

Plentiful Possibilities for Pen, Pencil, and Paper Play

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Materials

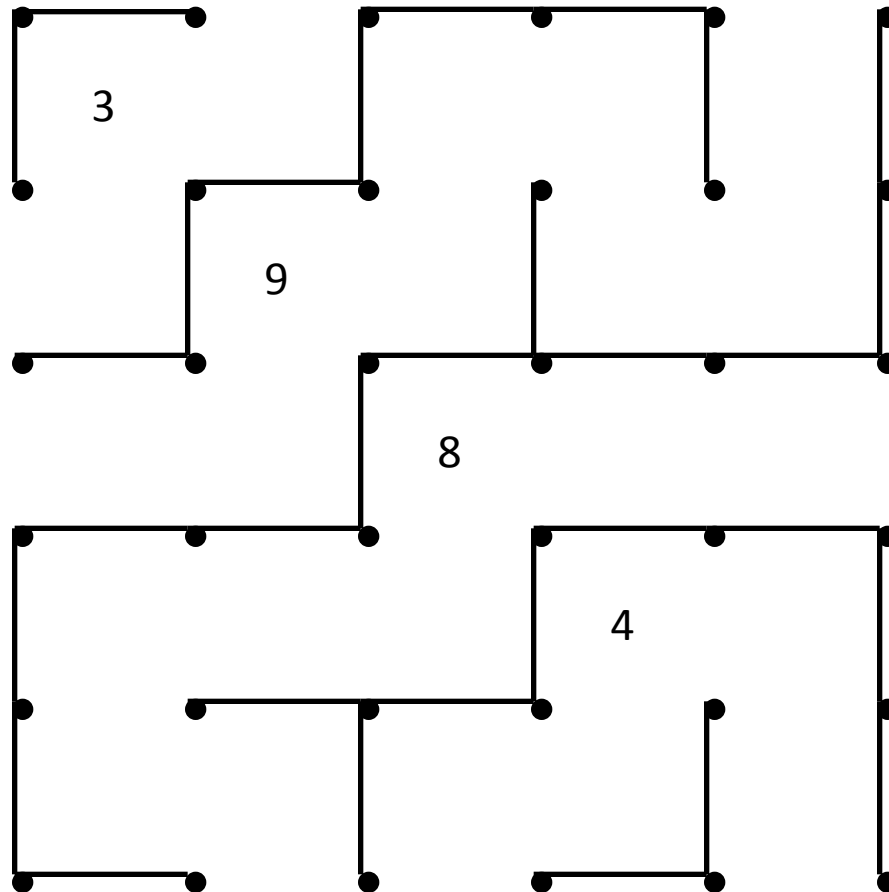
- For many games, graph paper is very handy
- Prefer pencil to pen to fix game rule mistakes
- Some games benefit from two colors of pencil/pen

Dots and Boxes

- Board: An arbitrary number of dots in a rectangular grid layout. (On graph paper, dots are at intersections.)
- Move: Mark a horizontal or vertical line between adjacent dots. If this forms complete square(s), mark the square(s) with a unique player initial, and make another move.
- When all squares are claimed the player marking the most squares wins.

Dots and Boxes: Example

- You to move:



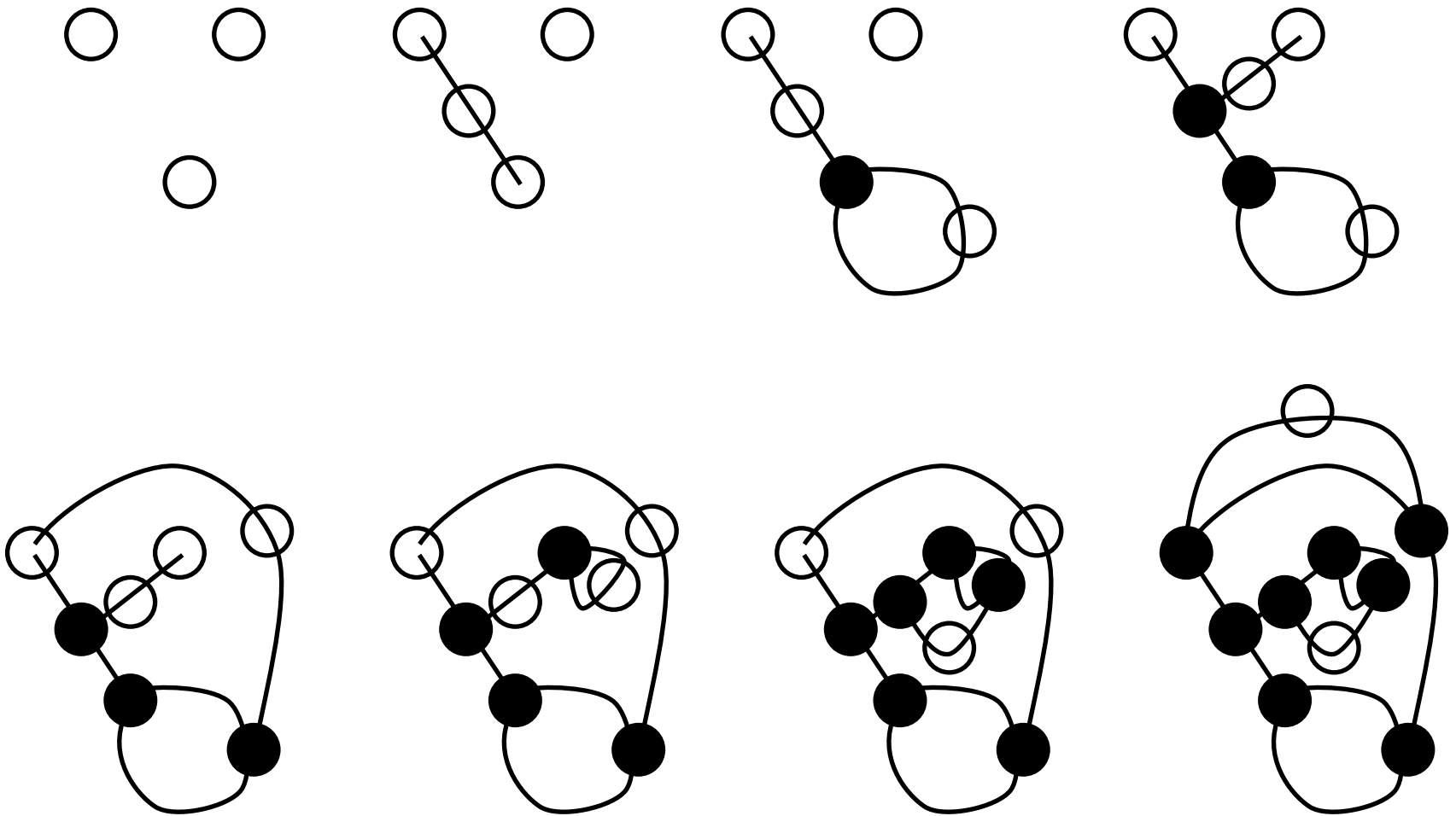
Dots and Boxes: Basic Strategy

- Avoid creating third sides of squares.
- Consider the common end-game scenario where there are a number of disjoint chains of varying length.
 - Players typically take turns claiming one chain and giving away the next.
 - No brainer: Give away shortest chain to other player.
 - However, control in the endgame is key, so...
 - Leave the last two squares of all but last chain for the other player!
- Advanced strategy: Berlekamp, Elwin R. *The Dots and Boxes Game: sophisticated child's play*, 2000.

Sprouts

- Rules:
 - Draw a number (e.g. 3) of unfilled small circles
 - On each turn, draw a (possibly curving) line between circles (or from a circle to itself), and draw a new circle splitting the new line. However:
 - Lines cannot touch or cross.
 - At most three lines may exit a circle.
 - (Fill in a three-line circle to aid visual reasoning.)
 - The first player unable to make a legal move loses.

Sprouts: Example



Sprouts: Variations

- Brussels Sprouts:
 - Instead of a circle, make a cross (plus); cross each new line.
 - Lines must be drawn from the ends of crosses.
 - Uninteresting game: Total moves, winner predetermined based on initial number of crosses. ($5n-2$ moves; player 1/2 win with odd/even crosses)
- Weeds and Brambles
 - Respectively, Sprouts and Brussels Sprouts with *optional* circle/cross on new line
 - Makes Brussels Sprouts interesting
 - Complicates analysis of Sprouts
- More info: [http://en.wikipedia.org/wiki/Sprouts_\(game\)](http://en.wikipedia.org/wiki/Sprouts_(game))

Jotto

- Deductive word game akin to Mastermind, Bulls and Cows, etc.
- Two players each choose a secret 5-letter word (not proper noun)
 - Others disallow repeated letters.
- Players seek to guess the opponent's word first.
- On each turn a player guesses a word, and the opponent responds with "Jotto!" if the guess is correct, or the number of "jots" otherwise.
 - A jot is the number of letters in the guess that may be used in the construction of the secret word.

Jotto Examples

- Guess “piece” has 3 jots for secret word “crisp”.
- “Games” has 2 jots for secret word “soggy”.
- “Lulls” has 4 jots for secret word “gulls”.
- “Steak” has 5 jots (but no “Jotto!”) for secret word “stake”.

Jotto Strategy

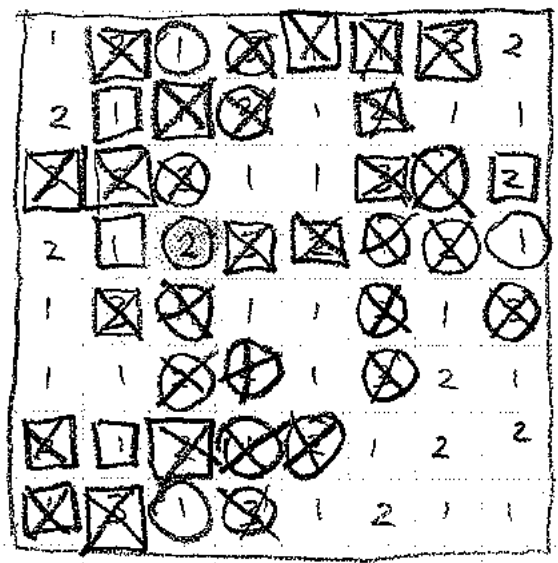
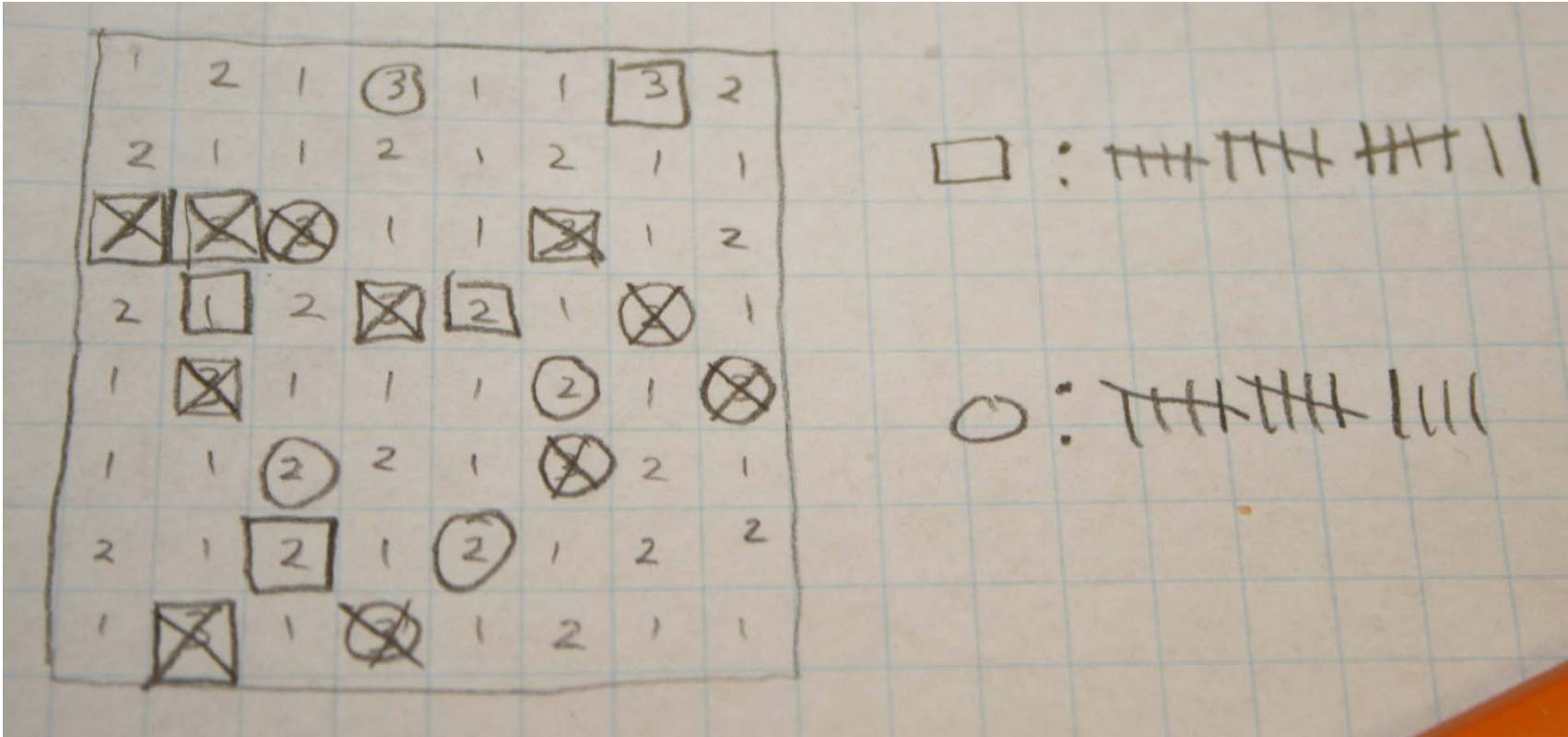
- Ideas for secret word choice:
 - Obscure words with many anagrams (e.g. “tares”)
 - Words with uncommon letters (e.g. “jazzy”)
 - Words with multiple letters (e.g. “lulls”)
- Ideas for guessing strategy:
 - Write down a list of letters, crossing out those that cannot occur in the secret word. (0 jots is good!)
 - Write down each guess and the number of jots.
 - In each guess, circle each confirmed secret letter, and cross out each confirmed non-secret letter.
 - Guess initial sequences of words with high letter coverage, e.g. blown-fixed-gravy-jumps-ketch.
 - Choose guesses to strategically aid in deductive process

Paper Pen-guins

- Pencil and paper variation of Pingvinas/“Hey! That’s My Fish!”
- Object: To score the most points.
- Board: 8x8 square grid
- Initial setup:
 - Players take turns writing 11 “3”s in grid squares, then 21 “2”s. All remaining squares are marked with “1”s.
 - Players take turns placing four “pieces” each, represented by a square/circle outlining a number within a grid square

Paper Pen-guins: Move

- Square moves first.
- A move consists of these steps:
 - The player chooses one of their pieces, and adds the number that piece contains to their score. (Tally score to the side of the board.)
 - Mark an “X” through that grid square, marking that position blocked for the remainder of the game.
 - If possible, the player “moves” the chosen piece a queen’s move (any number of non-occupied/blocked spaces horizontally, vertically, or diagonally) from that position, drawing a new piece in the new location.
- Pieces may not “move” on or beyond other pieces and blocked spaces (marked “X”).



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Paper Pen-guins: Game End

- Play ends when no further legal moves are possible, or by mutual consent when the conclusion can be foreseen.
- Players claim and tally remaining points.
- Highest total points wins.

References

- Wikipedia “paper and pencil games”:
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- Brandeth, Gyles. *Word Games*, 1986 (Jotto)
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- Mohr, Marilyn Simonds. *The New Games Treasury*, 1997. (Dots and Boxes, Gomoku, Jotto, Sprouts)