\} = .2315$;
(d) $P\{\text{three alike}\} = .1543$;
(e) $P\{\text{full house}\} = .0386$;
(f) $P\{\text{four alike}\} = .0193$;
(g) $P\{\text{five alike}\} = .0008$.

17. If 8 rooks (castles) are randomly placed on a chessboard, compute the probability that none of the rooks can capture any of the others. That is,