

Story 5. Dodgeball

Player One's game board

1						
2						
3						
4						
5						
6						

Player Two's game board

1	2	3	4	5	6

Dodgeball is a game for two players—Player One and Player Two (although any two people can play it, even if they are not named “Player One” and “Player Two”). Each player has a special game board (shown below) and is given six turns.

Player One begins by filling in the first horizontal row of his game board with a run of X’s and O’s. That is, on the first line of his board, he will write either an X or an O in each box. Then Player Two places either an X or an O in the first box of her board. So at this point, Player One has filled in the first row of his board with six letters, and Player Two has filled in the first box of her board with one letter.

The game continues with Player One writing down either an X or an O in each box of the second horizontal row of his board. Then Player Two writes one letter (an X or an O) in the second box of her board. The game proceeds in this fashion until all of Player One’s boxes are filled with X’s and O’s; thus, Player One has produced six rows of six marks each, and Player Two has produced one row of six marks. All marks are visible to both players at all times. Player One wins if any of his rows exactly matches Player Two’s row (Player One matches Player Two).

Player Two wins if her row does not match any of Player One’s rows (Player Two dodges Player One).

Would you rather be Player One or Player Two? Who has the advantage? Can you devise a strategy for either side that will always result in victory? This little game holds within it the key to understanding the sizes of infinity.

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Nudges:

- Play this game a few times with a friend. Switch roles so that each of you has the opportunity to be Player One and Player Two. Remember, if you are Player One, your goal is to match one of your rows with your opponent's row. If you are Player Two, you want to dodge all six of your opponent's rows; that is, you want your row to differ in at least one spot from each of the six rows of your opponent. Who would you rather be: Player One or Player Two?