Name:_____

AP stats Assign 6.2 Conditional Probability

1. What does conditional probability mean?

6. Researchers are interested in the relationship between cigarette smoking and lung cancer. Suppose an adult male is randomly selected from a particular population. Assume that the following table shows some probabilities involving the compound event that the individual does or does not smoke and the person is or is not diagnosed with cancer:

Event	Probability
smokes and gets cancer	0.08
smokes and does not get cancer	0.17
does not smoke and gets cancer	0.04
does not smoke and does not get cancer	0.71

Suppose further that the probability that the randomly selected individual is a smoker is 0.25.

(a) Find the probability that the individual gets cancer, given that he is a smoker.

(b) Find the probability that the individual does not get cancer, given that he is a smoker.

(c) Find the probability that the individual gets cancer, given that he does not smoke.

(d) Find the probability that the individual does not get cancer, given that he does not smoke.

7. Here are the counts (in thousands) of earned degrees in the United States in a recent year, classified by level and by the sex of the degree recipient:

	Bachelor's	Master's	Professional	Doctorate	Total
Female	616	194	30	16	856
Male	529	171	44	26	770
Total	1145	365	74	42	1626

a. If you choose a degree recipient at random, what is the probability that the person you choose is a woman?

b. What is the probability that a randomly chosen degree recipient is a man?

c. What is the conditional probability that you choose a woman, given that the person chosen received a professional degree?

d. What is the conditional probability that the person chosen received a bachelor's degree, given that he is a man?

e. Are the events "choose a woman" and "choose a professional degree recipient" *independent*? How do you know?

f. Use the multiplication rule to find the probability of choosing a male bachelor's degree recipient.

g. Confirm your answer to Question f by finding the probability of choosing a male bachelor's degree recipient directly from the table of counts above.