Math 160 – Professor Busken
Probability Worksheet 2 **Name:** _____

1. A study conducted at a certain college shows that 59% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that among 6 randomly selected graduates, at least one finds a job in his or her chosen

2. In a batch of 8,000 clock radios 6% are defective. A sample of 8 clock radios is randomly selected without replacement from the 8,000 and tested. The entire batch will be rejected if at least one of those tested is defective. What is the probability that the entire batch will be rejected?

Table 4 - 1 Results from Experiments with Polygraph Instruments

	No (Did Not Lie)	Yes (Lied)
Positive Test Result (The polygraph test indicated that the subject *lied*.)	15 (false positive)	42 (true positive)
Negative Test Result (The polygraph test indicated that the subject did not *lie*.)	32 (true negative)	9 (false negative)

3. If one of the 98 subjects is randomly selected, find the probability that the subject had a positive test result, given that the subject actually lied. That is find P(positive test result|subject lied).

4. If one of the 98 subjects is randomly selected, find the probability that the subject actually lied, given that he or she had a positive test result.

	Nonsmoker	Light Smoker	Heavy Smoker	Total
Men	306	74	66	446
Women	345	68	81	494
Total	651	142	147	940

Consider the following events:

Event N: The person selected is a nonsmoker
Event L: The person selected is a light smoker
Event H: The person selected is a heavy smoker
Event M: The person selected is a male
Event F: The person selected is a female

5. Suppose one of the 940 subjects is chosen at random. Determine the following probabilities:

a. $P(N|F)$

b. $P(F|N)$

c. $P(H \cup M)$

d. $P(M \cap L)$

e. $P(\text{the person selected is a smoker})$

f. $P(F \cap \overline{H})$

6. Now suppose that two people are selected from the group, ***without replacement***. Let A be the event "the first person selected is a nonsmoker," and let B be the event "the second person is a light smoker." What is $P(A \cap B)$?

7. Two people are selected from the group, ***with replacement***. What is the probability that both people are nonsmokers?

8. Two people are selected from the group. What is the probability that both people are smokers?