Principle of Addition:

If a task can be performed in p different ways and if another task can be performed in q different ways and the two operations are mutually exclusive.(task can be performed independently, the performance of one does not affect the performance of the other) then either of the two tasks can be performed in (m + n) ways.

Question 1: In a class there are 20 boys and 33 girls. The teacher wants to select a monitor in a class.

Solution: In this case the teacher can perform the same job in two ways either he selects a boy out of 20 boys as a class monitor or selects a girl out of 33 girls as a class monitor.

As per addition principle of counting the total number of ways to select a monitor is (20 + 33) = 53 ways.

Question 2: In a class there are 30 boys and 30 girls. The teacher wants to select a sports captain in a class.(all 60 students are involved in sports activity).

Solution: In this case the teacher can perform the same job in two ways either he selects a boy out of 30 boys as a sports captain or selects a girl out of 30 girls as a sports captain.

As per addition principle of counting the total number of ways to select a sports captain is (30 + 30) = 60 ways.

Question 3: There are 20 students for Statistics, 25 for Mathematics and 35 for an Economics scholarship. In how many ways can one of these scholarships be awarded ?

Solution: Total number of ways of awarding one of the three scholarships = 20 + 25+ 35 = 80 ways. (apply Addition principle of counting because only one scholarship is to be awarded, either for Statistics students or for Mathematics students or for Economics students.)

Question 4: There are 10 students for History, 15 for Geography and 12 for an English scholarship. In how many ways can one of these scholarships be awarded ?

Solution: Total number of ways of awarding one of the three scholarships = 10 + 15 + 12 = 37 ways. (apply Addition principle of counting because only one scholarship is to be awarded, either for History students or for Geography students or for English students.)

Question 5: In a section there are 22 boys and 42 girls. In how many ways the teacher can select either a girl or a boy to represent the class in an annual function.

Solution: In this case a teacher can select either a boy out of 28 boys or a girl out of 32 girls. Selection process is seen as independent so the total number of selection of a student is (22 + 42) = 64. (apply Addition principle of counting)