

Pure Strategy Games

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Circular Nim

- Start with a circular arrangement of 12 stones.
- Two players take turns removing 1 stone or 2 originally-adjacent stones per turn.
- The player who removes the last stone wins.

Nim

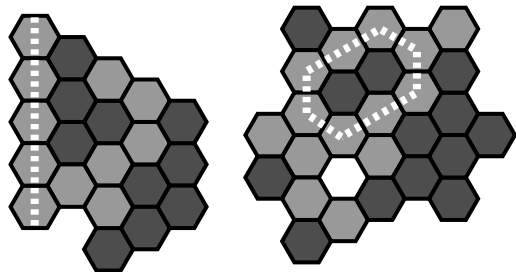
- Start with 3 piles of stones: a pile of 3 stones, a pile of 4 stones, and a pile of 5 stones.
- Two players take turns removing as many stones as they want from one pile per turn.
- The player who removes the last stone wins.

Andantino

- Play on any flat surface using hexagonal tiles of two colors.
- Two players take turns placing one hexagonal tile of their color per turn.
- The game starts with the three-tile arrangement shown, with the darker-tiled player to place the next tile.

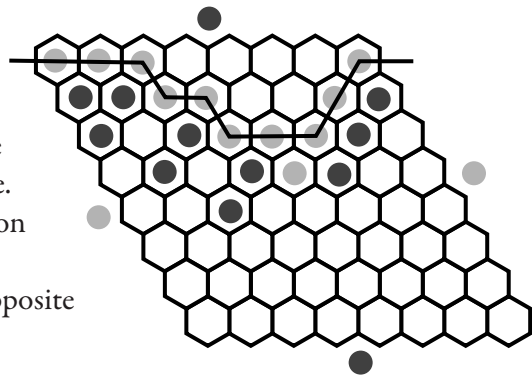


- Every tile must be placed adjacent to at least two of the tiles already placed.
- A player wins by either completing a straight line of five tiles or surrounding one or more of the opponent's tiles in a continuous loop (there may be empty spaces inside the loop, as long as there is at least one opposing tile).



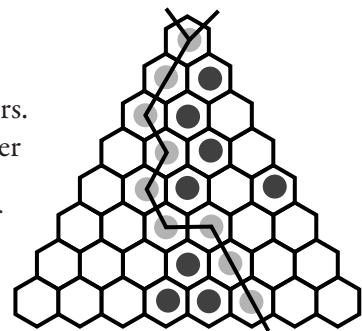
Hex

- Play on a rhombus-shaped array of hexagonal spaces using stones of two colors. Designate one pair of opposite edges of the board for one color of stone and the other pair of opposite edges for the other color of stone.
- Two players take turns placing one stone of their color on the board per turn.
- A player wins by connecting their designated pair of opposite sides. Corners of the board count as part of both sides.



Y

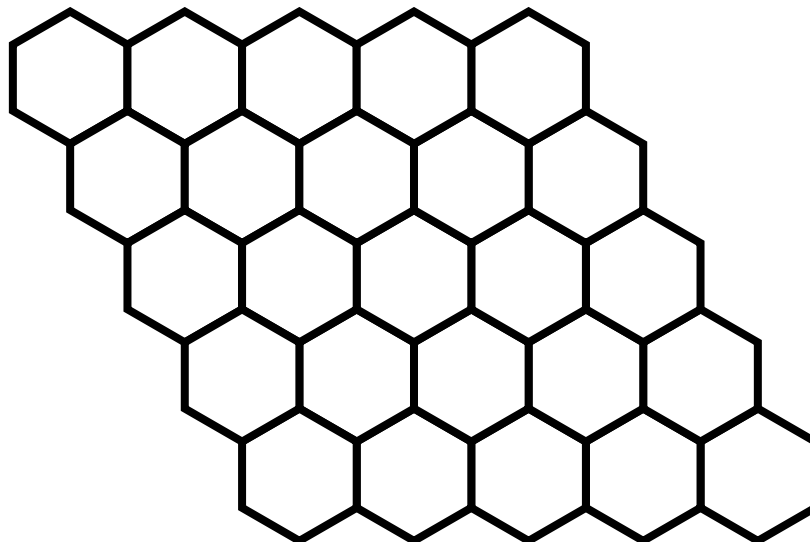
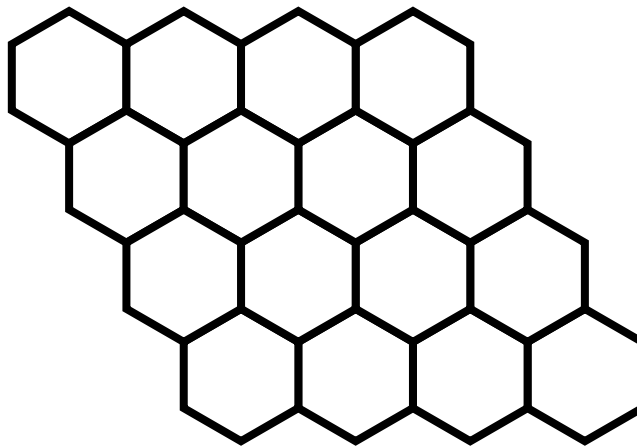
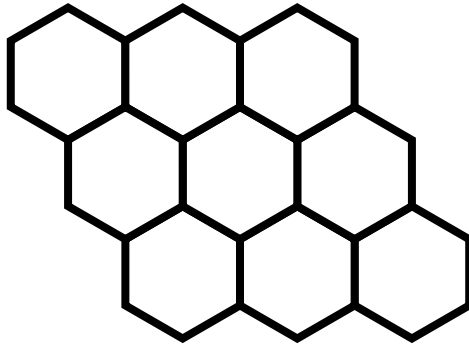
- Play on a triangular array of hexagonal spaces using stones of two colors.
- Two players take turns placing one stone of their color on the board per turn.
- A player wins by connecting all three sides of the board with stones of their color. Corners of the board count as part of both sides.



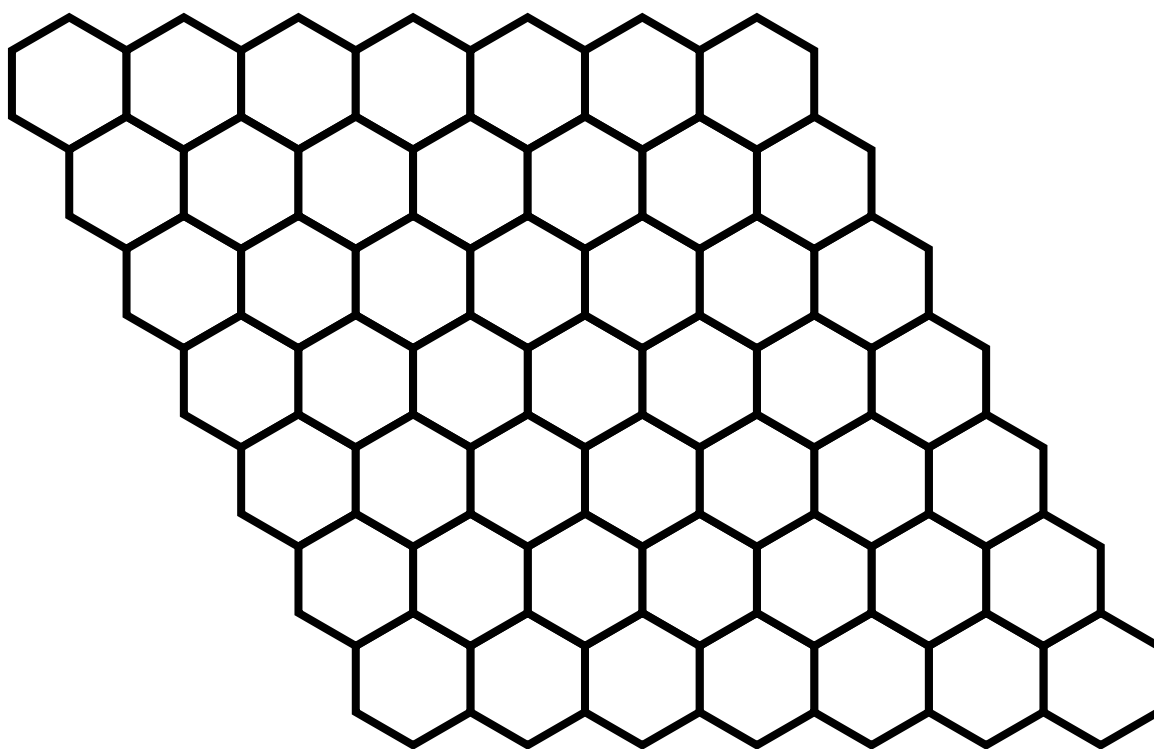
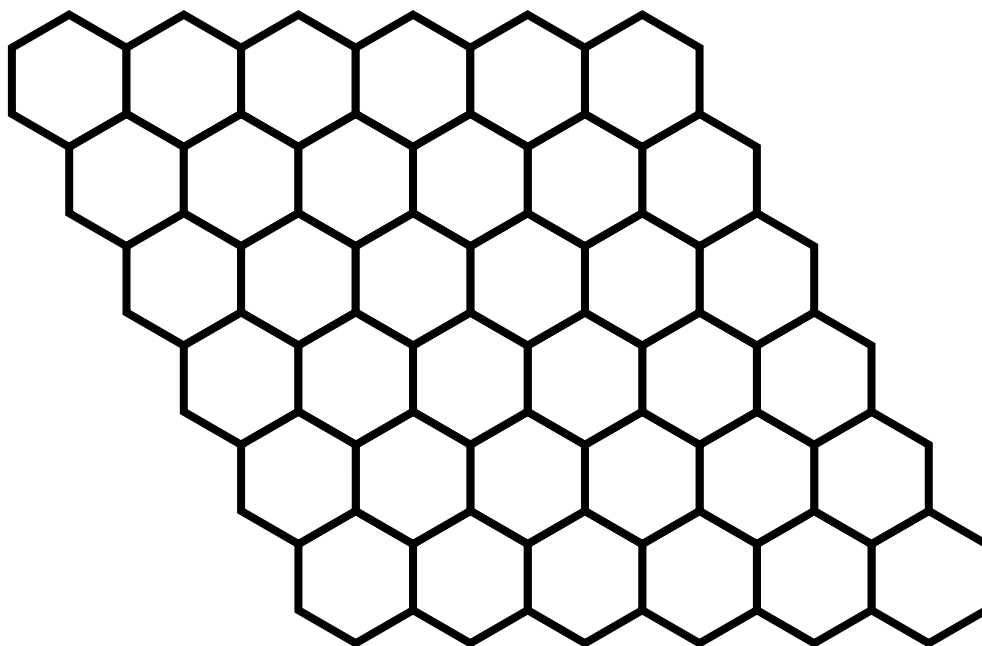
Other Games

- Other variants of Nim
- Kalah
- Breakthrough
- Go
- Havannah

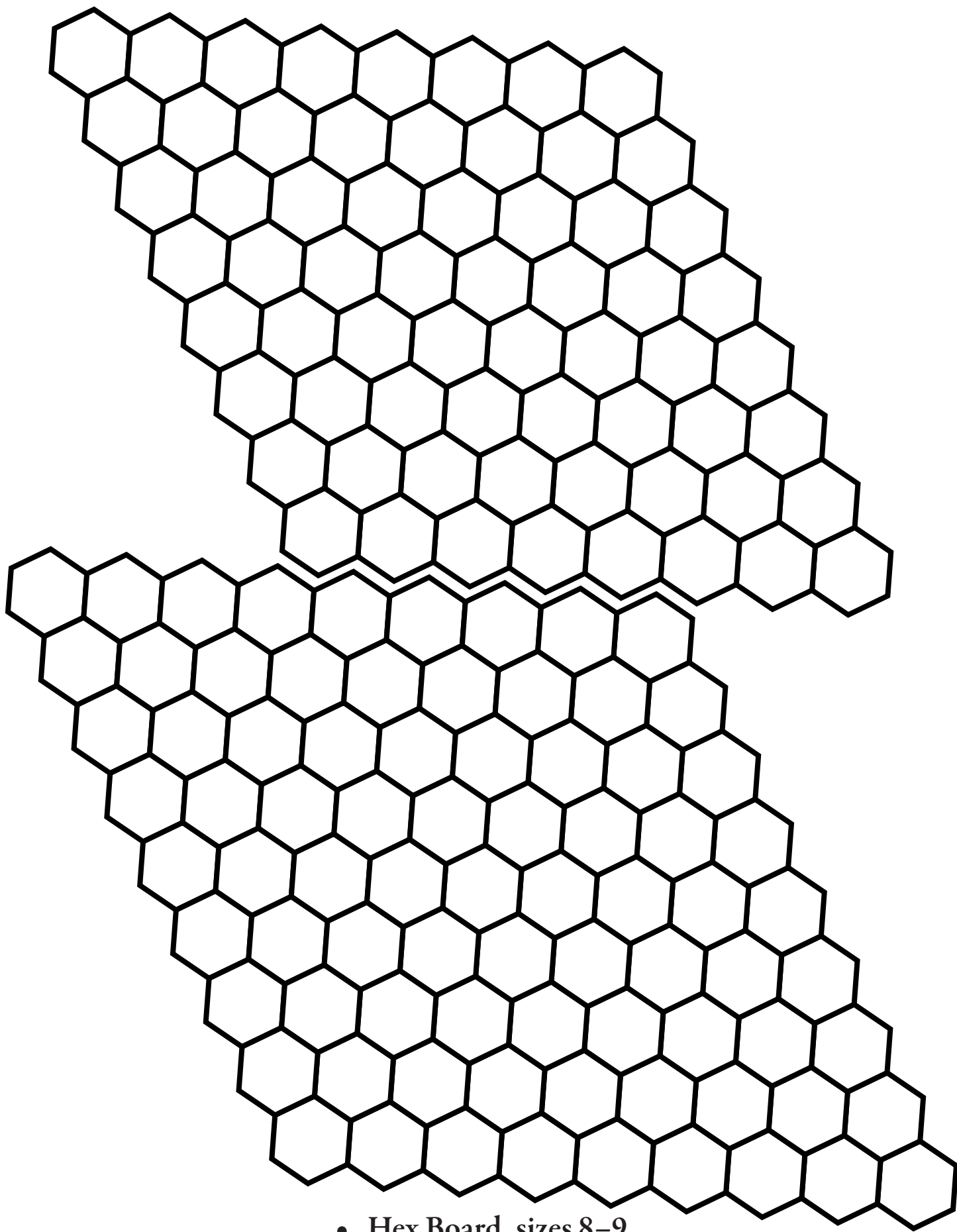
An extended version of this handout containing boards of various sizes for Hex and Y is available at <http://talks.isaacgreenspan.com/PureStrategyGames.pdf>



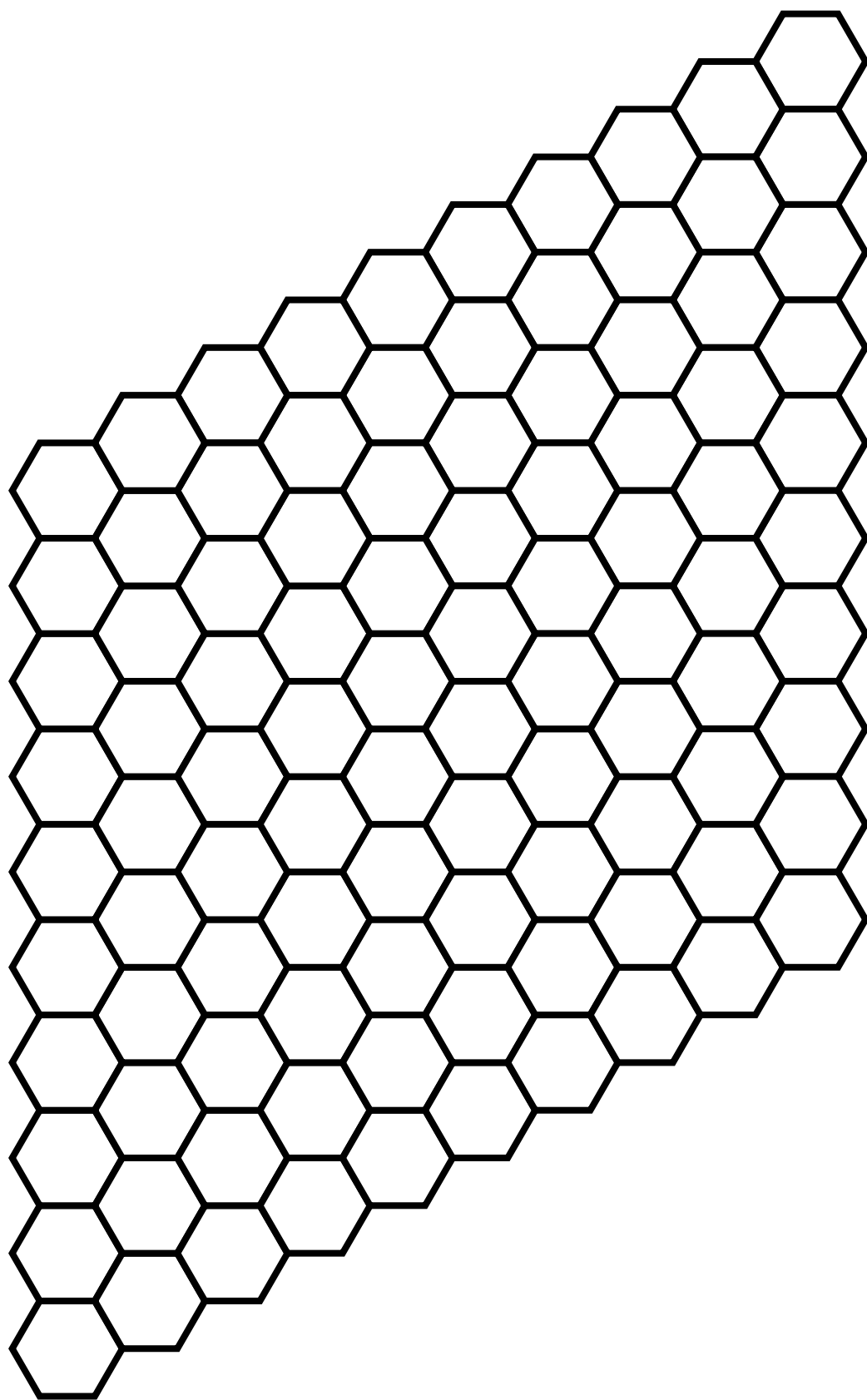
- Hex Board, sizes 3–5



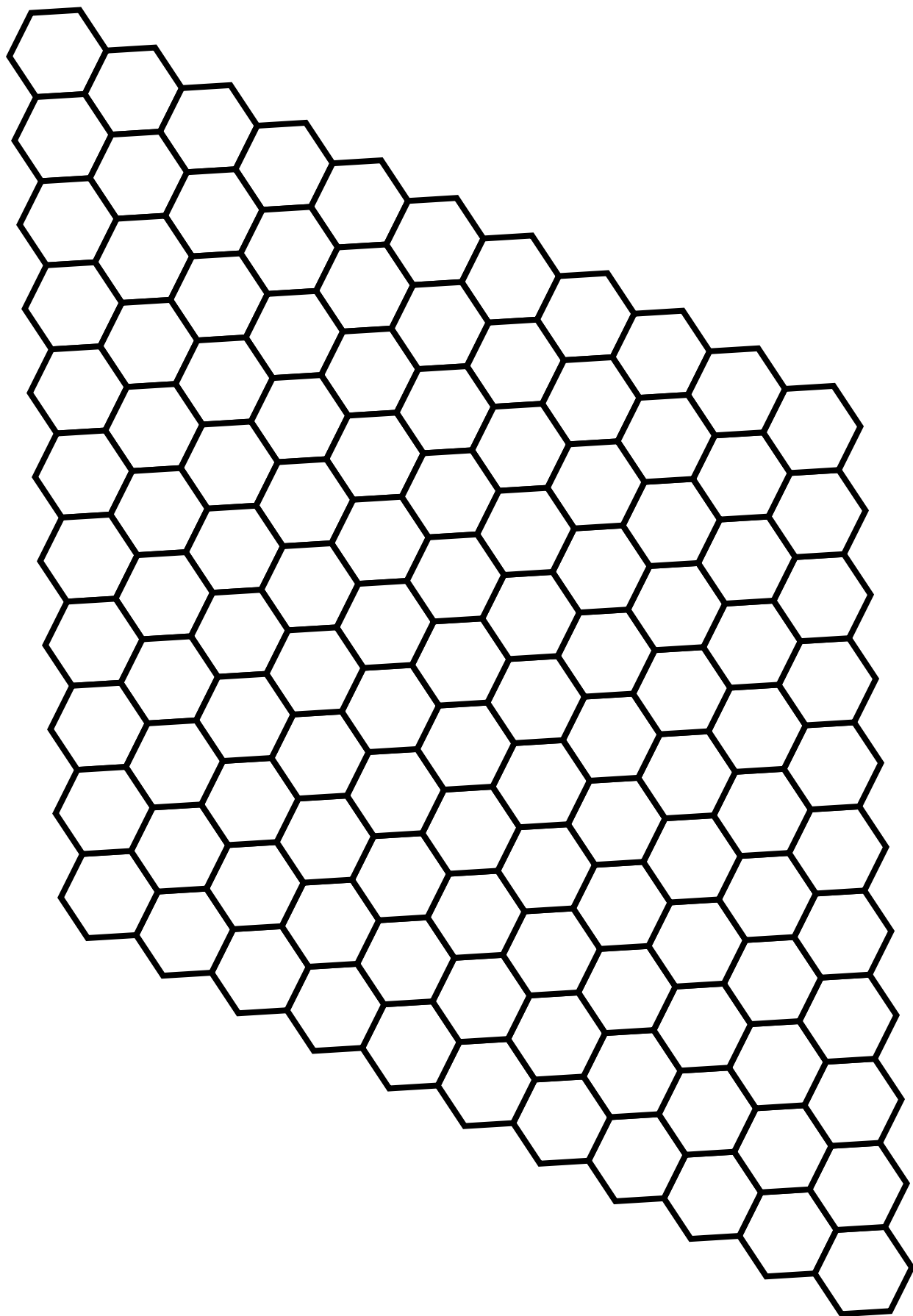
- Hex Board, sizes 6–7



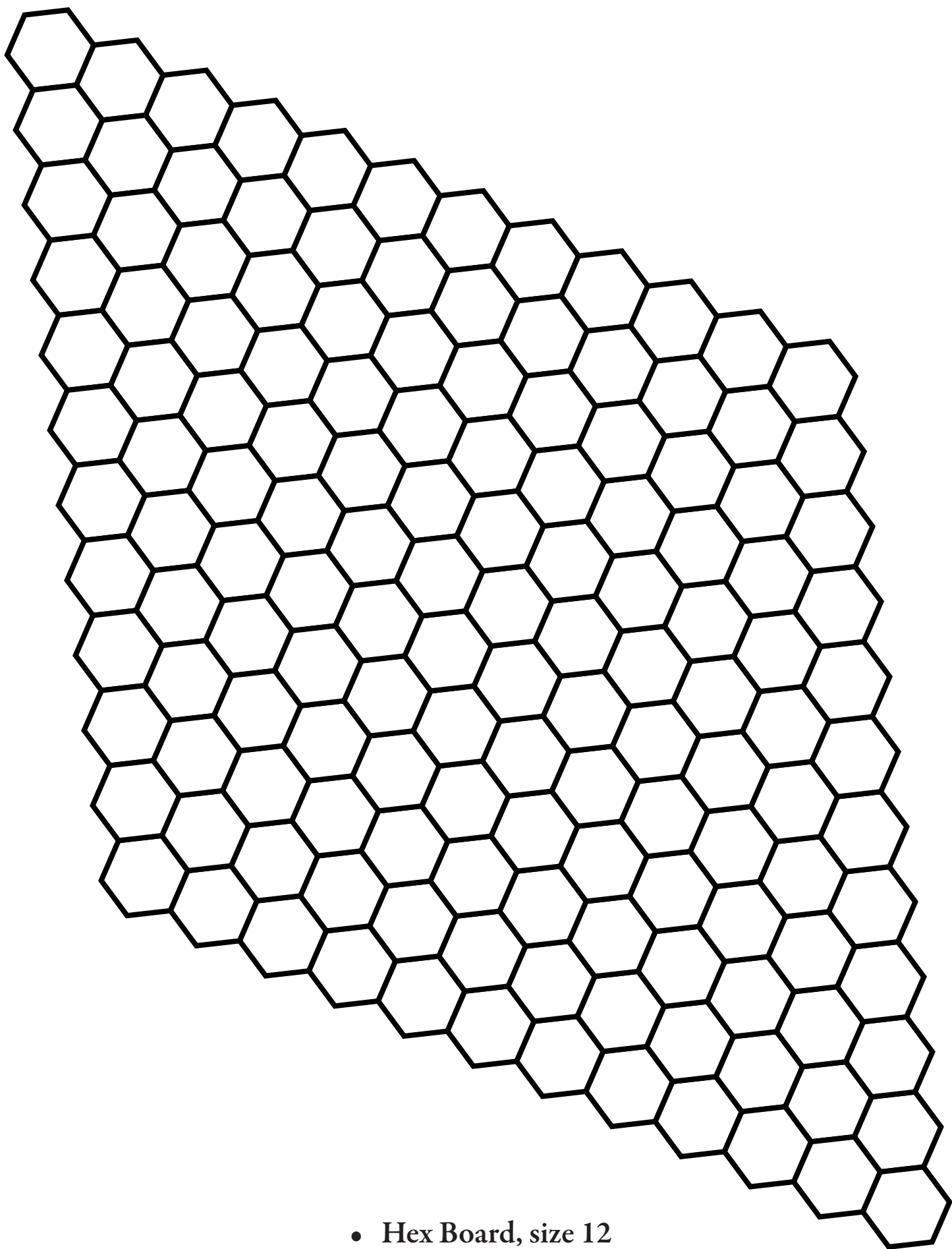
- Hex Board, sizes 8–9



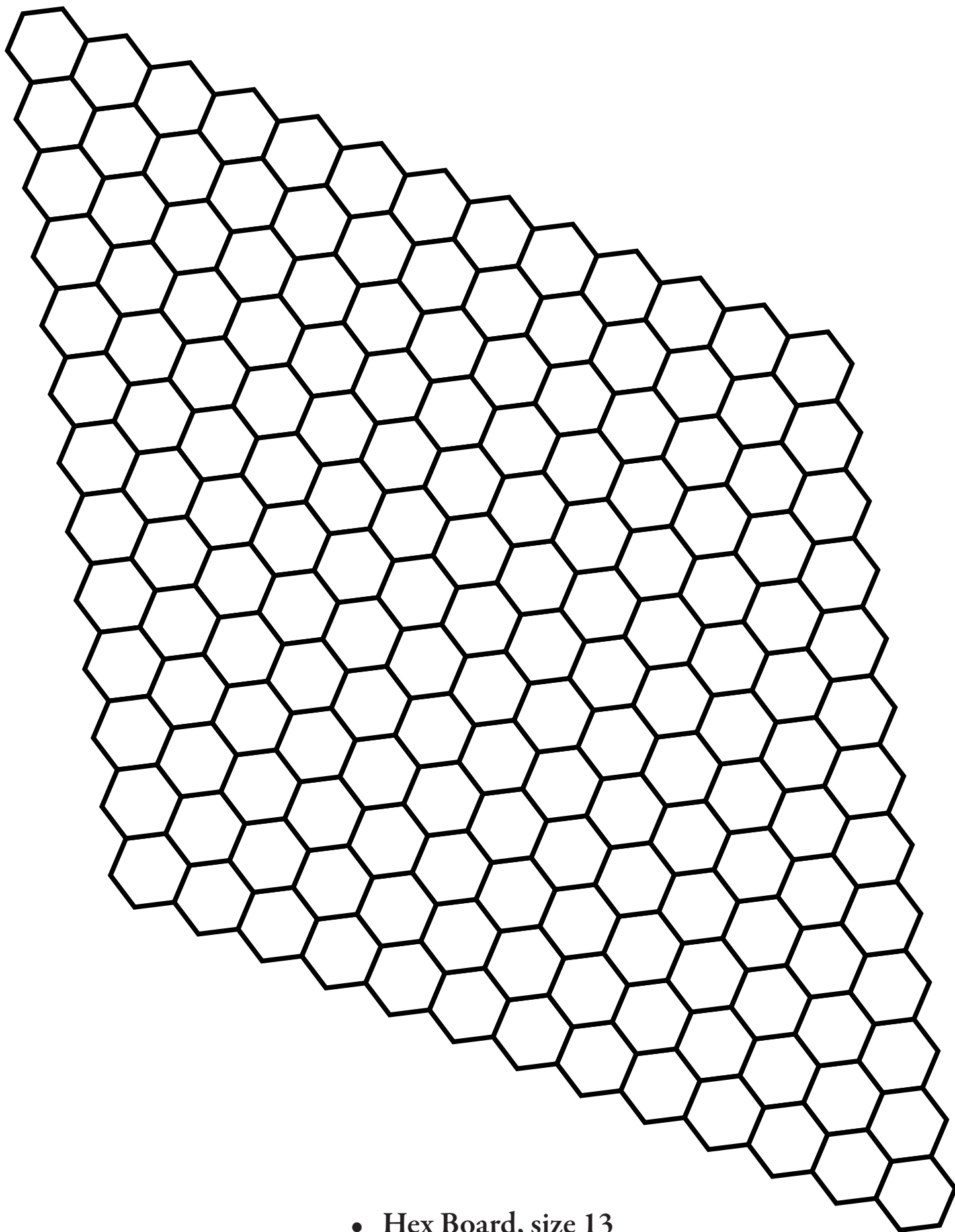
- Hex Board, size 10



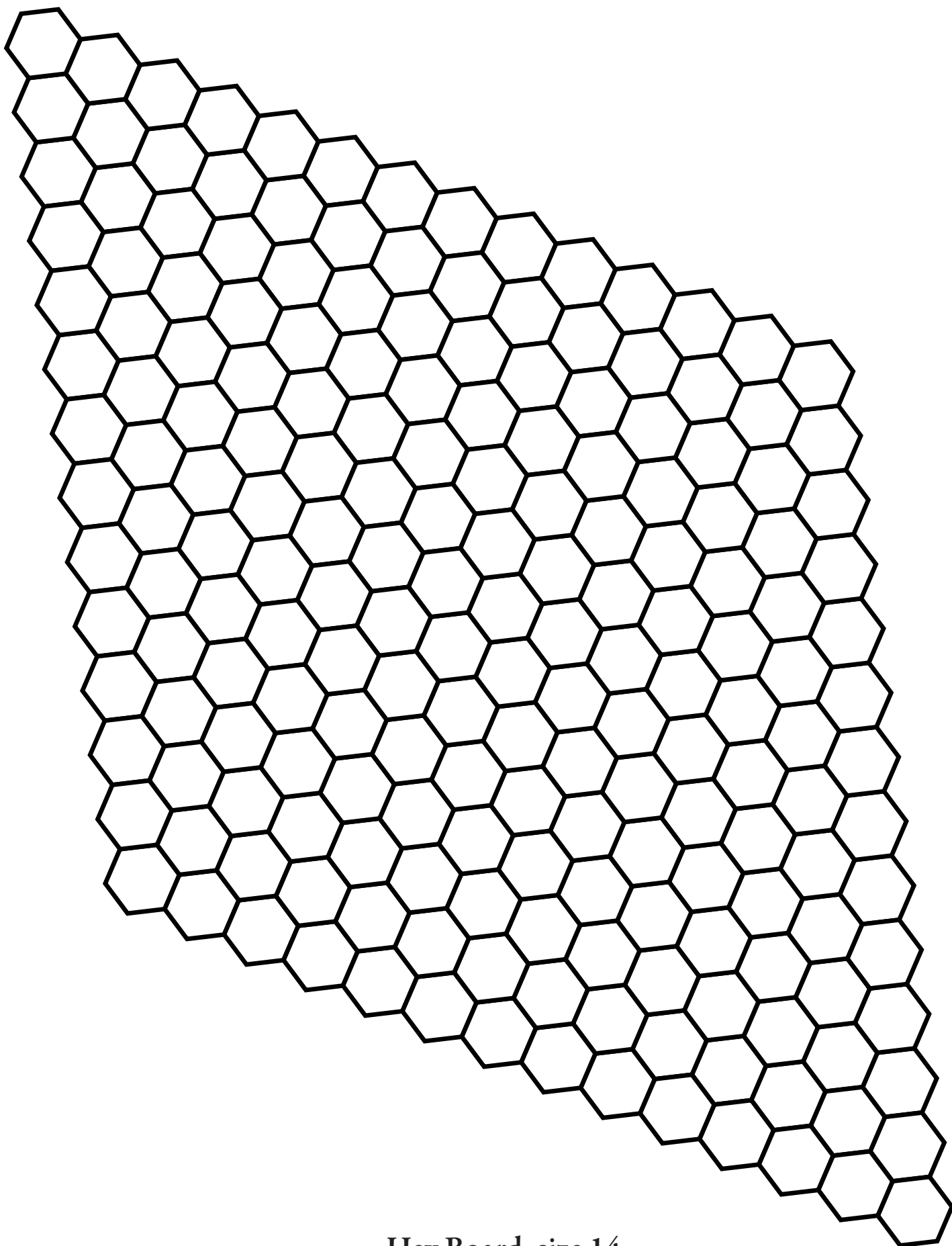
- Hex Board, size 11



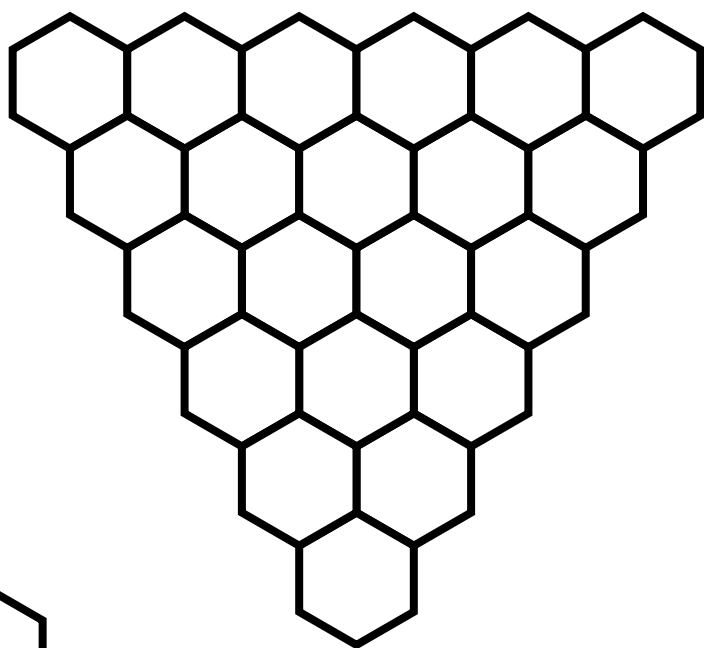
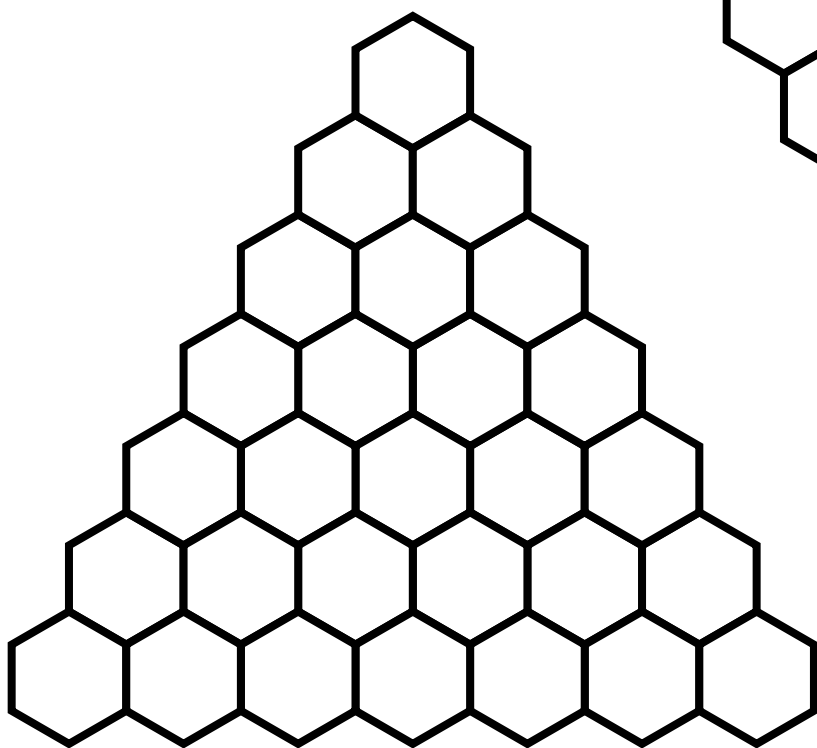
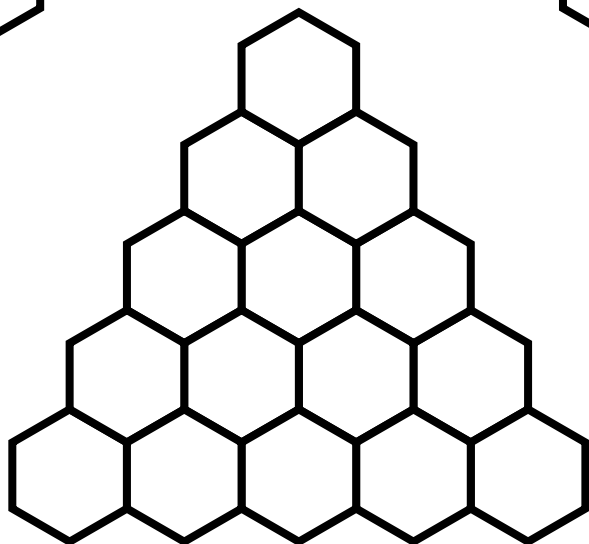
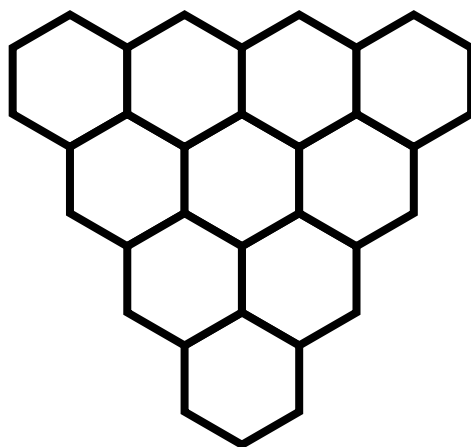
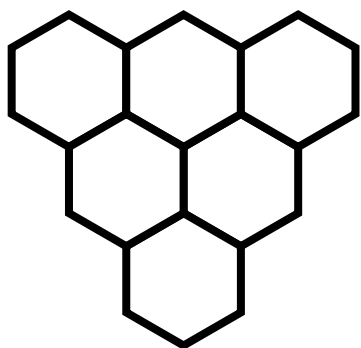
- Hex Board, size 12



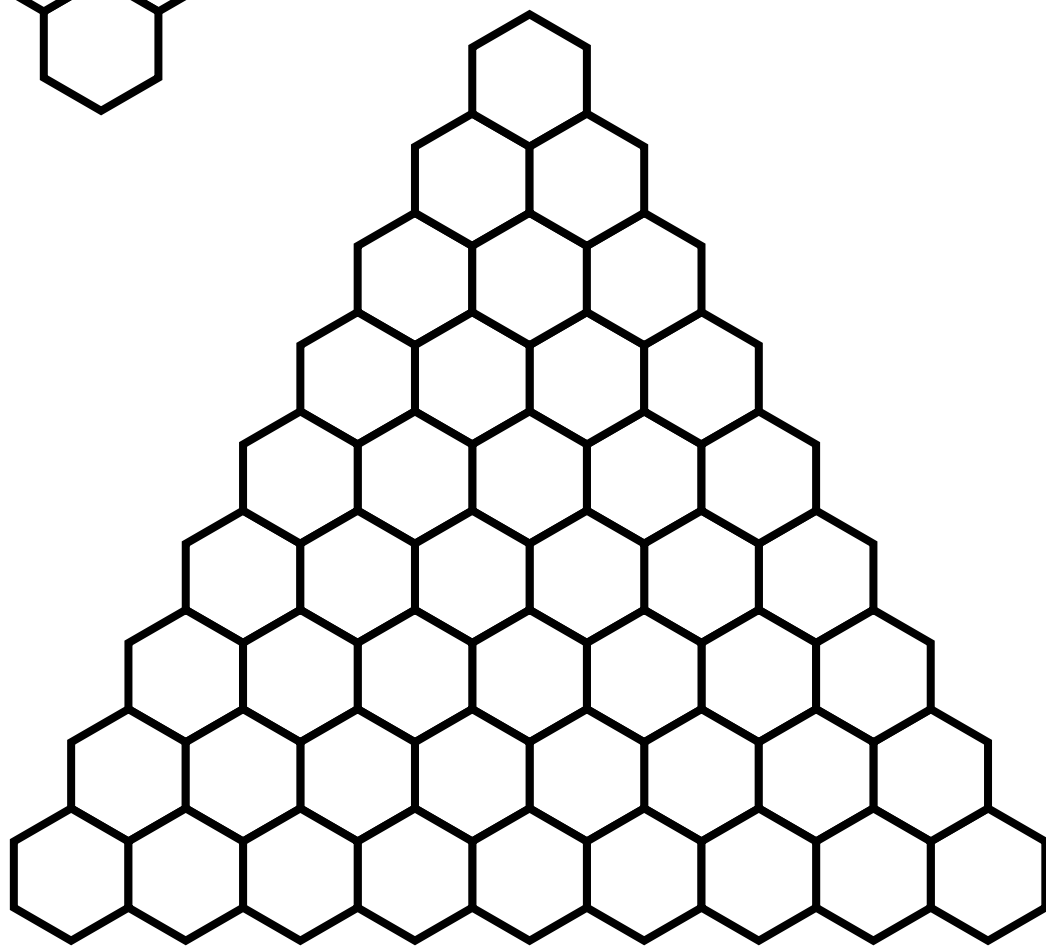
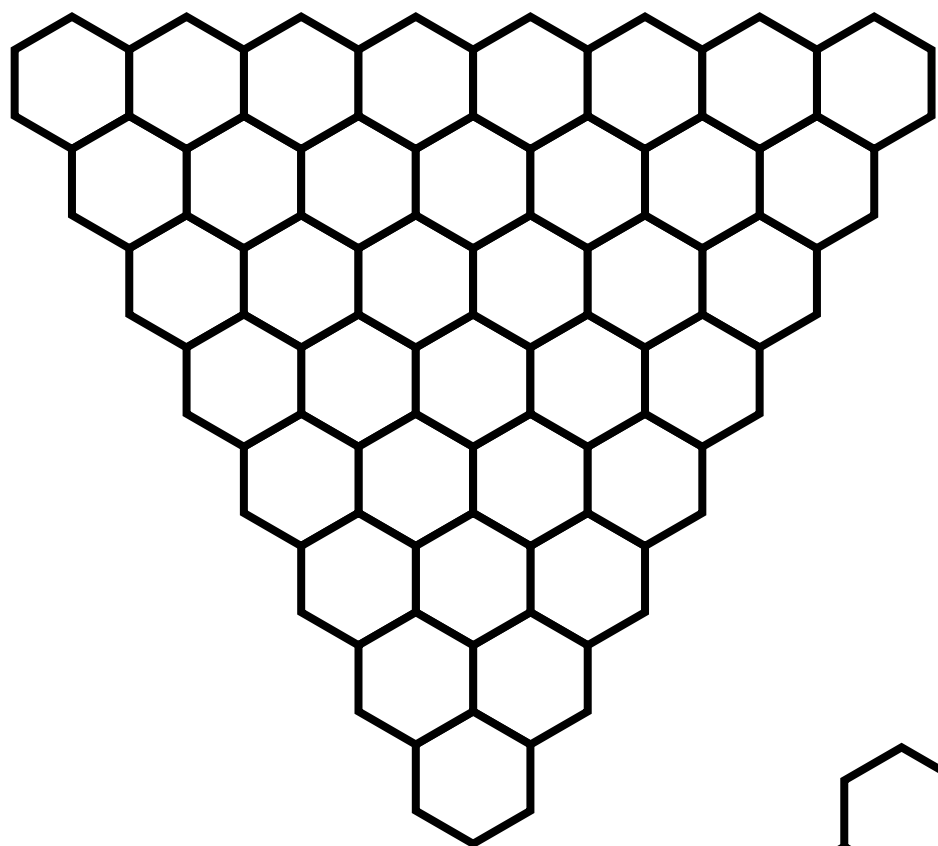
- Hex Board, size 13



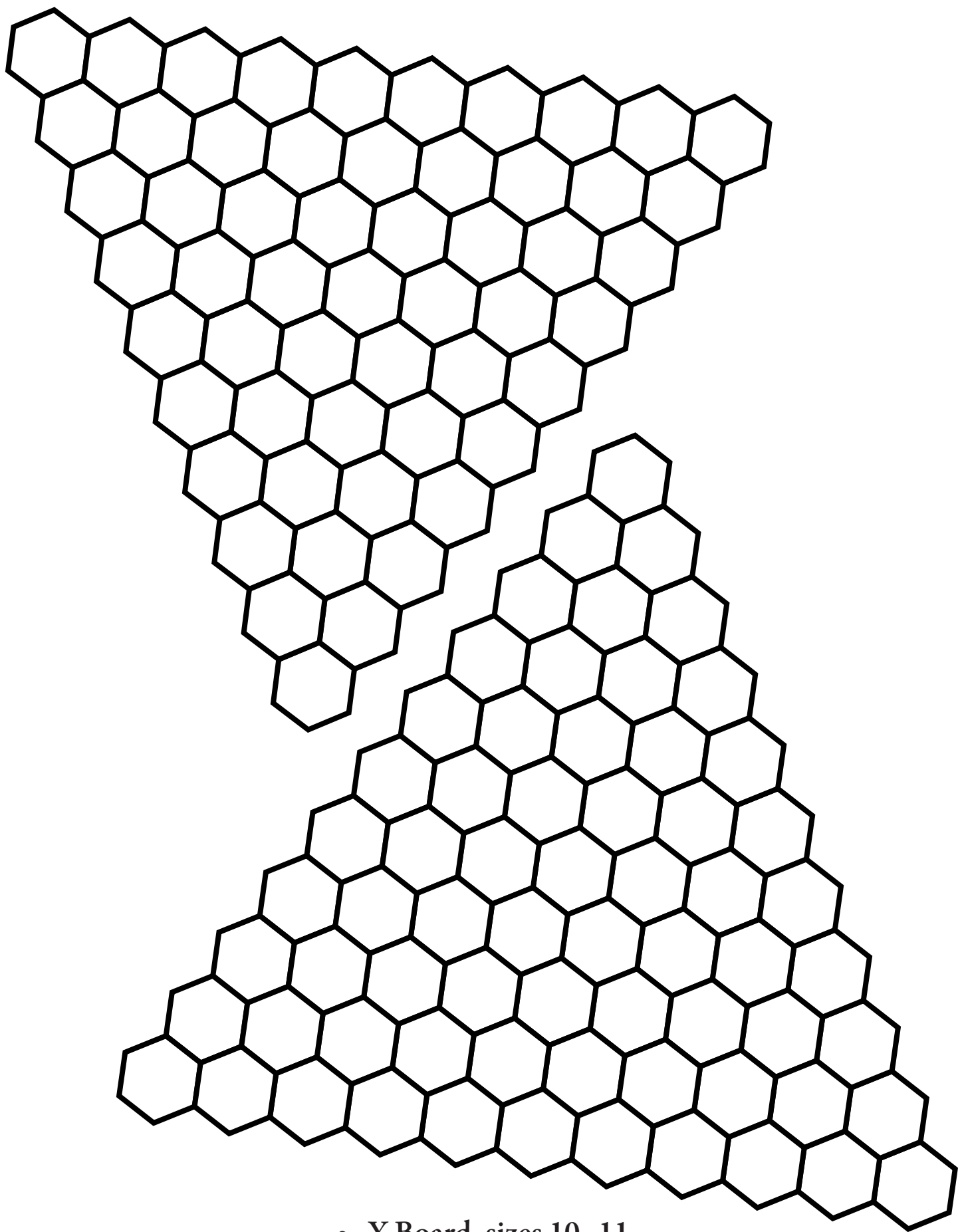
- Hex Board, size 14



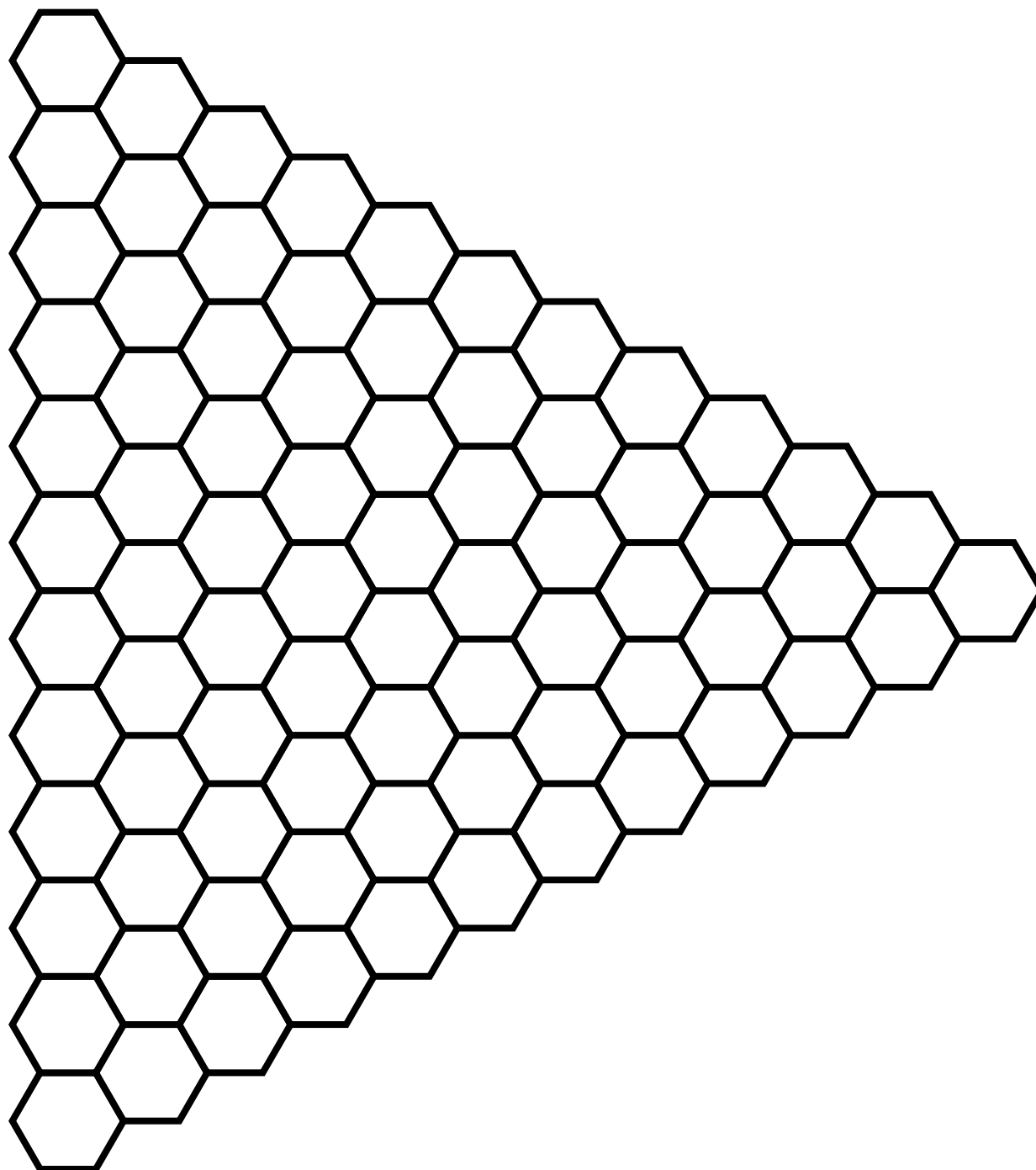
• Y Board, sizes 3–7



- Y Board, sizes 8–9



- Y Board, sizes 10–11



- Y Board, size 12