



Pop Tac Toe

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Talk presented at MathFest, Aug 2025 by Phil Yasskin, John Weeks, Kun Wang, Lucian Chauvin, Mckinley Xie, Carl Van Huyck, Marshall King and Sinjini Sengupta.

- Players start with 8 checkers of their color. They take turns placing a checker anywhere on the checkerboard with the goal of getting three in a row.
- The complication is that when a checker is placed next to a previous piece (of either color) the previous piece pops away one space, (horizontally, vertically or diagonally) with the exception that if there is another piece behind it, the previous piece does not move.
- If a piece falls off the side of the board, it is returned to the storage bin to be used again later.
- When all of their checkers are on the board, a player can move any one piece one space in any direction (like a King's move) with the requirement that pieces adjacent to the new space pop away as previously described.

There is a website where two people can play in person or via zoom. Go to:

<https://mymathapps.com/mymacalc-sample/>

and navigate to:

<https://mymathapps.com/mymacalc-sample/MathCircleApps/2PGames/PopTacToe/PopTacToe.html>

The website offers lots of variations of the game. The basic rules described above are:

Reincarnation (when a checker falls off the side of the board, it can be played again).

Continue (when all the pieces are on the board).

Pieces can be moved only when All are on the Board,
by a King's move, with No Zero moves and No Jumps.

To be able to discuss the moves, you are advised to Turn On the Labels,

The website has lots of variations, like playing on a Torus or a Klein bottle.

The game started during the Pandemic, when Phil Yasskin attended a Julia Robinson online Math Circle and played a game called Berserker on Second Life. Phil modified the rules and Carl Van Huyck programmed it to be on the TAMU Math Circle Apps website, linked above. In spring of 2024, Lucian Chauvin and Mckinley Xie (undergrads at A&M) programmed Stockfish (the world champion Chess computer) to play Pop Tac Toe. In spring of 2025, Lucian and Carl programmed the Math Circle Apps website to be able to play against the computer. Stockfish is pretty good, but it can be beaten.

The game also appears in the Summer, 2025 issue of the Math Circular and in a YouTube video.