Answer on Question #53908-Engineering-Mechanical Engineering

A word 'papagay' is formed by letters of an alphabetic section. then, cards with letters are well mixed and any four of them are drawn one after another in succession and arranged in a row. what is the probability of obtaining the word 'papa' by this procedure?

Solution

Suppose that events A, B, C and D be, respectively, that the first letter drawn 'p'; the second 'a'; the third 'p' and the fourth 'a'; then the event in whose probability we are interested can be written as ABCD. Further, by applying consecutively a few times the formula for probability of the product of two events, we have

$$p(A) = \frac{2}{7},$$

$$p(AB) = p(A)p_A(B) = \frac{2}{7} \cdot \frac{3}{6} = \frac{1}{7},$$

$$p(ABC) = p(AB)p_{AB}(C) = \frac{1}{7} \cdot \frac{1}{5} = \frac{1}{35},$$

and, finally,

$$p(ABCD) = p(ABC)p_{ABC}(D) = \frac{1}{35} \cdot \frac{2}{4} = \frac{1}{70}.$$

Answer: $\frac{1}{70}$.