- We shall try to show, among these 25 differences, atleast ~~2 of the~~ differences ~~are actually equal to each other~~ occur atleast 3 times.

- ~~The odd are whole~~ Suppose, for the sake of contradiction, each of the differences from 1 to 12 occur atmost two times each.

- ∴ We can have a maximum of $12 \times 2 = 24$ differences.

- But we have 25 differences given

- ∴ Our assumption that each of the differences from 1 to 12 occur atmost 2 times is wrong

- So, ∃ a difference which has atleast 3 occurences among the given 25 differences.

- ∵ $28 = 25 + 3$, it's implicit that atleast 3 pairs of no.s will have the same positive differences in case of 28 differences.

  (Needs to be written a little bit more rigorously)

Prob 8: Show that in any group of five people, there are two who have an identical no. of friends within the group.

- ~~Since~~ Each person in a group has no. of friends in the set $\{0,1,2,3,4\}$.

- Suppose, by the sake of contradiction, each person in the group has different no. of friends.

- Since, there are 5 people, and the cardinality of the given set is 5, each element of the set occurs exactly once as the respective no. of friends of each person.

- But, if a person has 4 friends, in a 5 people group, it's evident that each of the other persons must have ~~a~~ atleast 1 friend respectively.

- So, in a 5 people group, a person having 4 friends and a person having 0 friends can't co-exist together.

- ∴ Our assump that each person in the group has different no. of friends is wrong. So, in a group of 5, there are 2 who have an identical no. of friends within the group.