



If you figure out something before others,

Think. Imagine more possibilities.

Help others think. Don't tell.

Share ideas and thoughts. Not answers.





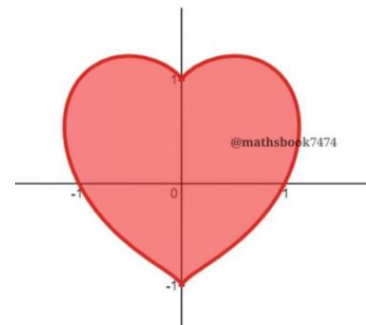
Curiosity

A thirst for deep investigation.



Freedom

To wonder, play and explore



$$(x^2 + y^2 - 1)^3 - x^2 y^3 = 0$$

Love

To nurture the potential in others.



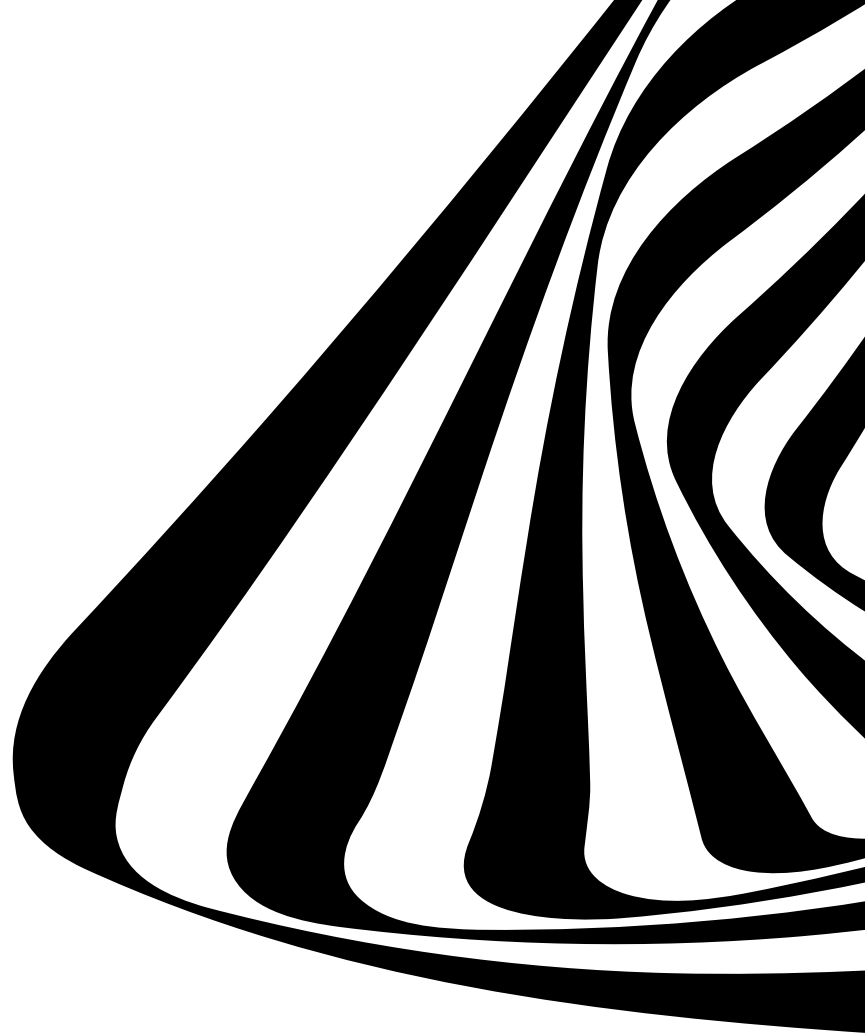
loveformath.com

All about the joy and beauty of Math!

Welcome!



The Math Club





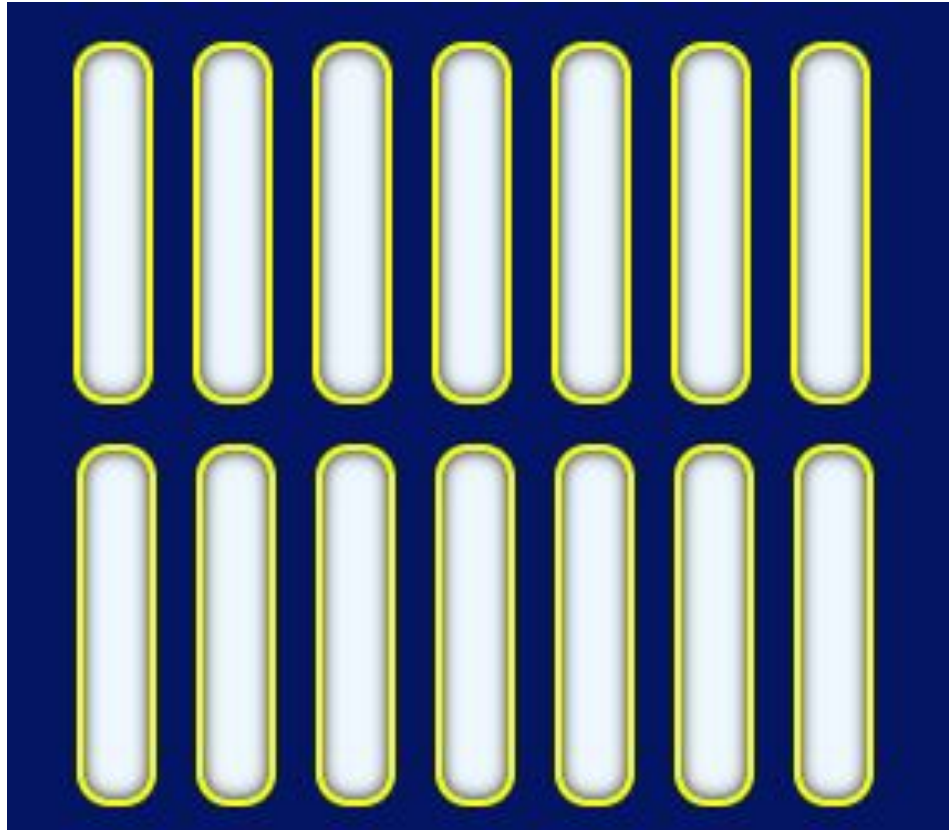
**Let's play a
warm up game!**

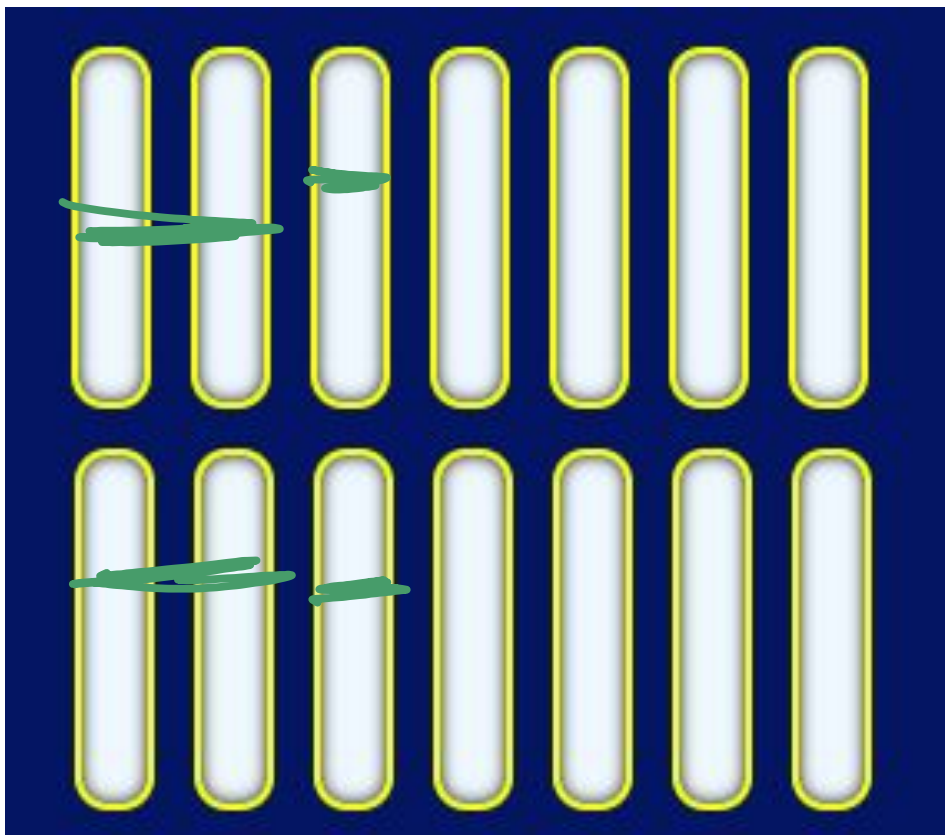
The Nim Game

2 rows of sticks!

You can take as many sticks you want, but only from one row!

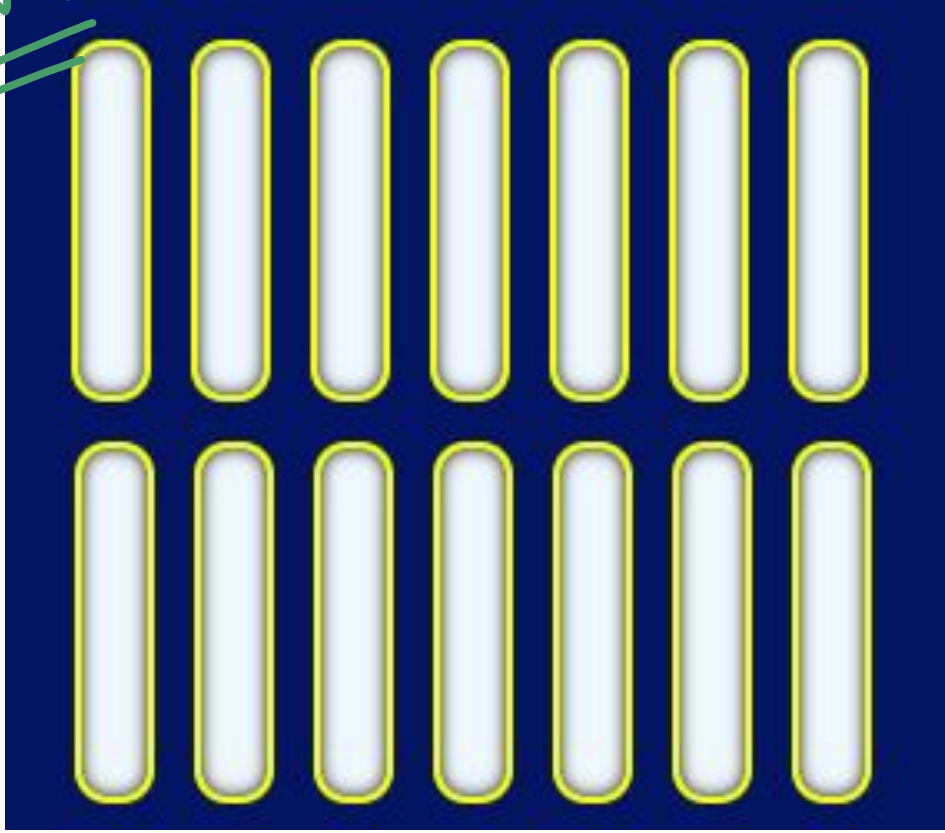
The player to get the last stick wins.





pseudo games

12th

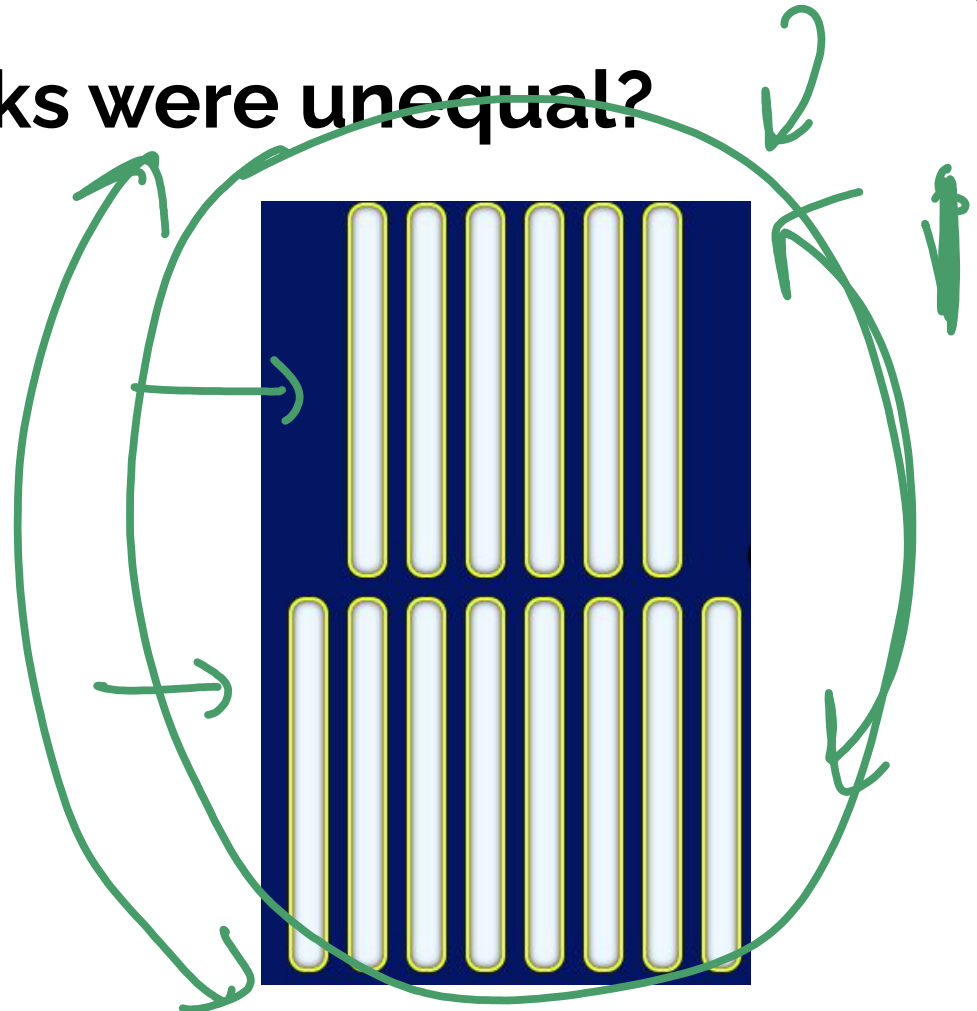
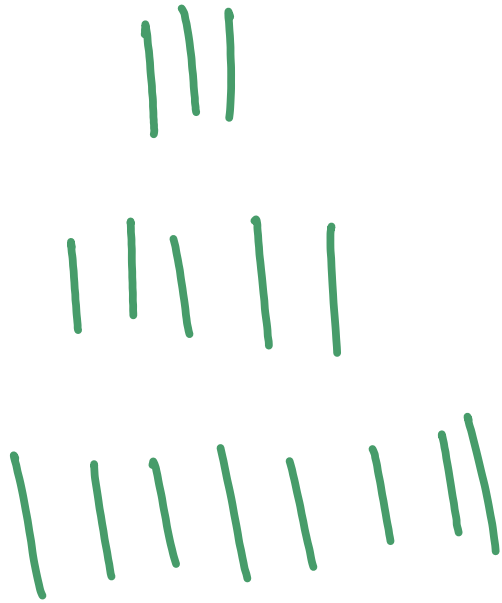


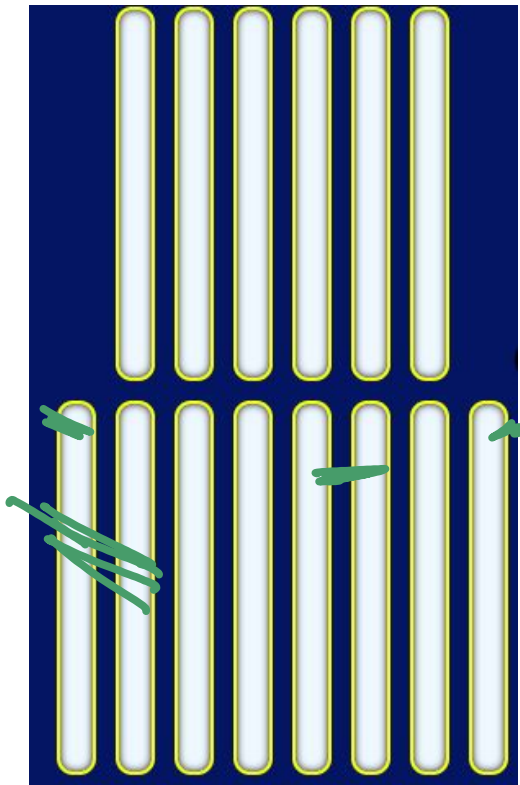
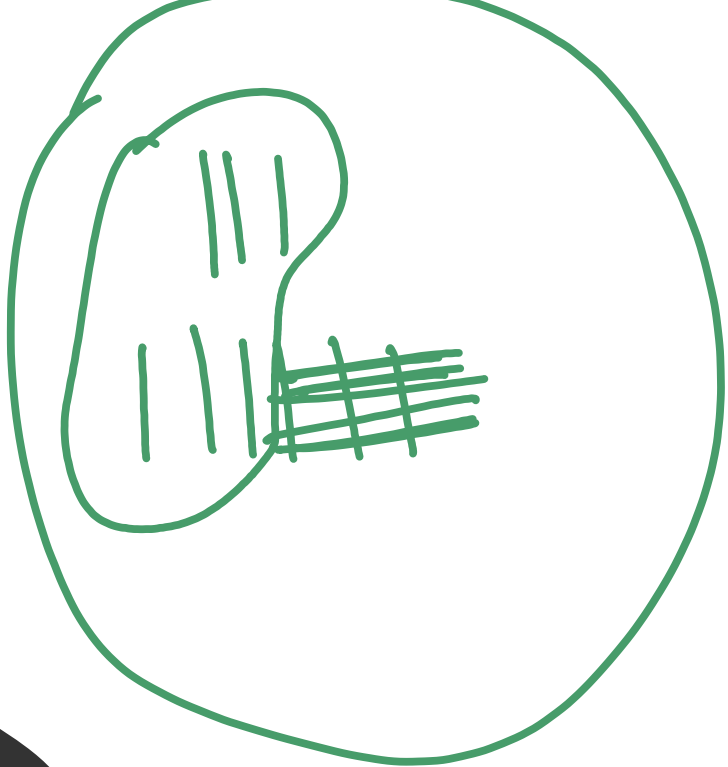
Winning strategy!

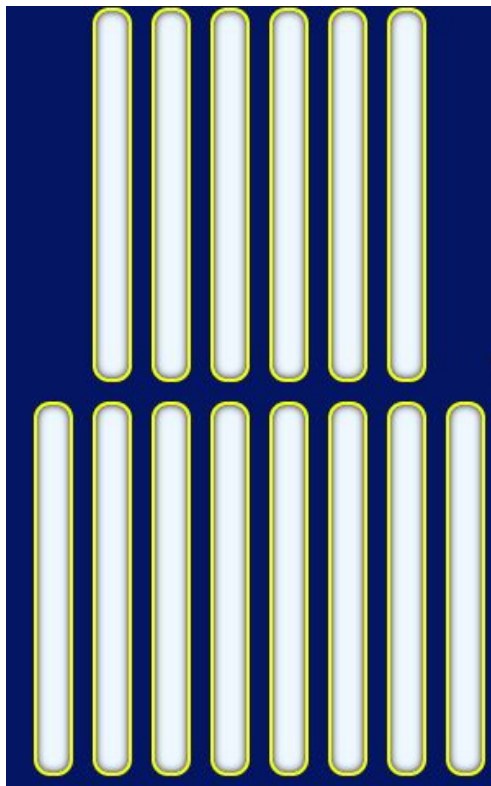




What if the sticks were unequal?





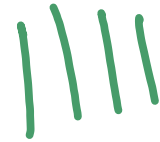
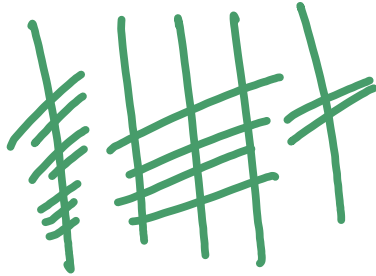


Winning strategy!



This is an example of Symmetrical game and Strategy!

~~5~~



3

15.

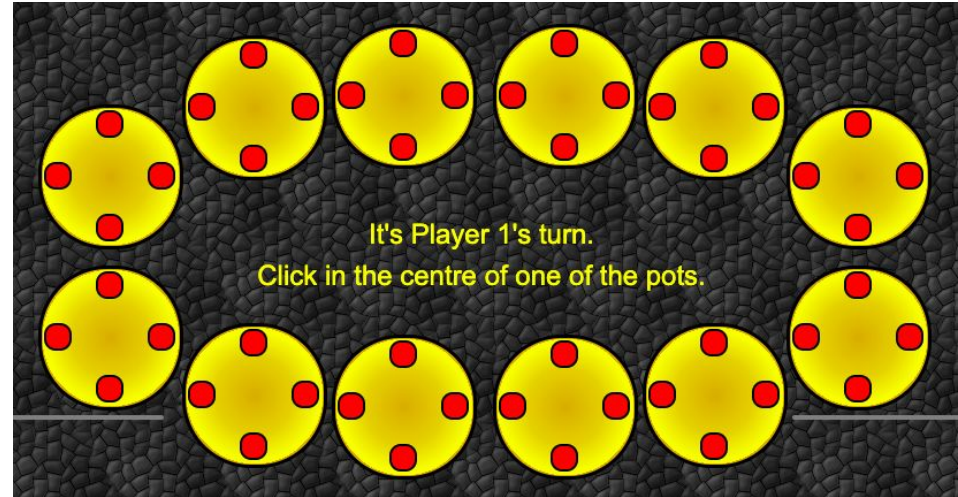
~~6~~



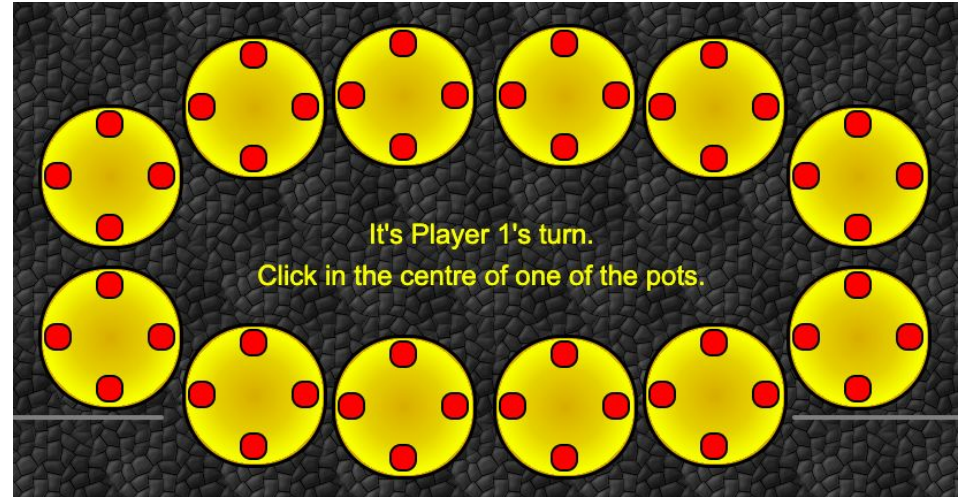
~~7~~



Mathematical Strategy Games and Problems



Mathematical Strategy Games and Problems



The Chocolate Division Game



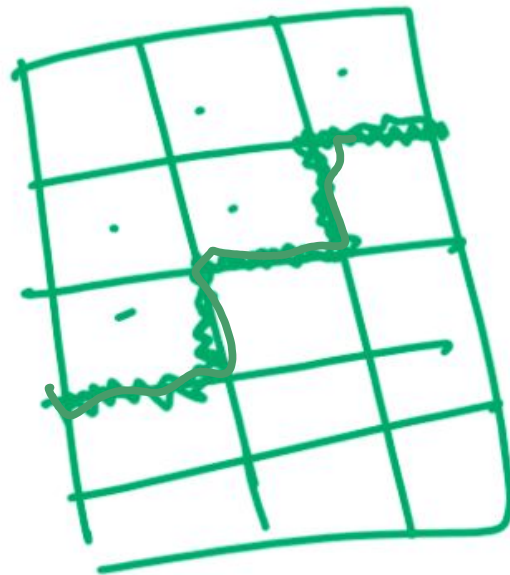
2 player game

15 piece chocolate —

Players make one cut in their turn ←,

Breaking allowed only along the divisions

Challenge 1: 15 piece chocolate



Who will win?

15

14 moves.

1. How many pieces do we start with?
2. How many pieces do we have in the end?
3. How many total turns will be played?

1st.

1st → 1, 2nd → 2, 1st → 3, 2nd → 4, 1st → 5, 2nd → 6

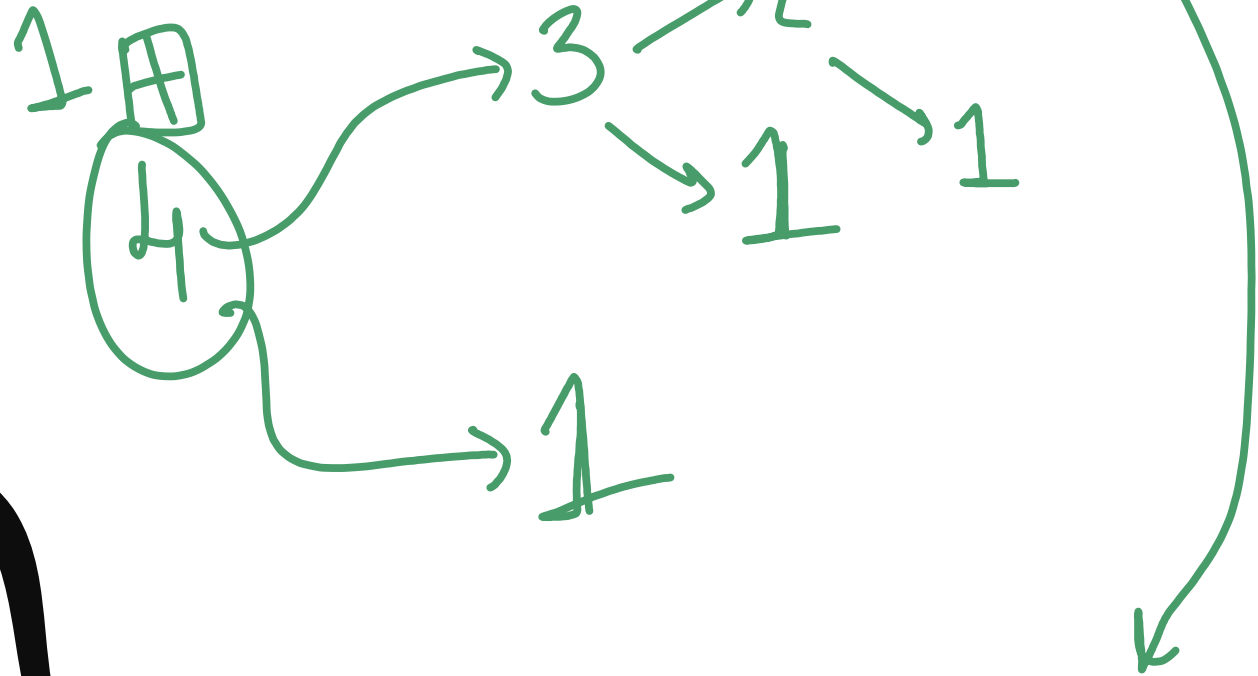
14

2nd Player.

✓
1st.

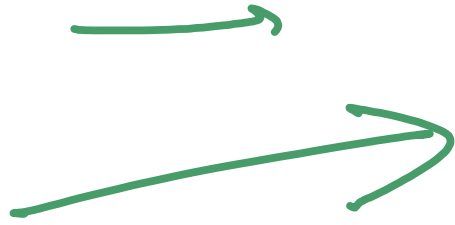
15 pieces

Lets try with a starting number of 4!



How many total
4 pieces.

~~1~~
1 piece



Finally
4 pieces.

2 → 3

3

What's the winning strategy?

Challenge 3: Try different values

Try playing the game with different number of stones to start with. Record your findings or winning strategies in each case.

| Number of Stones | Winning Strategy |
|------------------|------------------|
|------------------|------------------|

1

2

3

4

5

6

7

.....

Challenge 3: Try different values

Try playing the game with different number of stones to start with. Record your findings or winning strategies in each case.

Number of Stones Winning Strategy

1

2

3

4

5

6

7

.....

6 pieces
check.

6 pieces.

5 moves
5th.

i

3

5th.

6
7









CHINMAY

May 23, 2021 at 2:01 pm

2'nd person will win because the first person always starts with odd and ends with even number then has to break it down then 2'nd person will make it 1 and 1 and win

[\(Edit\)](#)

[Reply](#)



KARISHMA

May 23, 2021 at 1:42 pm

The Winning strategy is to take the second turn

for all odd number of bars second turn person will win

Total turns played!

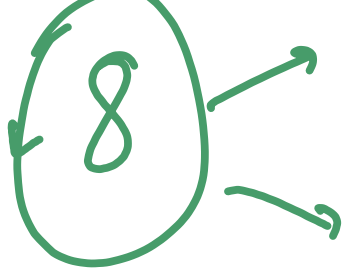


Challenge 4: 2 Piles of stones

There are two piles of stones: one with **8 stones**, one with **15 stones**, At each turn, a player can **choose one of the piles** and **divide it into two smaller piles**.

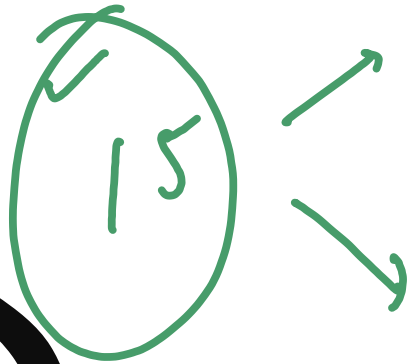
The loser is the player who cannot make a move. Who will win, and how?





①

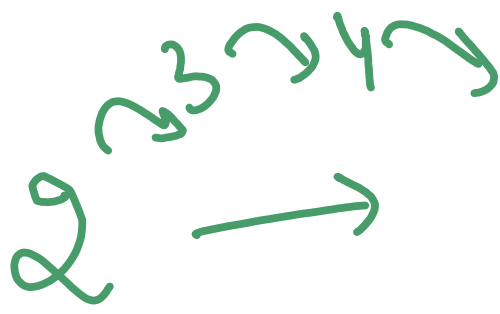
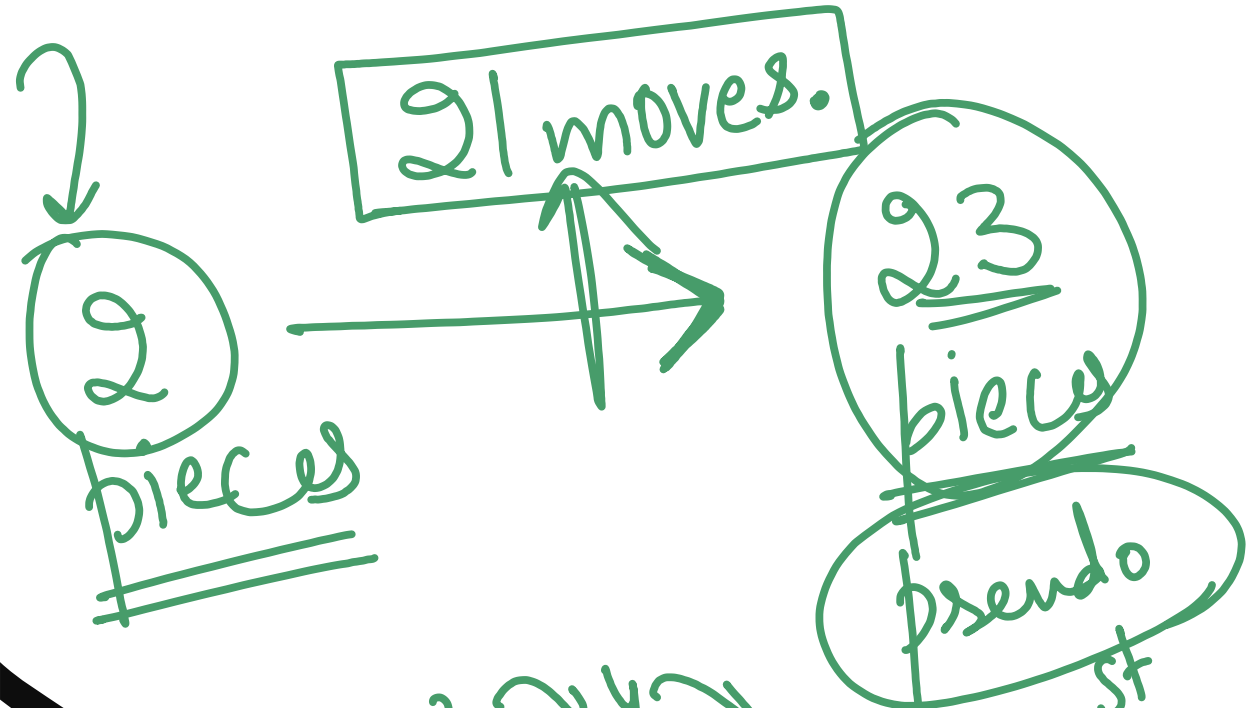
Finally
total
no. of pie.
23 pieces



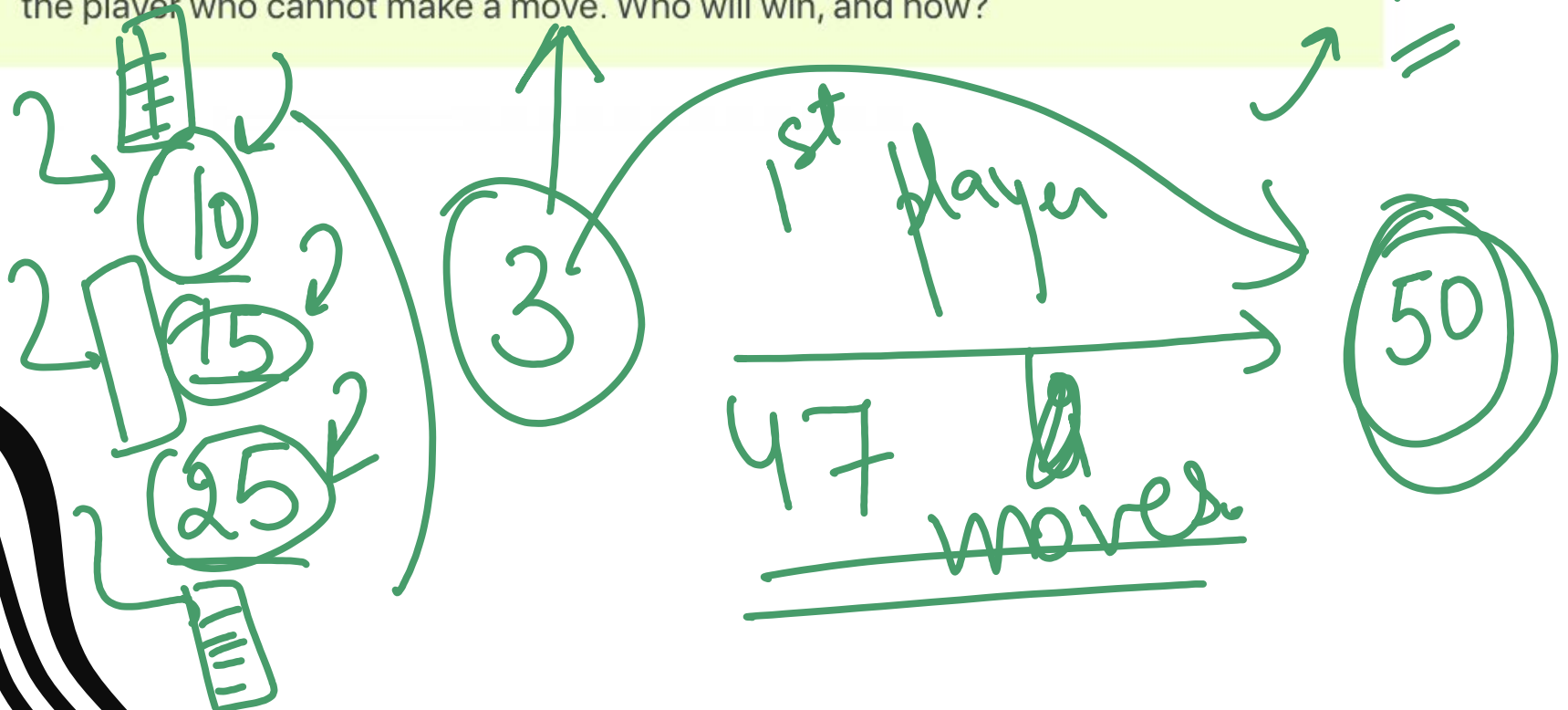
21?

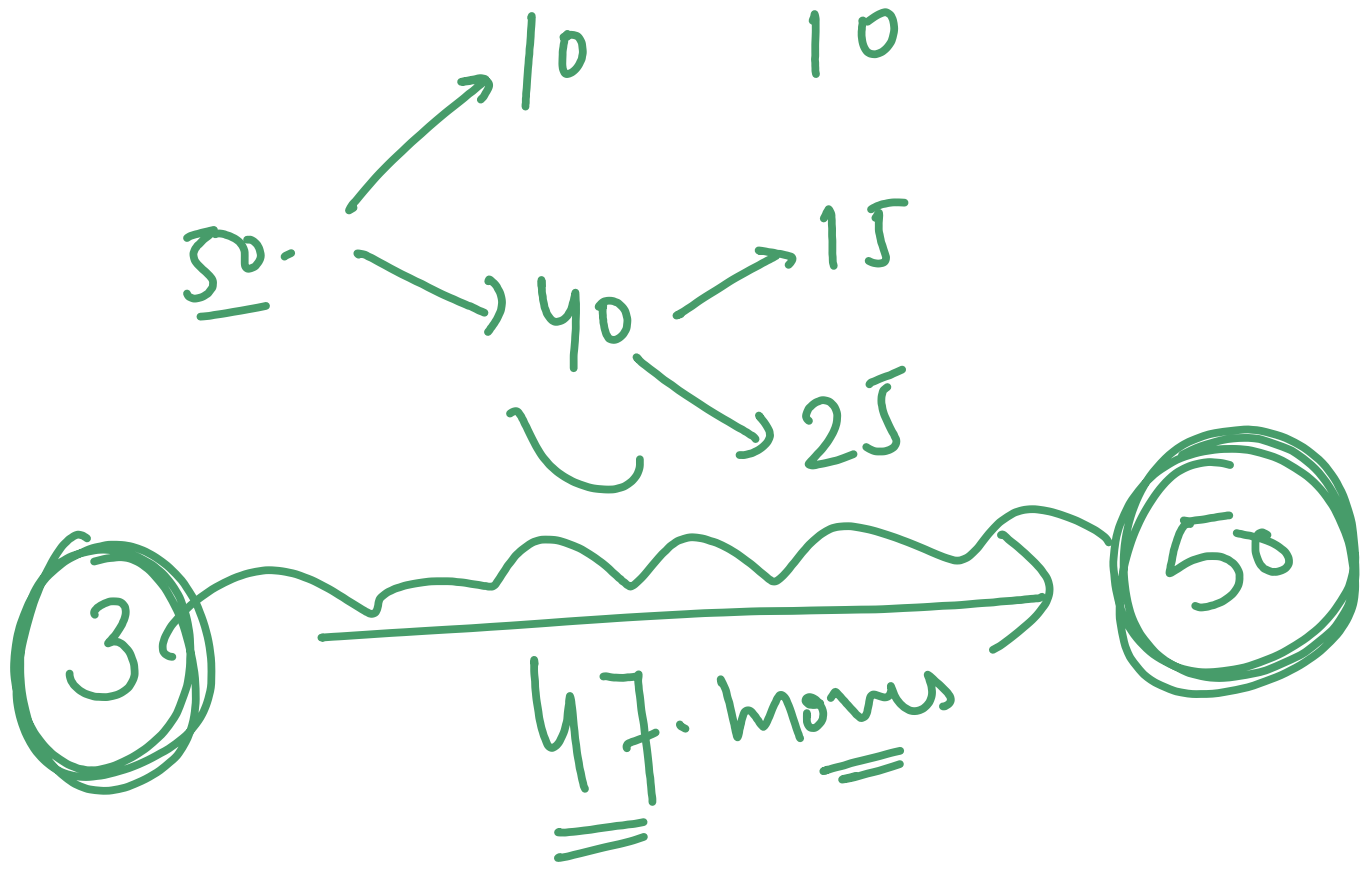
②

How many
moves. (22?)



There are three piles of stones with 10, 15 and 25 stones. At each turn, a player can **choose one of the piles** and **divide it into two smaller piles**. The loser is the player who cannot make a move. Who will win, and how?









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Thank you!



Creativity



**Active Problem
Solving**



**Mathematical
Thinking**



**Algorithmic
Thinking**