

1. There are two people in Toronto with the exact same number of hairs on their head.
2. Consider 5 points in the interior of a square of side length 1. Prove that the distance between two of them is less than $\frac{\sqrt{2}}{2}$.
3. Show that if there are 20 people in a party, then two of them know the same number of people (among those present).
4. Let a_1, a_2, a_3, a_4, a_5 be 5 integers. Show that there is a subset of these numbers with sum divisible by 5.
5. Given $n + 1$ positive integers none of which exceeds $2n$, show that at least one member of the set must divide another member of the set.