1) Suppose a box contains 3 defective light bulbs and 12 good bulbs. Two bulbs are chosen from the box without replacement. What is the probability that one of two bulbs drawn is defective and one is not?
2) Find the probability that a hand of 5 cards dealt from a standard deck of 52 cards contains 3 aces and 2 kings.
3) Of voters in a recent election, $57 \%$ were male, $64 \%$ were Democrat, and $35 \%$ were both male and Democrat.
a) What is the probability that a voter chosen at random is female?
b) What is the probability that a voter chosen at random is either male or Democrat?
c) Is being male or Democrat independent of each other?
4) A rocket being launched has three engines that are independent of each other. The probability of an engine firing is .97. What is the probability of at least one engine not firing?
5) The probability of rain on Monday is . 3 and on Thursday is .4. Assuming these are independent, what is the probability that
a) it rains on both days?
b) it does not rain on Monday? d) it rains on Monday, but not Thursday?
d) it rains on at least one of these days? e) it doesn't rain on either day?
6) Student Life at a college did a survey asking students if they were part-time or full-time students. Another question was if the student voted or not in the most recent student elections. The results are shown in the table. If a student is

|  | Part-time | Full-time |
| :--- | :--- | :--- |
| Voted | 15 | 20 |
| Did not vote | 25 | 30 | selected at random, what is the probability that

a) the student voted in the most recent election?
b) the student voted in the most recent election or is a part-time student?
c) if the student is a part-time student, they voted in the most recent election?
7) Dr. Carey has two bottles of sample pills on his desk for the treatment of arthritic pain. He often grabs a bottle without looking and takes the medicine. Since the first bottle is closer to him, the chances of grabbing it are 0.60 . He knows the medicine from this bottle relieves the pain 70\%of the time while the medicine in the second bottle relieves the pain $90 \%$ of the time. What is the probability that Dr. Carey grabbed the first bottle given his pain was not relieved?
8) If the $P(A)=.5, P(B)=.6$, and $P(A \cup B)=.85$, then what is: a) $P(A \cap B)$ ? $\quad$ b) $P(A \mid B)$ ? $C) \quad P(B \mid A)$ ?

