

Answer on Question #82311 – Math – Statistics and Probability

Question

Suppose that two cards are randomly selected from a standard 52-card deck.
(a) What is the probability that the first card is a king and the second card is a king if the sampling is done without replacement?

Solution

The probability space Ω is a set of ordered pairs $(c1, c2)$. The total number of such pairs is $52 \cdot 51 = 2652$ since there are 52 variants to choose the first card, and after it is selected there are $52-1=51$ variants to choose the second card.

There are $4 \cdot 3 = 12$ variants to choose both kings since there are 4 variants to choose the first king and after it is selected there are $4-1=3$ variants to choose the second king.

Hence the probability is

$$\frac{12}{2652} = 0.0045$$

Answer: $\frac{12}{2652} = 0.0045$.