1. Let a pair of fair dice be tossed. Find the following. Make a sample space.

   a) the probability that at least one of the dice is a 4  
   b) the probability that the sum is 7

   c) Given that the sum is 7, find the probability that one of the dice is 4

   d) Given that at least one of the dice is 4, find the probability that the sum is 7

   e) Are rolling two dice with at least one of them a 4 and the sum being 7 independent events. Explain.
2. A cooler has 12 Coke’s and 15 Pepsi’s. 9 of the Coke’s are diet Coke’s and 5 of the Pepsi’s are diet Pepsi’s. A bottle is chosen at random. Find the following: Make a chart.

a) the probability that the bottle is a Coke.  

b) the probability that the bottle is a Pepsi

c) the probability that the bottle is a Diet Coke

d) the probability that the bottle is a Diet Pepsi

e) the probability that the bottle is a diet drink

f) the probability that the bottle is not a diet drink

g) Given that the bottle is a diet drink, find the probability that the bottle is a Coke

h) Given that the bottle is diet drink, find the probability that the bottle is a Pepsi

i) Given that the bottle is a Coke, find the probability that the bottle is a Diet Coke

j) Given that the bottle is a Pepsi, find the probability that the bottle is a Diet Pepsi
3. A box contains 8 green light bulbs of which 3 are defective. It also contains 12 red light bulbs of which 5 are defective. A bulb is chosen at random from the box. Make a chart.

a) Find the probability that the bulb is red.

b) If the bulb chosen is red, what is the probability that the bulb is defective?

c) What is the probability that the bulb is defective?

d) If the bulb is defective, what is the probability that it is red?

e) Is choosing a red bulb and choosing a defective bulb independent? Explain.
4. A woman's club has 80% of its members married. 30% of the married women are pro-choice and 75% of the single women are pro-choice. If a woman is chosen at random, find the probabilities. Make a chart.

a) she is married

b) she is single

c) she is pro-choice

d) she is pro-life

e) she is married and pro-choice

f) she is single and pro-choice

g) Given that she is married, she is pro-choice

h) Given she is married, she is pro-life

i) Given she is single, she is pro-choice

j) Given she is single, she is pro-life

k) Given she is pro-choice, she is married

l) Given she is pro-life, she is single

m) Are being married and being pro-choice independent? Explain.