Use the following for problems 1 - 4.

The sample space of an experiment consists of 4 mutually exclusive outcomes A, B, C, D. Some of the probabilities are given by

outcome	A	B	C	D
probability	0.370.14		0.25	

1.   What is the probability of event {D}?

a. 0.75   b. 0.25   c. 0.24   d. 0.76   e. 0.39

2.   What is the probability event {A} does not occur.

a. 0.63   b. 0.37   c. 0.24   d. 0.39   e. 0.76

3. What is the probability of event {B,C}?

a. 0.39   b. 0.61   c. 0.37   d. 0.14   e. 0.25

4.   What is the conditional probability Pr({B}|{C}) ?

a. 0.14   b. 0   c. 0.25   d. 0.39   e. 0.11

5.   A coin is tossed 10 times. Consider the following events:
     E = 5 heads or less
     F = 4 tails or less
     G = 4 heads exactly
     H = 2 heads or more

     Which of the following pairs of events listed below is mutually exclusive?

a. E & G   b. G & H   c. F & H d. E & F   e. E & H

6.   If there is a 40% chance of rain tomorrow, then the odds in favor of rain
     tomorrow are

a. 2 to 3   b. 3 to 2   c. 2 to 5   d. 5 to 2   e. 7 to 8

7.   If the odds in favor of the temperature being above 95° F tomorrow are 8
     to 7, then the probability that the temperature will be above 95° F
     tomorrow is

a. 0.067   b. 0.875   c. 0.125   d. 0.467   e. 0.533

8. A die has 3 faces colored blue, 2 faces colored green and the remaining face colored red. If the die is rolled, then probability that the color of the top face is green is

a. $\frac{2}{3}$ b. $\frac{1}{3}$ c. $\frac{1}{6}$ d. $\frac{3}{5}$ e. $\frac{5}{6}$

9. A fair coin is flipped 3 times. The probability of getting 2 or more heads is

a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\frac{5}{8}$ d. $\frac{3}{4}$ e. $\frac{7}{8}$

10. The scarecrow, the tin man, the lion, Toto, and Dorothy line up in random order to meet the wizard. What is the probability that Dorothy and Toto are standing next to each other?

a. $\frac{1}{5}$ b. $\frac{1}{4}$ c. $\frac{1}{2}$ d. $\frac{2}{5}$ e. $\frac{5}{8}$

11. A jar contains 5 green marbles and 4 red marbles. 3 marbles are chosen from the jar at random. What is the probability that at least one of the chosen marbles is green?

a. $\frac{93}{96}$ b. $\frac{6}{7}$ c. $\frac{20}{21}$ d. $\frac{1}{12}$ e. $\frac{3}{4}$

12. A fair die is rolled. E is the event that 1, 2, or 3 is rolled. F is the event that 1, 2, 4, 5 or 6 is rolled. What is the probability that E occurs given that F has occurred?

a. $\frac{3}{4}$ b. $\frac{1}{5}$ c. $\frac{3}{5}$ d. $\frac{1}{2}$ e. $\frac{2}{5}$

In the next 3 problems, let S be a sample space and let E, F, and G be events associated with S. Assume that $Pr(E) = 0.6$, $Pr(F') = 0.7$, $Pr(G) = 0.2$, and $Pr(F \cup G) = 0.4$.

13.   Calculate Pr(F|G).

a. $\frac{1}{4}$ b. $\frac{1}{3}$ c. $\frac{2}{3}$ d. $\frac{1}{2}$ e. $\frac{3}{4}$

14.   If E and F are independent, what is Pr(E|F) ?

a. 0.4   b. 0.6   c. 0.7   d. 0.3   e. 0.1

15.   If E and G are independent, what is $Pr(G \cup E)$?

a. 0.8   b. 0.12   c. 0.68   d. 0.66   e. 0.92

The following tree diagram gives data concerning two experiments
D and E each of which has two outcomes J and K. Use this diagram for problems 16 & 17.

16. Calculate Pr(J)

a. $\frac{11}{30}$ b. $\frac{7}{30}$ c. $\frac{13}{30}$ d. $\frac{5}{30}$ e.

$\frac{9}{30}$

17. Calculate Pr(D|K)

a. $\frac{8}{19}$ b. $\frac{7}{19}$ c. $\frac{1}{19}$ d. $\frac{4}{19}$ e.

$\frac{3}{19}$

18. A box contains three coins. One is two-headed, one is two-tailed, and the other is an ordinary coin. A coin is drawn at random from the box and is flipped twice, coming up heads both times. What is the probability that the 2-headed coin was taken from the box?

a. 1   b. $\frac{1}{3}$ c. $\frac{4}{5}$ d. $\frac{5}{12}$ e. $\frac{1}{8}$

19. A person is playing a dice game and must roll a 2 or 4 to win. The person first tosses a coin. If the coin comes up tails, they only get one roll of a die to get a 2 or 4. If the coin comes up heads, they get two rolls of a die to get a 2 or 4. What is the probability of winning the game?

a. $\frac{6}{36}$ b. $\frac{14}{36}$ c. $\frac{3}{36}$ d. $\frac{16}{36}$ e. $\frac{18}{36}$

	% Student Body	% Women	Product
Softball	0.40	0.40	0.16
Basketball	0.35	0.30	0.105
Soccer	0.25	0.30	0.075
		Total	0.34

20. The above table gives data on a student survey of their favorite sport
     given the choices of softball, basketball and soccer. A student is selected
     at random. Given that the student is a woman, the probability that her
     favorite sport is soccer is:

a. 0.265   b. 0.78   c. 0.75   d. 0.34   e. 0.22