Answer on Question #63073 – Math – Statistics and Probability

Question

A club consist of 15 members. In how many ways can a committee of 3 to be chosen?

Solution

Firstly, we need to choose the first committee member. There are 15 possible ways to do it.

Secondly, there are 14 possible ways to choose the second committee member, because 15th member is in committee already.

Thirdly, there are 13 possible ways to choose the third committee member, because two other members are in committee already.

Besides, the order in which 3 persons could be chosen is not important for us. In other words, we do not distinguish 3! = 6 ways and regard only one case:

$$(1,2,3), (1,3,2), (2,3,1), (2,1,3), (3,2,1), (3,1,2).$$

Since three steps are independent, committee of 3 to be chosen in

$$\binom{15}{3} = \frac{15 \cdot 14 \cdot 13}{3!} = \frac{15 \cdot 14 \cdot 13}{3 \cdot 2} = 5 \cdot 7 \cdot 13 = 455$$

different ways.

Answer: 455 different ways.