**Homework Assignment 5**

**1)** Problem 2(iv) on page 50

**2)** Problem 15 on page 51

**3)** Example 1.4.3 parts (i), (ii), and (iii)

**4)** Problem 2(iii) on page 50

**5)** Problem 20 on page 52

**6)** Problem 22 on page 52

**7)** Problem 23 on page 52

**2. There are 12 students in a party. Five of them are girls. In how many ways can these 12 students be arranged in a row if**

**(iv) between two particular boys $A$ and $B$, there are no boys but exactly 3 girls?**

---

**15. In a group of 15 students, 5 of them are female. If exactly 3 female students are to be selected, in how many ways can 9 students be chosen from the group**

**(i) to form a committee?**

**(ii) to take up 9 different posts in a committee?**

---

**Example 1.4.3.** **In how many ways can a committee of 5 be formed from a group of 11 people consisting of 4 teachers and 7 students if**

**(i) there is no restriction in the selection?**

**(ii) the committee must include exactly 2 teachers?**

**(iii) the committee must include at least 3 teachers?**

---

**2. There are 12 students in a party. Five of them are girls. In how many ways can these 12 students be arranged in a row if**

**(iii) no 2 girls are adjacent?**

---

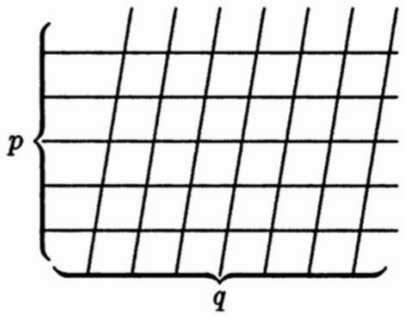
**20. In a group of 15 students, 3 of them are female. If at least one female student is to be selected, in how many ways can 7 students be chosen from the group**

**(i) to form a committee?**

**(ii) to take up 7 different posts in a committee?**

---

**22. Two sets of parallel lines with $p$ and $q$ lines each are shown in the following diagram:**




**Find the number of parallelograms formed by the lines?**

---

**23. There are 10 girls and 15 boys in a junior class, and 4 girls and 10 boys in a senior class. A committee of 7 members is to be formed from these 2 classes. Find the number of ways this can be done if the committee must have exactly 4 senior students and exactly 5 boys.**