

Answer on Question #80601 – Math – Statistics and Probability

Question

A selection committee consisting of 10 members is to be formed from a group of 20 employees at a firm. Of the 20, 12 are female. Calculate probability that at most 8 committee members will be female

Solution

Number of ways to select 10 members: $C_{10}^{20} = \frac{20!}{10! \cdot 10!} = 184756$

Number of ways to select 9 female members: $C_9^{12} * C_1^8 = \frac{12!}{9! \cdot 3!} * \frac{8!}{1! \cdot 7!} = 1760$

Number of ways to select 10 female members: $C_{10}^{12} = \frac{12!}{10! \cdot 2!} = 66$

Number of ways to select from 1 till 8 female members $184756 - 1760 - 66 = 182930$

Probability that at most 8 committee members will be female:

$$P = 182930 / 184756 = 0.99012$$

Answer: Probability that at most 8 committee members will be female equals 0.99012.