Chomp and Game Trees

One 75 Minute Class.

Activity

- Have students pair off and play the game on different sized boards: 2×5, 4×4, etc. (On a $2 \times n$ bar the winning strategy is to go first and always leave the numbers in the two rows differing by 1. On an $n \times n$ bar go first, and always leave a symmetric L-shape.)

- Introduce students to game trees.

- Have students draw game trees in groups at the board: Draw it for

    - chomp on a 2×2 board
    - maybe chomp on a 2×3 board (this is much larger)
    - nim (if students are familiar with the game) on one pile, subtracting at most 3 each time, starting with 7 in the pile (or more),
    - tic-tac-toe on a 2×2 board
    - nim on a $2, 3$ start or for more of a challenge maybe a $1, 2, 3$ or $3, 3$ start.

- Discuss: Why, in a 2-player game which always ends and has no draws, one player necessarily has a winning strategy.

References and resources

Math Explorer's Club 2008: Games

Play Chomp online

Follow-on activities

Nim