

## Blokus game.

*(Note: during this lesson we were playing a 2 person version of the Blokus game - Blokus duo. The differences with the traditional blokus are: only two sets of pieces, smaller field and no rule to start from the corner, instead you start with 2 marked positions on the field).*

Last time we made many different shapes from 1-2-3-4 and 5 squares and today is the time to use them for something interesting.

**First:** Let us sort all the pieces and count them.

- 1 piece consisting of 1 square (monomino)
- 1 piece consisting of 2 squares (domino)
- 2 pieces comprised of 3 squares (triominoes)
- 5 pieces made up of 4 squares (tetrominoes)
- 12 pieces made up of 5 squares (pentominoes)

We have 21 pieces:



**Second:** Let's fill the field with a single color! The rule: each next piece need to touch some other piece, but only at corners, never at sides.

We will try first on the board:



And then you will do it on your field and try to put as many pieces as you can. Can you put all 21 pieces on the field? Let's count which table has the least number of squares left outside of the 14-by-14 board. We have winners who use all the pieces!



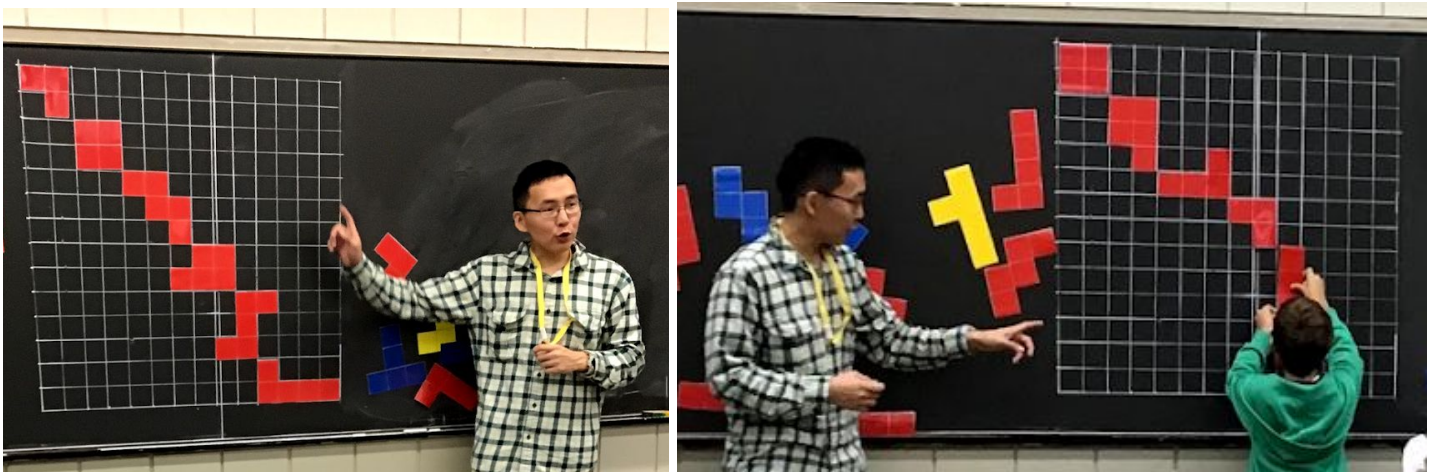
### Third:

Let us play a game of diagonal on the blokus board: we need to get from the top left corner of our 14-by-14 board to the bottom right corner: “build a diagonal”. Whoever does it in the fewest number of pieces wins!

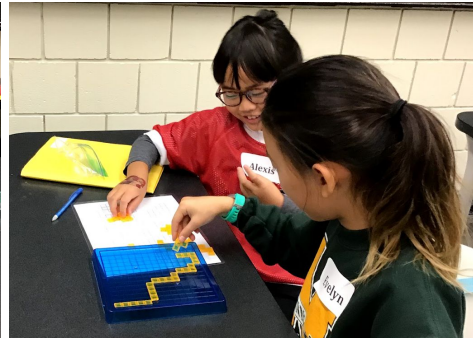
If we use the large V piece, how much do we “travel” towards the bottom right corner? 3 units to the right and 3 units down. So a large V piece gives us total of 6 steps. But for a “diagonal”, we need to make 14 steps to the right and 14 down, or total of 28 unit steps.

What is the best strategy then? To use the largest pieces with the most distant corners!

It is IMPOSSIBLE to make a diagonal using less than 5 pieces, because we can not get 28 unit steps towards the opposite corner out of 4 pieces: none of our blokus pieces give us 7 unit steps. They only give 6 unit steps at most: 3 to the right + 3 down or 4 to the right + 2 down or 5 to the right + 1 down.







**Now let us play the real Blokus Duo game:** The goal is simple: Each player has to fit as many of his/her 21 pieces on the board as possible.

1. Decide who will start first. Player 1 places one of her pieces on one of the two starting points.
2. Player 2 places one of his pieces on the second starting point. Play continues as each player lays down one piece during a turn.
  - Each new piece must touch at least one other piece of the same color, but only at the corners.
  - No flat edges of same colored pieces can touch.
  - There are no restrictions on how different colored pieces can touch one another.
  - Once a game piece has been placed on the board it cannot be moved during subsequent turns.
3. Whenever a player is unable to place one of his remaining pieces on the board, that player must pass his turn.
4. The game ends when both players are blocked from laying down any more of their pieces. This also includes a player who may have placed all of his pieces on the board. Scores are tallied, and the player with the highest score is the winner. A player's score is the number of squares of the player's color that are put on the board during the gameplay. (Do not count the squares on board; count the squares left outside the board instead!) The more pieces/squares were placed on board, the better it is for the player.



**See you next week!**