

Mathematical Games, Part 3

Chapel Hill Math Circle –Sept. 24, 2016

Ducks in a Row

There are 15 pennies in a row. Players take turns removing 1, 2, or 3 consecutive pennies at a time. “Consecutive” means located next to each other. The player who cannot move (because there are no pennies left) loses.

Extra Game: Dominos on a Board

Players take turns placing 1 x 2 dominos on an 8 x 8 board. Each domino should be placed so as to fully cover two squares of the board. The dominoes cannot overlap. The player who cannot place a domino loses.

Students: try to find a winning strategy. To describe a winning strategy, you have to explain what the winning player should do in order to win, no matter what the opponent does. Once you find a winning strategy, challenge the teacher at your table to a game!

Inchworm

There are two piles of 7 pennies each. Players take turns taking a single penny from one of the piles, or a penny from each pile. The player who cannot move loses.

Students: try to find a winning strategy. To describe a winning strategy, you have to explain what the winning player should do in order to win, no matter what the opponent does. Once you find a winning strategy, challenge the teacher at your table to a game!

Extra game: Sneaky Inchworm.

In addition to the moves described above, players are allowed to take a penny from the first pile and place it on the second pile or vice versa.