



GEMS Challenges -- Instant Insanity

SUBJECT

Math and Spatial Skills

Suggested grades

3-8

Cautions/concerns

This can be a precursor to topology or learning to do the Rubik's Cube. It is the beginning of graph theory. This is also an abstract problem that may not be solved in this GEMS session.

The Challenge — Stack four boxes or blocks on top of each other without repeating a single color on each side

LEADER ACTIONS**GIRL ACTIONS**

INTRODUCTION	Present the challenge—you have four blocks with different colored sides. How can you stack these so that each color is shown only once?	Brainstorm options
BACKGROUND INFORMATION	Although this game has been around in different variations for years, since at least 1900, it is an example of graph theory, or understanding how things are connected. Other systems using graph theory include subway systems, social networks, and molecules.	Can you come up with other forms or this type of graph?
ACTIVITY	Divide into teams of 3-4 girls. Fewer girls may lead to frustration. Give the instructions and let them work.	Try to solve the problem.
CONCLUSION	At the end of the time, has everyone solved it? What are some ways that the teams worked? What was successful? What was not?	
REFLECTION	Ask 2-3 girls to reflect on the experience using the reflection cards.	

Supplies

- Colored cubes (be sure to follow the patterns marked on the instruction page) The

Preparation needed

- Make the cubes—the handouts can be enlarged and printed on card stock, or you

Comments

- Taken directly from ThinkFun
- Here is a link to the math behind this problem: <http://pi.math.cornel>

cubes can be any size,
but small cubes are
harder to work with.

- Copy of solution sheet

can use large boxes
and decorate the sides.
You also can color
wooden cubes.

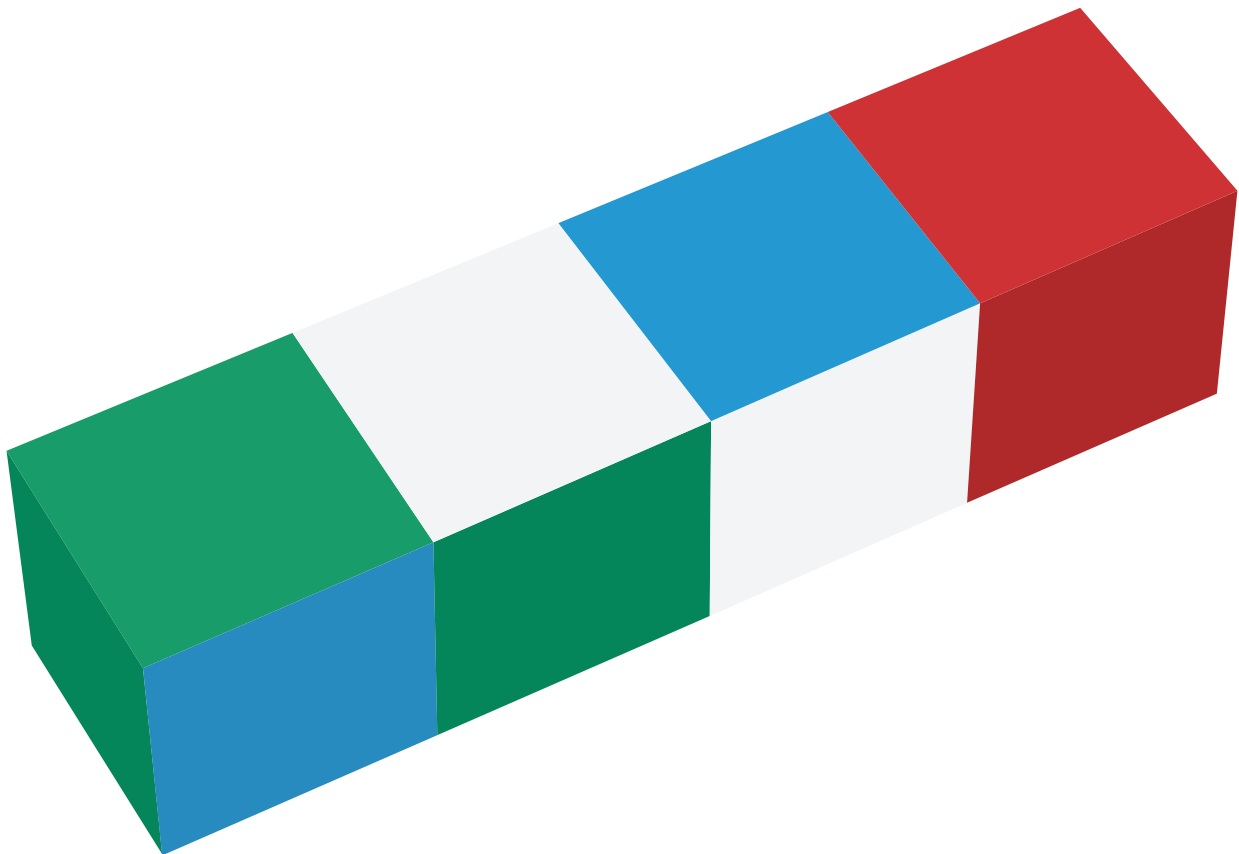
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yinstantinsanity.html](http://www.brandeis.edu/~mec/2003-2004/graphtheory/ii/howtoplayinstantinsanity.html)

- Answer is here
also [http://www.cs.brandeis.e
du/~storer/JimPuzzles/MATCH
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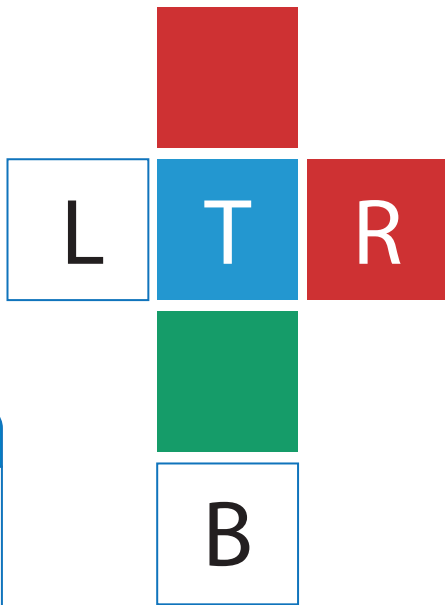
INSTANT INSANITY

- 1) Stack the four colored cubes into a tower so that each color appears only once on each of the four sides.
- 2) Let everyone know if you solve Instant Insanity, this is a hard one!

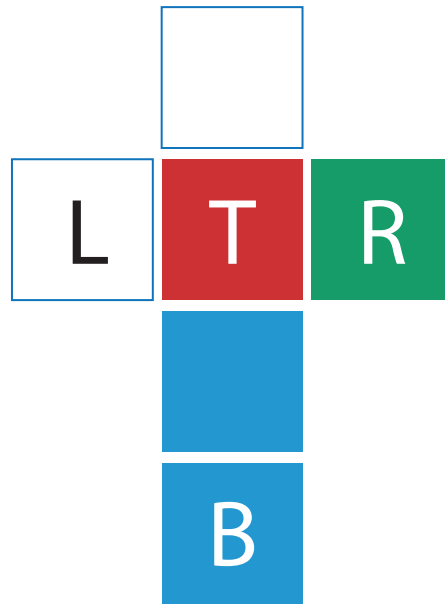


INSTANT INSANITY

Block 1



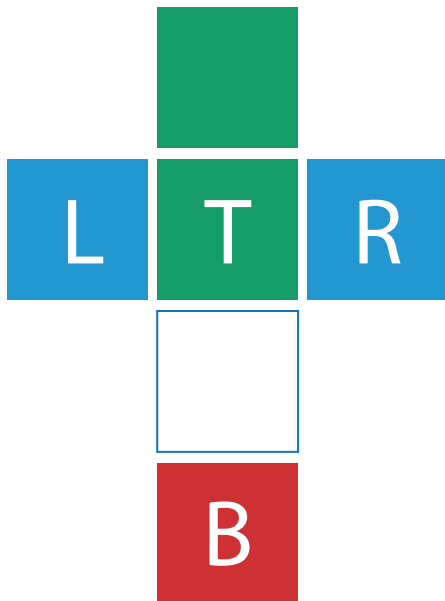
Block 2



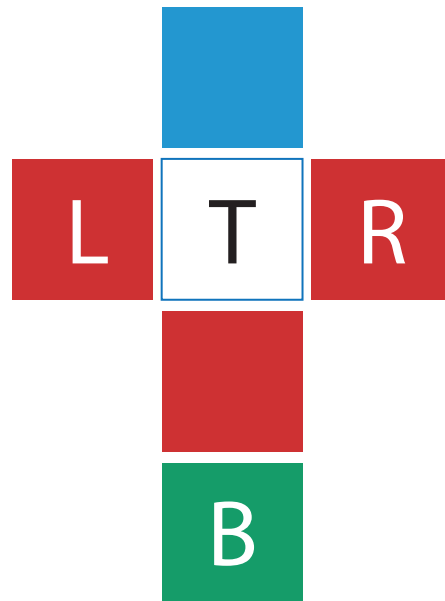
Key

- T = Top
- B = Bottom
- L = Left
- R = Right

Block 3



Block 4





INSTANT INSANITY SET UP & RULES

BIG GAMES

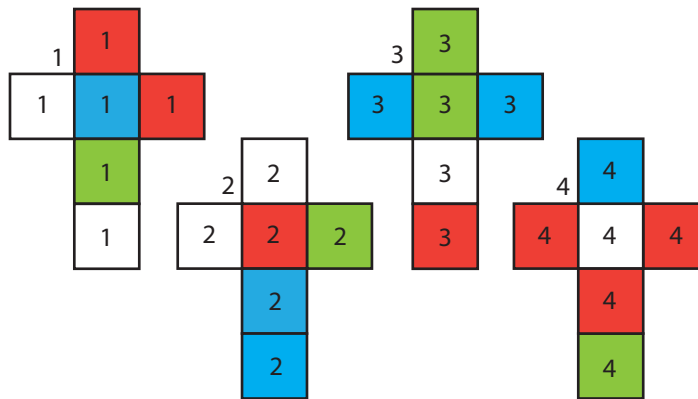
Children will play and play until they solve this seemingly easy puzzle! Great for problem solving skills.

Age Appropriateness:

- 8 & up

Learning Skills:

- Reasoning
- Logical Deduction
- Problem Solving



PREPARATION

- Using 4 identical cardboard boxes, color each box with the color configurations shown above. Use tape or art supplies to color the boxes as creatively as you like.
- Make a 'Wall of Fame' poster and hang it close by. This can be as simple as a table with names and times.

ACTION

- Instruct players to stack the 4 boxes on top of each other without repeating a single color on each side.
- When done correctly, there should be 4 different colors on each side of the tower, with no duplicates.
- Small teams of 2-5 players will have the most fun and spend a lot of time on this challenge.
- Option - use a stopwatch to time how long the players take to solve the challenge and log it on the Wall of Fame.

Materials:

- 4 identical cardboard boxes
- Art materials or tape to color sides of boxes
- Wall of Fame poster (Optional)
- Stopwatch (Optional)
- 1 or more players

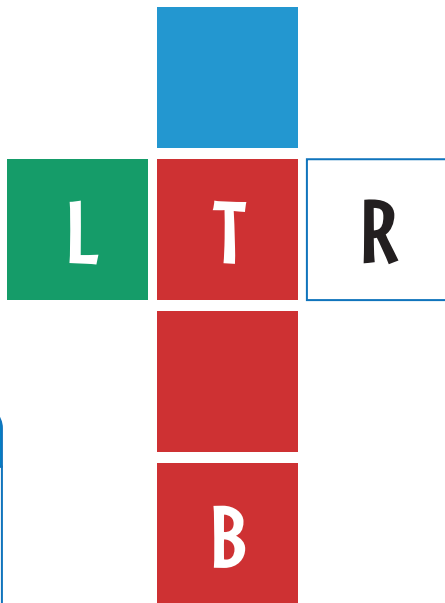
Action Time:

- 1-2 Hours

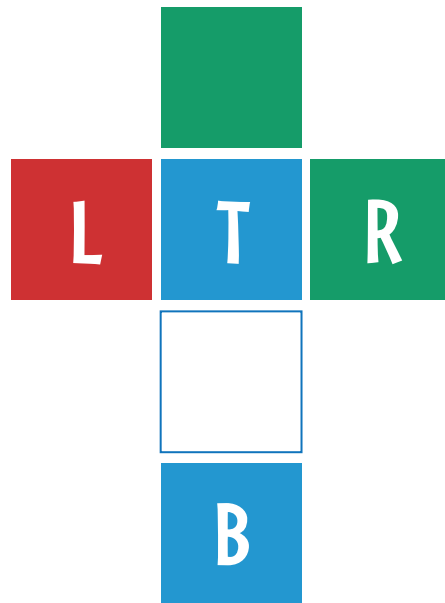
REFLECTION: Lead a discussion to talk about what players did well or could have done better in trying to work together to find the answers. Challenge players to change their strategy to solve faster the next time.

INSTANT INSANITY

Block 1



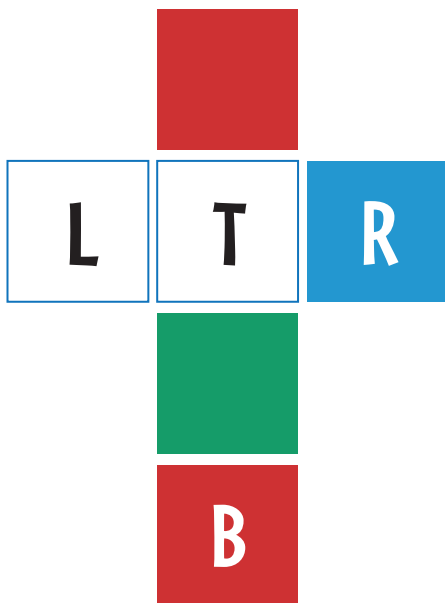
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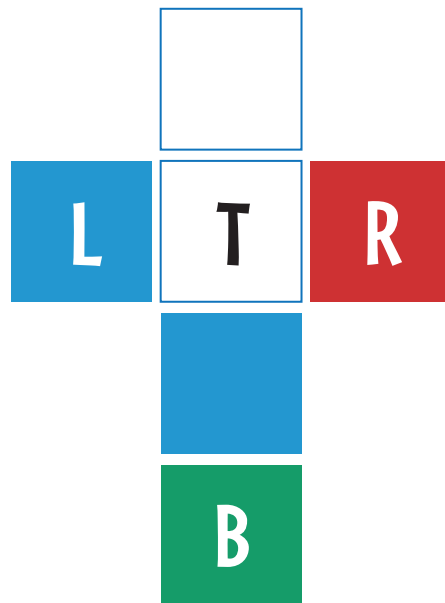
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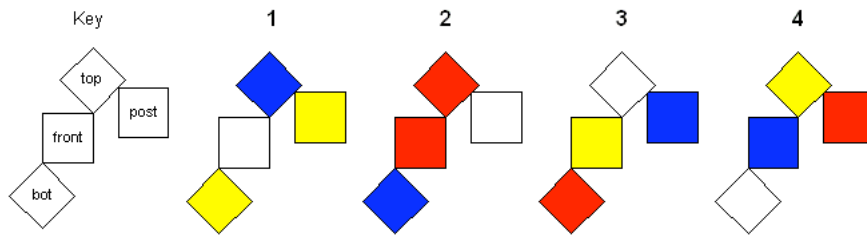
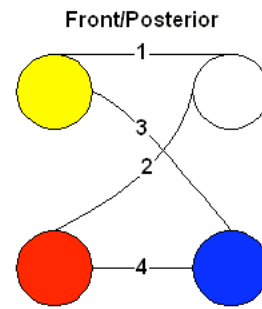
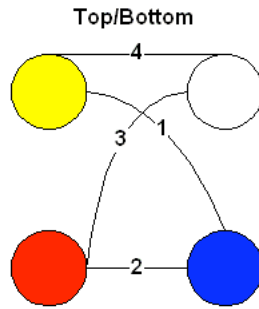
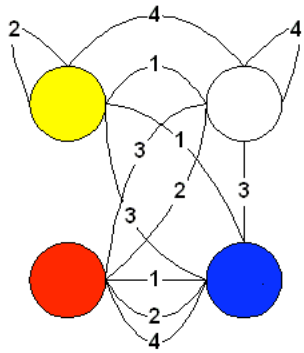
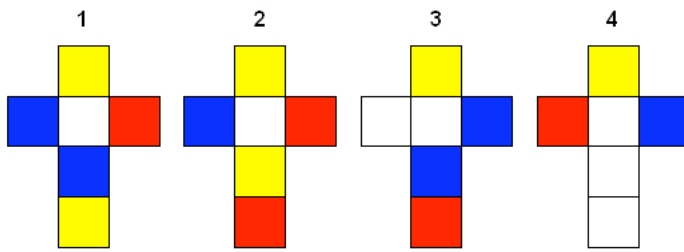
Block 3



Block 4



Nice Cubes Puzzle
 Graphical Solution
 6/2004 Robert Stegmann



Below is my solution to the Masudaya Cubes, using the graphical technique. The connectivity of this graph is similar to that of the Nice Cubes, though its edges seem differently labeled. Are the puzzles in fact isomorphic?