Exercise: Probabilities are sensitive to the form of the question that was used to generate the answer

(Source: Minka.) My neighbor has two children. Assuming that the gender of a child is like a coin flip, it is most likely, a priori, that my neighbor has one boy and one girl, with probability 1/2. The other possibilities—two boys or two girls—have probabilities 1/4 and 1/4.

1. Suppose I ask him whether he has any boys, and he says yes. What is the probability that one child is a girl?
2. Suppose instead that I happen to see one of his children run by, and it is a boy. What is the probability that the other child is a girl?