Generation, Construction, Matches: An Analysis of n-Sided Dice

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We address n-sided dice whose face values lie between 1 and n and whose faces sum to n(n+1)/2. We tackle the problem of generating n-sided dice by developing an algorithm to generate the integer partitions of n into exactly k parts, each part at most m. This general algorithm was then used to generate n-sided dice by making appropriate substitutions to the values of n, k, and m. We then create a class of constructions that enable us to obtain (n+1) distinct (n+1)-sided dice from one n-sided die. Finally, we develop a function that allows us to identify the winning die of a match more efficiently than the previously used function.

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