Ques:- In a class of 35 students, 24 like to play cricket and 16 like to play football. Also each student like to play at least one of the two games. How many students like to play both cricket and football?

Solution:—

Let X be the set of students who like to play cricket and Y be the set of student who like to play football.

So $X \cup Y$ is set with student play atleast one game

$X \cap Y$ is set with student play both game.

So given $n(X) = 24$, $n(Y) = 16$, $n(X \cup Y) = 35$

$n(X \cap Y) = ?$

So $n(X \cup Y) = n(X) + n(Y) - n(X \cap Y)$ we get

$35 = 24 + 16 - n(X \cap Y)$

thus $n(X \cap Y) = 5$

5 Student like to play both games.