14.

    a. $P(A \cup B) = .50 + .40 - .25 = .65$

    b. $P((A \cup B)') = 1 - P(A \cup B) = 1 - .65 = .35$

    c. $A \cap B'$; $P(A \cap B') = P(A) - P(A \cap B) = .50 - .25 = .25$

17.

    a. Let event E be the event that at most one purchases an electric dryer. Then E′ is the event that at least two purchase electric dryers.
        $P(E') = 1 - P(E) = 1 - .428 = .572$

    b. Let event A be the event that all five purchase gas. Let event B be the event that all five purchase electric. All other possible outcomes are those in which at least one of each type is purchased. Thus, the desired probability =
        $1 - P(A) - P(B) = 1 - .116 - .005 = .879$

20.   This situation requires the complement concept. The only way for the desired event NOT to happen is if a 75 W bulb is selected first. Let event A be that a 75 W bulb is selected first, and $P(A) = \frac{6}{15}$. Then the desired event is event A′.

So $P(A') = 1 - P(A) = 1 - \frac{6}{15} = \frac{9}{15} = .60$

22.   Let S1, S2 and S3 represent the swing and night shifts, respectively. Let C1 and C2 represent the unsafe conditions and unrelated to conditions, respectively.

    a. The simple events are {S1,C1}, {S1,C2}, {S2,C1}, {S2,C2},{S3,C1}, {S3,C2}.

    b. $P(\{C1\}) = P(\{S1,C1\},\{S2,C1\},\{S3,C1\}) = .10 + .08 + .05 = .23$

    c. $P(\{S1\}') = 1 - P(\{S1,C1\}, \{S1,C2\}) = 1 - (.10 + .35) = .55$

28.

    a. $P(A_1') = 1 - P(A_1) = 1 - .12 = .88$

    b. $P(A_1 \cap A_2) = P(A_1) + P(A_2) - P(A_1 \cup A_2) = .12 + .07 - .13 = .06$

    c. $P(A_1 \cap A_2 \cap A_3') = P(A_1 \cap A_2) - P(A_1 \cap A_2 \cap A_3) = .06 - .01 = .05$

    d. P(at most two errors) $= 1 - P(\text{all three types})$
                     $= 1 - P(A_1 \cap A_2 \cap A_3)$
                     $= 1 - .01 = .99$