

1135-VV-2059 **Denver Stahl*** (stahldi@jay.washjeff.edu) and **Roman Wong**. *Any Which Way You Split*.

The splitting problem is an effective way to illustrate the concept of strong induction. We start by splitting a pile of n objects into two piles of r and s objects, respectively. We then compute the product $r \times s$. We repeat this process for the smaller piles, splitting each into 2 piles any which way we want until we are left with n piles of 1 object. Finally, we calculate the sum of all these products, $\sum r \times s$. It is a surprising discovery that this sum of products is always the same for a given n regardless of how the piles are split in the process. Can we generalize this problem to splitting into 3 piles? 4 piles? What about k piles? Can we find a method of splitting such that, no matter how we split, we find an invariant? In this talk, we delve into this generalization and provide an answer to these questions (Received September 25, 2017)