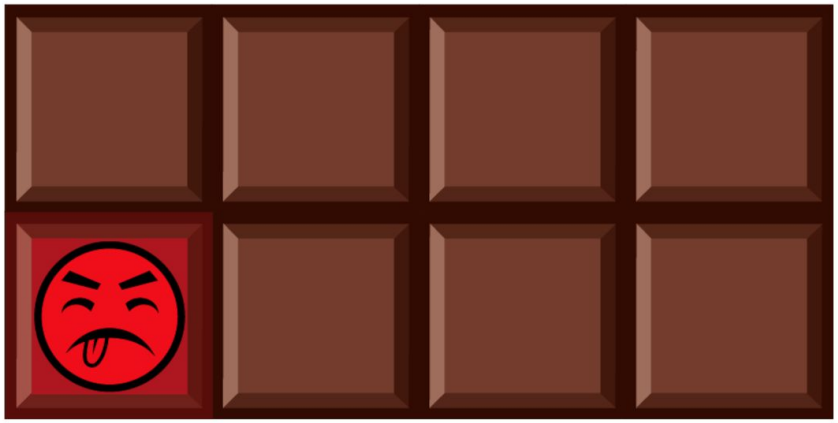
Chomp



Julia Robinson Mathematics Festival

App

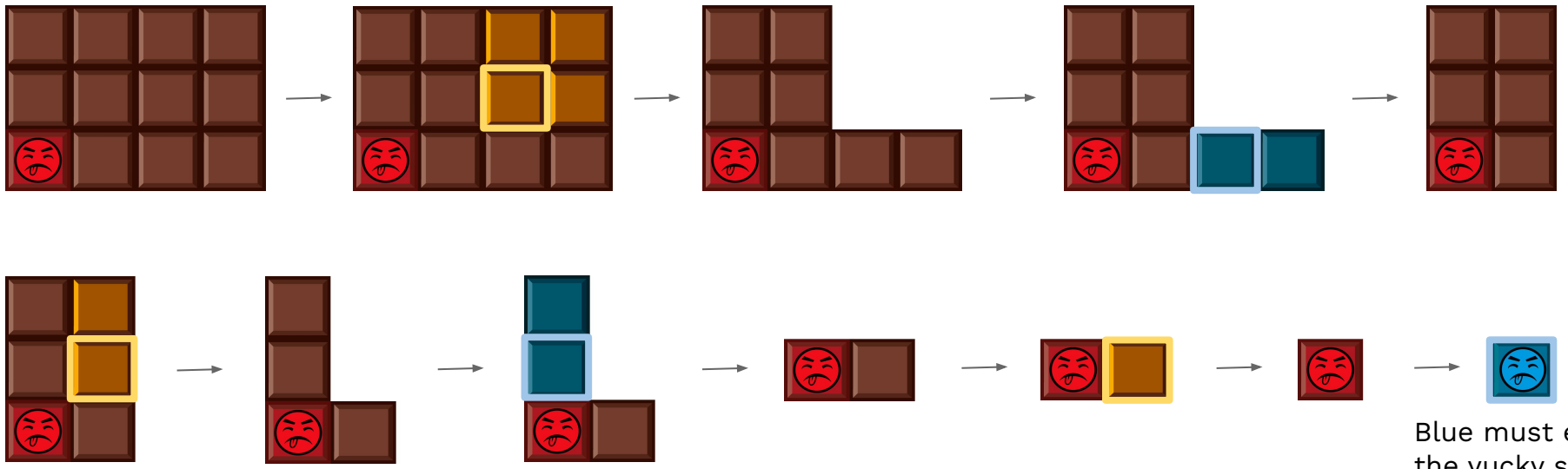
jrmf.org

Chomp

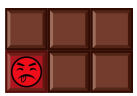
Objective:
The winner is the player who doesn't eat the yucky square.

Rules:

- Players take turns eating chocolate squares.
- When a square is eaten, all squares above and to the right of that square are also eaten.
- The player who is forced to eat the yucky square loses.



Blue must eat the yucky square, so yellow wins!



Revised on 2021.09.15

Square Bars

1. Start with a 3x3 chocolate bar and play a few games. Does Player 1 or Player 2 usually win?

2. When it's your turn, are there any shapes that you have a winning strategy for? What about shapes that you're pretty sure mean you will lose?

3. Can you find a strategy that helps Player 1 or Player 2 win every time?

4. Does this same strategy work for 4x4 bars? 5x5 bars? Any *n*x*n* bar?

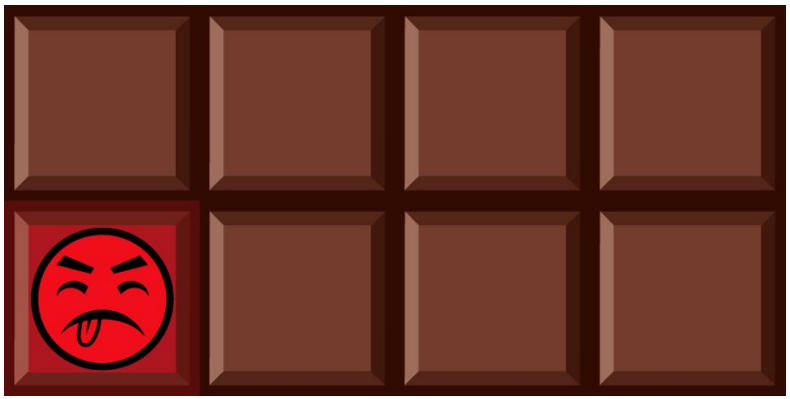
Narrow Bars

1. Now start with a 2x4 chocolate bar and play a few games. Does Player 1 or Player 2 usually win?

2. When it's your turn, are there any shapes that you have a winning strategy for? What about shapes that you're pretty sure mean you will lose?

3. Can you find a strategy that helps Player 1 or Player 2 win every time?

4. Does this same strategy work for 2x5 bars? 2x6 bars? Any 2x*n* bar?

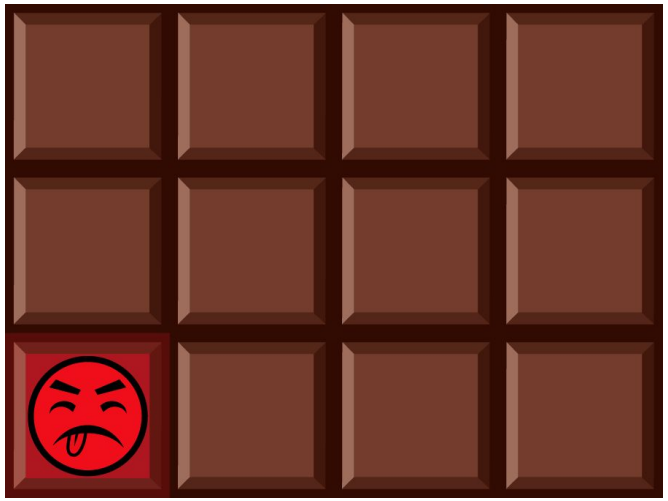


3x4 Bars

1. Now start with a 3x4 chocolate bar and play a few games. Does Player 1 or Player 2 usually win?

2. When it's your turn, are there any shapes that you have a winning strategy for? What about shapes that you're pretty sure mean you will lose? (You might recognize some from before!)

3. Can you find a strategy that helps Player 1 or Player 2 win every time? (This is a good deal more complicated than the other bars we've looked at and will likely require careful note-taking!)



Bigger Bars

What can you say about bigger bars? 3x*n*? 4x5? *m*x*n*?

While you probably found nice strategies for square bars or 2x*n* bars that weren't too hard to explain to a friend, you might have a little more trouble telling a friend how to win on a 3x4 bar without telling them exactly what to do in a bunch of different cases. Mathematicians still haven't found a nice way to describe winning strategies for the 3x*n* family of bars, if such "nice" strategies even exist! Are there any other families of chocolate bars you can find nice, somewhat easy-to-explain strategies for?