

## 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  $\Omega$  is a set of ordered pairs  $(c_1, c_2)$ . 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:**  $\frac{12}{2652} = 0.0045$ .