

# Nim

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# Game: Single-pile Nim

- ▶ Play in pairs.
- ▶ Place a pile of sticks\* in front of you.
- ▶ Players take turns to take 1, 2 or 3 sticks from the pile.
- ▶ The player who takes the last match wins.



Question: what is a winning strategy for this game?

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\*or stones or counters or, indeed, matches.

# Game: Multi-pile Nim

- ▶ Play in pairs, take turns.
- ▶ Start with several heaps<sup>†</sup> of sticks.
- ▶ A move is to remove a positive number of sticks from one of the piles.
- ▶ The player to take the last stick wins.

An example 3-pile Nim game:



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<sup>†</sup>or piles