# Math Field Day
## California State University, Fresno

## The first game will be one of the following games.

- ## Game A
  ### What you need
    - 12-30 coins (or chips).
  ### How to play
    - Choose a random number between 12 and 30 and make a pile of that many coins. Also choose a random number N between 3 and 6.
    - Each of the players takes turns removing 1, 2, ... , or N coins from the pile. (For example, if N=4, then in each move you can remove 1, 2, 3, or 4 coins from the pile.)
    - The game ends when there are no more coins in the pile.
    - The last person to remove a coin wins (i.e. the person who cannot make a move loses).

- ## Game B
  ### What you need
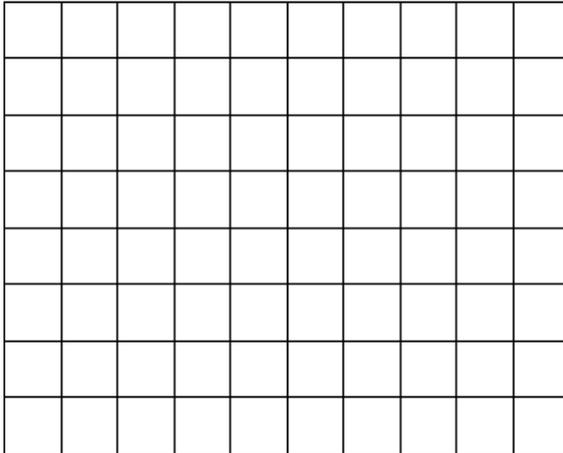    - 15-40 coins (or chips).
  ### How to play
    - Make two or three piles of 5-15 coins each.
    - Each of the players takes turns removing any number of coins from any of the piles (but only one pile; you cannot remove coins from different piles in one move).
    - The game ends when there are no more coins in any of the piles.
    - The last person to remove a coin wins (i.e. the person who cannot make a move loses).
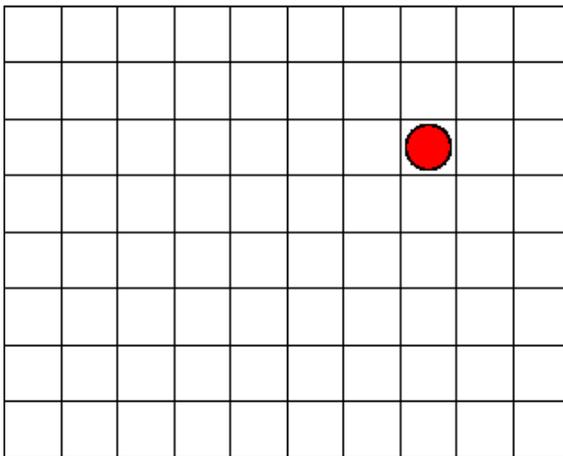
- # Game C
    - A 6x6 to 15x15 rectangle (e.g. a chessboard would work, or draw such a rectangle on paper), like this..

    

    - 1-3 coins (or chips).
    - Put the coin(s) in any square(s) on the board. If you play with more than 1 coin, they can be in the same square or in different ones, for example

    

    - Each of the players takes turns moving one of coins any positive number of spaces either to the left or down.
    - The game ends when all coins are in the bottom left corner.
    - The last person to move a coin wins (i.e. the person who cannot make a move loses).
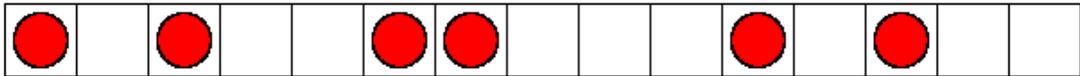
- # Game D

  ## What you need

  - A strip of paper, marked off into 10-20 squares, like this..

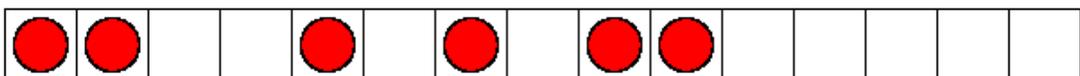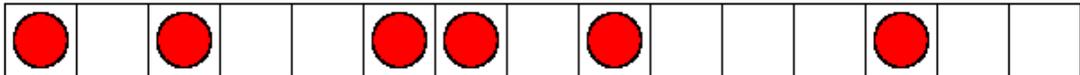  | | | | | | | | | | | | | | | | |
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  - 5-10 coins (or chips).

  ## How to play

  - Set up the game by laying out the strip of paper and placing any number of coins anywhere on the paper, one coin per square, leaving as many squares as you like empty.

  - Each of the players takes turns moving a coin. This is how coins may be moved:
    - Two coins may not share a square.
    - No coin may pass another coin.
    - Coins only move to the left.
    - Within these restrictions, coins can move any number of spaces.
    - Here are a few moves that these players could make:

  - When all the coins are lined up on the left as shown below, no more coins can be moved. The last player to move a coin is the winner. (Which is to say the first person who cannot move a coin loses.)