

The Take-Away Game:
Connecting Students' Arguments to the Principle of Mathematical Induction

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You have been challenged by your archenemy to play the following game:

- There are 21 chips on the table to start.
- In each move, a player takes away 1, 2, or 3 chips from the table.
- Players have to alternate moves.
- The player who takes away the last coins wins.

Assuming optimal play, do you want to go first or second to guarantee a win? Why?

