1125-05-2579   **Stephen M. Gagola III*** (`gagolasm@miamioh.edu`), Department of Mathematics, Miami
University, Oxford, OH 45056. *Multiplicative properties of partitions of integers.*

Here we give a combinatorial proof of an inequality that was first proven by Christine Bessenrodt and Ken Ono. Bessenrodt
and Ono proved that the number of partitions of n, say $p(n)$, satisfies $p(a)p(b) > p(a + b)$ for $a, b > 1$ and $a + b > 9$ by
using a result of Lehmer and asked whether a combinatorial proof exists. Here we prove the inequality combinatorially
and show that the proof can also be extended to prove the analogous inequality for k-regular partitions with $k \geq 2$.
For $2 \leq k \leq 6$, these inequalities were first proven to hold for k-regular partitions by Olivia Beckwith and Christine
Bessenrodt using similar methods to the $p(n)$ case. (Received September 20, 2016)