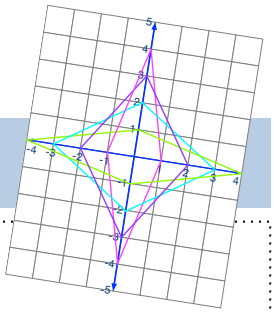
Graphic Elimination



Use linear functions to flip your opponent's counters and dominate the board.

Number & Quantity	
Algebra	X
Functions	X
Geometry	
Statistics & Probability	

Materials Needed:
- 2-color counters, 5 per team
- Alternatively, 2 colors of tokens that fit in a 1 square inch grid, 5 tokens of each color
- 1-square-inch grid paper with labeled axes
- Raw spaghetti noodle, pipe cleaner, or straight-edge, 1 per team

Where:

Outside	X
Inside	X
On-line	
On-site	

Set-Up:
- Split into two teams of 2 players each or play one-on-one.
- Place 1-inch grid paper in center of playing surface.

Object of the Game: Find equations of linear functions, graph them, and determine if they intersect chosen cells on a grid.

Playing the Game:
1. Players from both teams place counters randomly on grid paper.
2. Team 1 determines an equation of a linear function and graphs the line using a straight edge.
3. If the line goes through any part of a square containing a counter, Team 1 flips all such counters.
4. Players keep a record of each linear equation used. Teams may not use linear equations that have already been played by either team.
5. After the linear equation is graphed, Teams may use a graphing calculator. to verify if the line intersects counters on the board. The graphing calculator cannot be used to find an equation to play.
6. Team 2 becomes Team 1 and repeats Steps 2 through 6.
7. Play continues until all counters are one color or each team has played at least 3 linear equations.

Winning the Game: The team with the most counters of their color at the end of the game wins!

Think About It:
1. What strategies do you want to remember for the next time you play?
2. What functions were new to you? What functions did you have trouble visualizing?
3. How were you able to determine functions that would flip the most counters?

Variations:

Life-Size: Use painters' tape to make a 20-by-20 grid on the floor. Team members act as the counters in this variation. Use 2 different colors of rubber bands or sticky notes, one color to identify each team. If an opposing team calls a function that goes through the square you are standing on, you are now a member of that team. The first team to get every player on one team wins!

Timed Sessions: For players with more experience with linear functions, give each team one minute to find a linear equation. If a team cannot determine a linear equation in that time frame, that team loses its turn.

More Functions: Expand the function list to any function family with which the players are familiar. Play as above.

Helpful Hints:
- There are many forms of linear functions. Choose a form that helps you determine the equation of a line: Point-slope form if you know a point and the slope of the line or if you know two points; slope-intercept form if you know the slope and the y-intercept.