Name	Ent. No.

Important: Keep your answer within the box. Anything written outside the box will be treated as rough work. Do your rough work on the flip side of this sheet.

Q. The *Pigeonhole principle* says that if a set of size m is partitioned into n parts such that $n < m$ then at least one of the partitions must have at least 2 elements of the set. Use this simple but powerful fact in the following:

Let $S = \{1, 2, \ldots, n-1, n\}$ where $n \geq 3$. Prove that S has two subsets A, B such that the sum of the elements of A is equal to the sum of the elements of B.