Conditions

How many different committees can be formed from 7 teachers and 41 students if the committee consists of 3 teachers and 4 students? In how many ways can the committee of 7 members be selected.

Solution

The amount of different ways we can choose 3 teachers from 7 teachers is:

$$C_7^3 = \frac{7!}{3!\,4!} = \frac{5 \cdot 6 \cdot 7}{1 \cdot 2 \cdot 3} = 35$$

The amount of different ways we can choose 4 students from 41 students is:

$$C_7^3 = \frac{41!}{37!\,4!} = \frac{38 \cdot 39 \cdot 40 \cdot 41}{1 \cdot 2 \cdot 3 \cdot 4} = 101270$$

Then, the amount of different ways we can choose a committee is:

$$35 \cdot 101270 = 3544450$$