Poison

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1 Description of the game

Poison is a game for 2 players. From a pile of n stones the first player takes either one or two stones. Then the second player takes one or two stones. They repeat this ...

2 Main result

Theorem 1. *If the game of Poison starts with* 10 *stones, then the second player to go can always win.*

Proof. Player 2 can use the following strategy to win Poison with 10 stones:

1. Whenever player 1 takes 1 stone, player 2 takes 2 stones in the next move.

2. Whenever player 1 takes 2 stones, player 2 takes 1 stone in the next move.

Hence in each round the number of stones decreases by 3. After the first round there are 7 stones left, then 4, finally 1. So player 1 is forced to take the last stone and loses. □