8 – HW#5 Conditional Probability and Two Way Frequency Tables

Name: _____ Per: _____

1. The table below shows the ages of teachers by departments in a high school:

	21 - 30 years	31 - 40 years	41 - 50 years	51 - 60 years	Total
Science	2	3	4	1	10
Math	3	5	2	2	12
English	4	6	4	1	15
Social Studies	5	3	3	2	13
Total	14	17	13	6	50

a. Find the probability that a randomly selected teacher is 41 to 50 years old?

b. Find the probability that a randomly selected teacher is a 51- 60 year old Social Studies teacher?

c. **Given that** a teacher is 21 – 30 years old, find the probability he/she is an English teacher?

d. **Given that** a teacher is 31- 40 years old, find the probability that he/she is a Science teacher?

2. Suppose there are 1000 first year students at a certain university. Two hundred are taking French but not statistics, one hundred are taking statistics but not French and another 50 are taking both French and statistics.

If you pick a student at random, find the following probabilities:

a. P(taking French)   b. P(taking French or statistics)

c. P(not taking French)   d. P(taking neither French nor statistics)

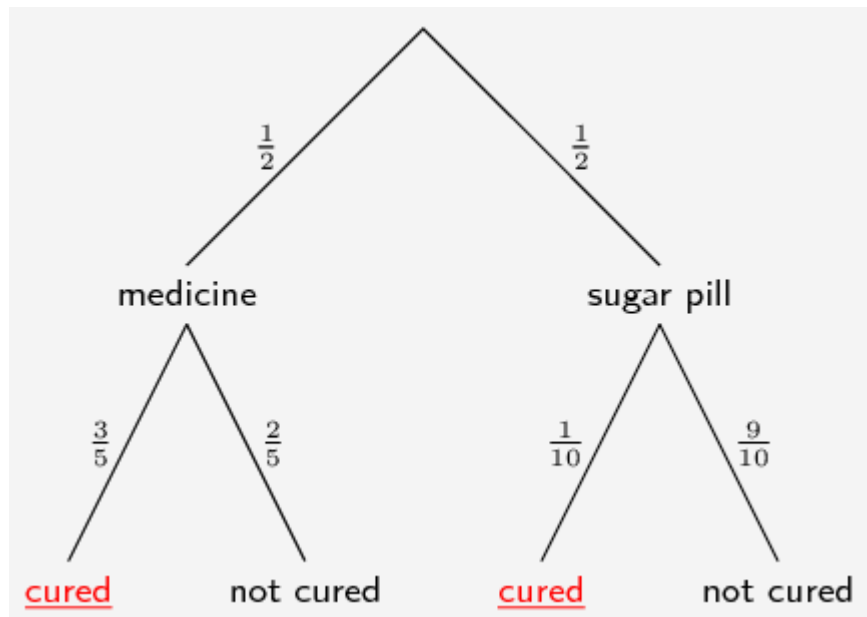e. P(taking statistics given that they are taking French)

3. Below are the number of students who play sports at a local high school. Complete the table below.

	Basketball	Volleyball	Swimming	Track	Total
Female	29	83	17	22	
Male	31	79	17	28	
Total					

If one person is selected at random, find the following probabilities:

a. P(female)

b. P(swimming)

c. P(female and track)

d. P(male or volleyball)

e. P(basketball given that he's male)

f. P(swimming or volleyball)

4. A person takes part in a medical trial that tests the effect of a new medicine on a disease. Half the people are given medicine and the other half are given a sugar pill, which does not contain any medicine. The medicine has a 60% chance of curing someone. But, people who do not get the medicine still have a 10% chance of getting well. There are 50 people in the trial who all have the disease. Judy takes part in the trial but we do not know what type of pill she received.

a.   What is the probability that Judy received a sugar pill and was cured?

b.   What is the probability that she was not cured?