

Proof For Feedback

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Please write your best written proof of the following theorem. You will be graded on logic as well as writing.

Theorem 1. *Suppose $n \geq 2$ people are in a room together. Suppose each pair of people is either a pair of friends or not friends at all. Then there are two people with the same number of friends.*

Hint: Use pigeonhole principle. It is probably useful to do two cases based on the number of friendless people: either there's at most one friendless person (in which case we take them out of the room entirely), or there are more than one.