

## Math 10B, Quiz 5

- (12 points) Suppose you draw 10 cards from a standard deck of 52 cards. What is the probability that you get no hearts or no diamonds? Make sure to clearly explain your answer.
- (1 point) Suppose you randomly select a patient at a hospital. Consider the following two events: (1) the patient has lung cancer and (2) the patient has lung cancer and is a smoker. True or false: it is possible that the second event is **more likely** than the first.  
 True    False
- (1 point) Suppose that of all the people who died in the US in 2017, 15% died of heart disease, 20% were life-long smokers, and the chance of dying of heart disease for life-long smokers was 40%. True or false: the probability that someone who died of heart disease in the US in 2017 was a life-long smoker was  $\frac{.4 \cdot 2}{.15}$ .  
 True    False
- (1 point) On an exam, a question asks: “You draw four cards from a standard deck of 52. What is the probability of getting one of each suit.” One student gives the answer of  $\frac{13^4}{52 \cdot 51 \cdot 50 \cdot 49}$  reasoning as follows: the size of the probability space is  $52 \cdot 51 \cdot 50 \cdot 49$  because that is the number of ways to draw four cards from 52 in order. To get one of each suit, you just need to choose which heart, which diamond, which spade, and which club you get and there are 13 options for each of these choices. The student’s answer is:  
 Too large  
 Correct  
 Too small