Answer on Question #78456 – Math – Combinatorics | Number Theory

Question

A cricket team of 11 players is to be selected from two groups of 6 and 8 players. In how many ways can the selection be made so that at least 4 players are taken from the group of 6.

Solution

The possible ways of performing the required selection:

a) 4 players from G6 and 7 players from G8;
b) 5 players from G6 and 6 players from G8;
c) 6 players from G6 and 5 players from G8;

Now one needs to determine the number of possible selections for each case.

a) $_6C_4 \cdot {}_8C_7 = \dfrac{6!}{4!2!} \cdot \dfrac{8!}{7!1!} = 120$

b) $_6C_5 \cdot {}_8C_6 = \dfrac{6!}{5!1!} \cdot \dfrac{8!}{6!2!} = 168$

c) $_6C_6 \cdot {}_8C_5 = \dfrac{6!}{6!0!} \cdot \dfrac{8!}{5!3!} = 56$

The total number of selections = 120 + 168 + 56 = 344

Answer: 344 ways of making the given selection.