

**Problem #6166** What is the probability of getting four cards of the same value ( 4 Aces, 4 Kings etc) from a pack of cards, without replacement? Please explain your answer

**Answer** The space of elementary events in the problem is  $\Omega = \{(A_1, A_2, A_3, A_4)\}$ , where  $A_i, i = 1, \dots, 4$  is the  $i$ -th card in a taken group of 4 cards. Hence  $|\Omega| = \binom{52}{4}$ . The event we are interested in is  $A = (A_1, A_2, A_3, A_4)$ , where  $A_i$  represent the card of the same value, there are 13 possible groups of such type, hence  $|A| = 13$ . The probability in problem, after simplifying,  $p = \frac{|A|}{|\Omega|} = \frac{13}{\binom{52}{4}} = \frac{1}{25 \cdot 17 \cdot 39} \approx 4.8 \cdot 10^{-5}$ .

**Answer**  $p = \frac{1}{25 \cdot 17 \cdot 39} \approx 4.8 \cdot 10^{-5}$