

Conditional probability practice

1. Suppose that you have the following table on pet ownership for 1000 homes, and use it to answer the following questions.

	Has at least one cat	Has no cats	Total
Has at least one dog	100	200	300
Has no dogs	300	400	700
Total	400	600	1000

- a. If you randomly sample a home, what is the probability it has neither a cat nor a dog?
- b. If you randomly sample a home, what is the probability it has at least one cat, given that it has no dogs?
2. A random sample of 100 Americans is taken and each participant is asked for their political affiliation or party (Republican, Democrat, or Other) and their stance on the death penalty (Favor/Oppose). The results are summarized in the following table. Assuming you randomly select one of these 100 Americans, find the indicated probabilities.

Party/Stance	Favor	Oppose	Total
Republican	26	4	30
Democrat	12	24	36
Other	24	10	34
Total	62	38	100

- a. The probability they are in favor of the death penalty
- b. The probability they are a Democrat
- c. The probability that they are in favor of the death penalty, given that the American is a Democrat
- d. The probability that they are a Republican, given that the American is in favor of the death penalty

3. Suppose you have 2 types of plant and you know that there is 70% of type 1 and 30% of type 2. Suppose you also know that given the season of the year, currently 40% of type 1 is immature and 80% of type 2 is immature. If you select one plant at random, what is the probability of a mature plant being selected?
- Set up a tree diagram and use to solve the problem.
 - Set up a hypothetical 1000 table (mimicking the cat/dog table in problem 1). Solve the problem using this table and check that your answer matches what you found in part a.