Playing Farkle with n-sided dice

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Farkle is a popular greedy-type dice game involving six 6-sided dice. After each roll during a turn, the player has two options: (1) not roll and end their turn by adding the points accrued on their turn to their game total, or (2) roll again. If a roll results in a scoring combination, points are added to the players turn's total. If not, the player is said to have rolled a *Farkle* which ends the player's turn and no points are added to the player's game total. Once some player's game total has exceeded a certain pre-set point threshold, the remaining player's have one more turn to attempt to add to their game totals. The winner is the player with the highest game total.

Using generating functions and enumerative combinatorial techniques, we compute the probabilities of the various scoring outcomes occurring during the standard game of Farkle and Farkle-like games involving n-sided dice for $n \leq 8$. This leads to formulating game strategies, making gameplay observations, and how these depend on value of n.

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