

BLOCK BATTLE

ACTIVITY GUIDE

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Festival**

Materials and Setup

Per table (assuming 5 students per table), you will need:

Per Table	Material Preparation	
5 sets of small colored blocks	Each set requires about 30 small same-colored blocks.	
3 copies of Instructions	1 page each	p. 7
5 copies of Tasks	6 pages each <i>can be printed double-sided</i>	p. 8-13
1 copy of Table Sign	1 page <i>print on cardstock for sturdiness</i>	p. 14

Per Table	Purchasing Materials		
5 sets of min 10 small colored blocks	pack of 100 for \$14.99		
18 plastic sheet protectors	pack of 100 for \$8.14	pack of 500 for \$26.99	These are recommended to protect the documents that students will be handling.
5 binder rings	pack of 100 \$8.99	These are recommended for keeping the task sheets in order.	



Objective

Place blocks on a grid.

Rules:

1. Place blocks into some of the squares.
2. Each color needs one block.
3. Each row and column needs one block.
4. Blocks cannot touch diagonally.

Materials

Each Block Battle table should be prepped for 5 stations.

Each station needs:

1. At least 10 small colored blocks.
2. Block Battle instructions.
3. Block Battle tasks.

How to Play

We encourage you to explore the activity yourself ahead of time.

You can try our online version [here](#).

Introduce the activity without overexplaining it and without telling what strategies students might want to use. As much as possible, avoid giving away answers. Students should be encouraged to explore, experiment, and learn from their mistakes.

1. Demonstrate the rules by starting the first puzzle with them.
2. Have the student explore the next puzzles. Point out that for the second page of puzzles, they'll need 5 blocks.

Beginner Version

See [here](#) for a beginner version to engage younger students or students of any age who:

1. Have strong math anxieties
2. Don't feel confident with math or math puzzles
3. Have learning differences
4. Want a gentler start to the activity

Standards

1. Make sense of problems and persevere in solving them. CCSS.MP1
2. Construct viable arguments and critique the reasoning of others. CCSS.MP3



3. Model with mathematics. CCSS.MP4
4. Attend to precision. CCSS.MP6

Asking Good Questions

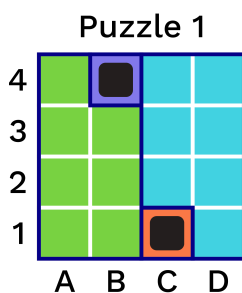
1. Ask questions about confidence.
 - a. When a student asks you “Is this right?”, instead of saying “yes” or “no” right away, ask them how confident they are in their answer. Here are some examples:
 - i. “Maybe. What do you think? How confident are you?”
 - ii. “On a scale of 1-5, how confident are you in your answer?”
 - b. If a student is not confident in their answer, follow up by asking “What would help you feel more confident in your answer?” or “Why do you not feel confident?” This helps you determine how best to help the student through their explorations.
2. Ask students about choices.
 - a. When a student is stuck or shows you a wrong answer, instead of jumping in and showing the student the correct answer, start by asking about the choices that the student made along the way. Here are some suggested steps to follow:
 - i. Start from the beginning.
 - ii. Ask students to show you what they’ve tried so far.
 - iii. When the student gets to a point where they have different choices, ask the student “What other choices can you make here?”
 - iv. Have the student make a different choice and try to solve the puzzle. This helps the student see that they have the power to make different choices during an activity, and they’ll start to do this on their own in the future.
 - v. If you’re familiar with the puzzle or a particular solution, stop the student only when a different choice will help them get to the solution. This will help them feel successful faster without you giving away too much of the answer.
3. Ask students about strategies.
 - a. If a student is getting into the activity and has been doing it for a while, ask the student if there are any strategies they’ve come up with to help them solve the puzzle or win the game.
 - b. Follow up by asking if they think their strategies will work for all puzzles and/or larger puzzles, more complex puzzles, etc. Have the student explore more complex puzzles to test out their strategies.
 - c. This is a great way to encourage a student to dive deeper into an activity and to start looking for patterns, structure, and proofs.

Answers

General Strategies:

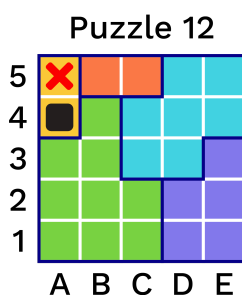
Many students will start by placing one block in each color and then shifting the blocks around until all of the rules are followed. However, there are a few general strategies that can help students who are stuck or who want to solve Block Battle puzzles faster.

1. As much as possible, don't make any guesses. In other words, only place a block if you know it must go there.



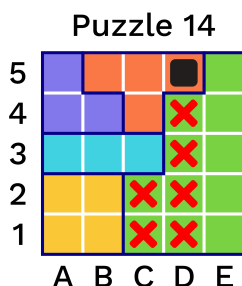
Because every color needs one block, start Puzzle 1 by placing a block on B4 and C1. This makes it much easier to figure out where the green and blue blocks should go.

2. Sometimes, it can be helpful to look for where a block **can't** go.



The orange block must go on either B5 or C5. Because there can only be one block in Row 5, this means that the yellow block cannot go on A5. So, the yellow block must go on A4.

3. Sometimes, it can be helpful to look at the number of colors in a row or column.

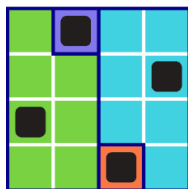


Column E has only one color – green. This means that the green block must be in Column E and cannot be in Columns C or D. There must be a block in Column D, so the block in Column D must be on D5.

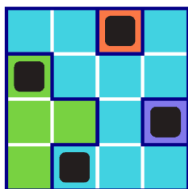
4. This isn't an exhaustive list of Block Battle strategies but should help out with most puzzles. Students should be encouraged to come up with their own strategies and explanations.

Puzzle Solutions:

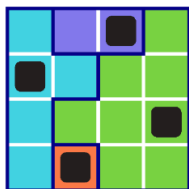
Puzzle 1



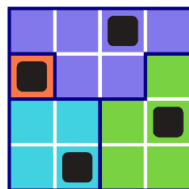
Puzzle 2



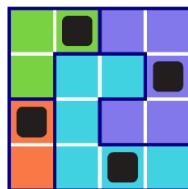
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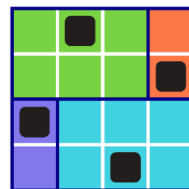
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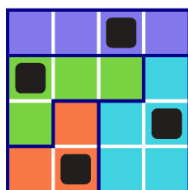
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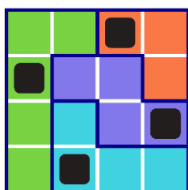
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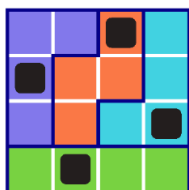
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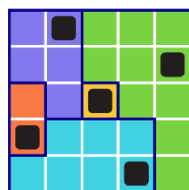
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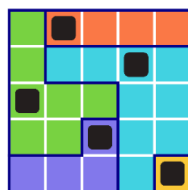
Puzzle 9



Puzzle 10



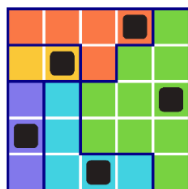
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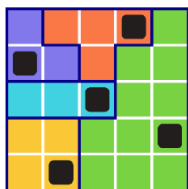
Puzzle 12



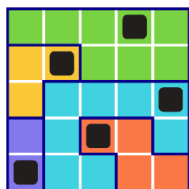
Puzzle 13



Puzzle 14



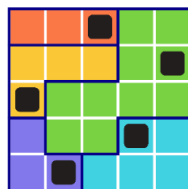
Puzzle 15



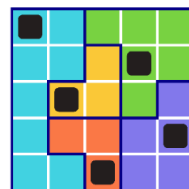
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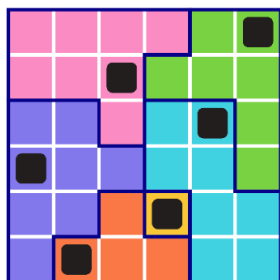
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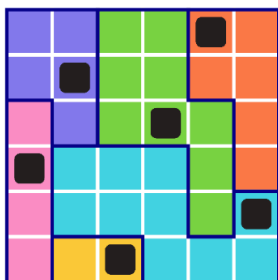
Puzzle 18



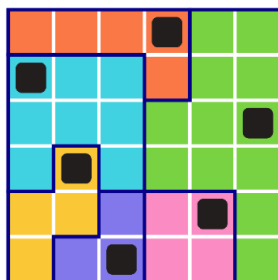
Puzzle 19



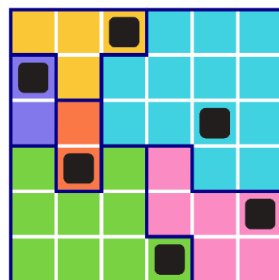
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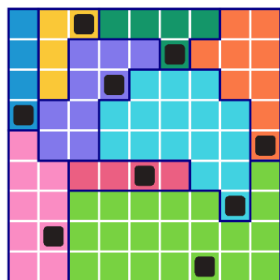
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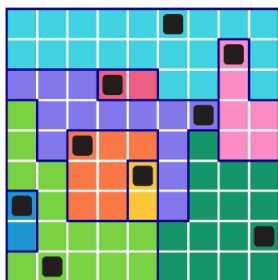
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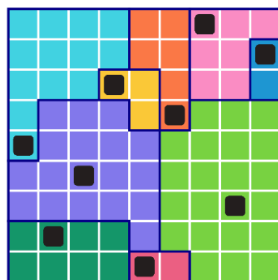
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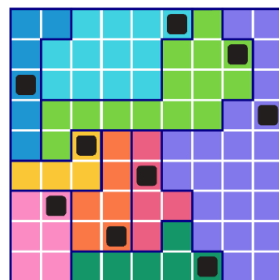
Puzzle 24



Puzzle 25



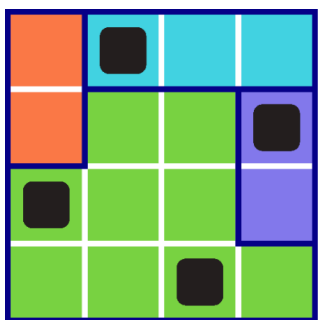
Puzzle 26



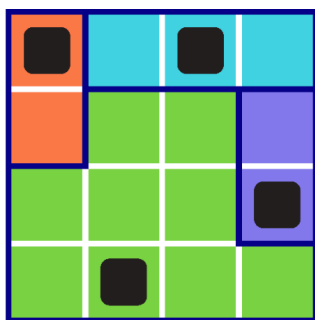
Block Battle Instructions

Rules:

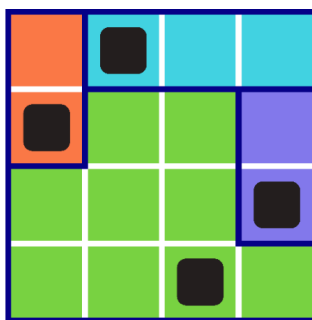
- Place blocks into some of the squares.
- Each color needs one block.
- Each row and column needs one block.
- Blocks cannot touch diagonally.



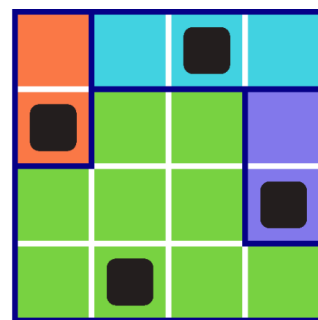
Green cannot
have two blocks



A row cannot
have two blocks

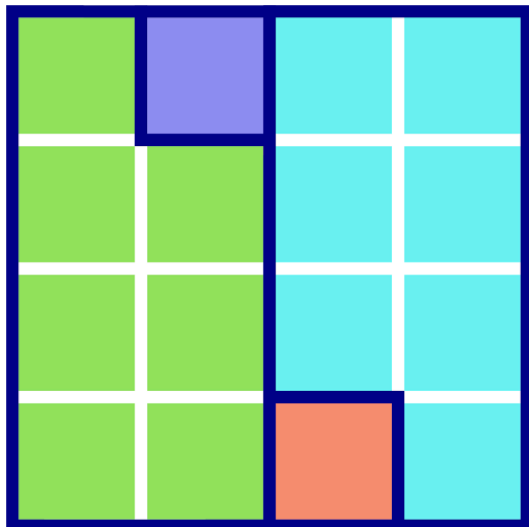


Blocks cannot
touch diagonally

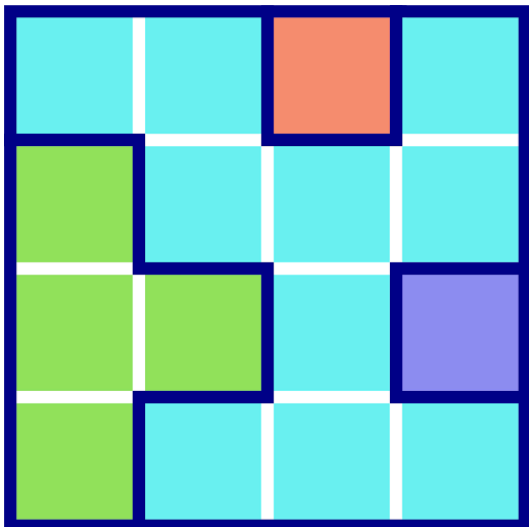


Block Battle

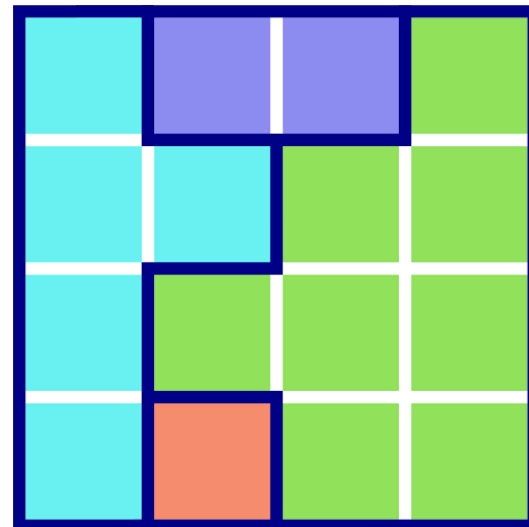
Puzzle 1



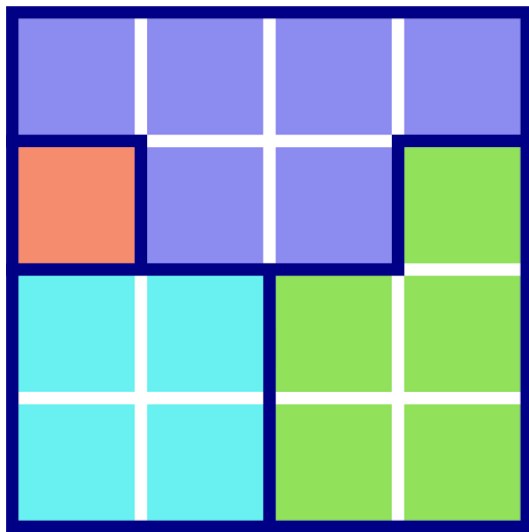
Puzzle 2



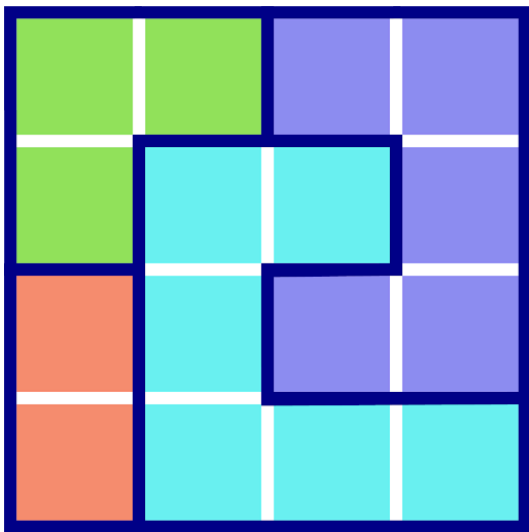
Puzzle 3



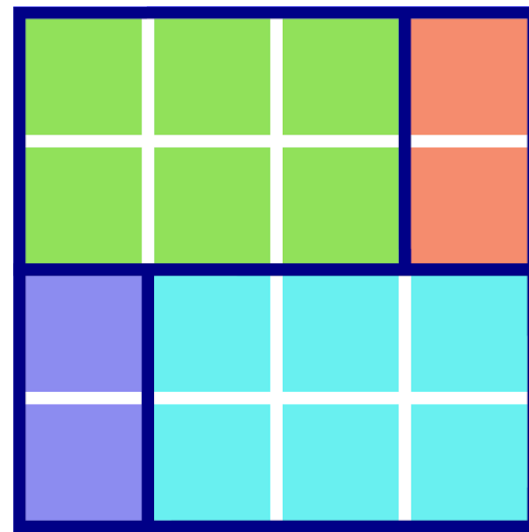
Puzzle 4



Puzzle 5

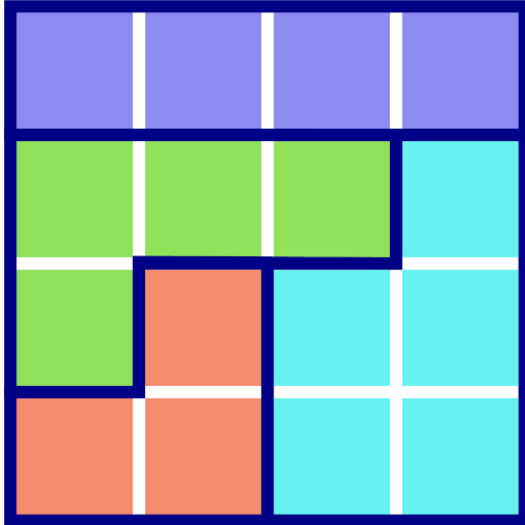


Puzzle 6

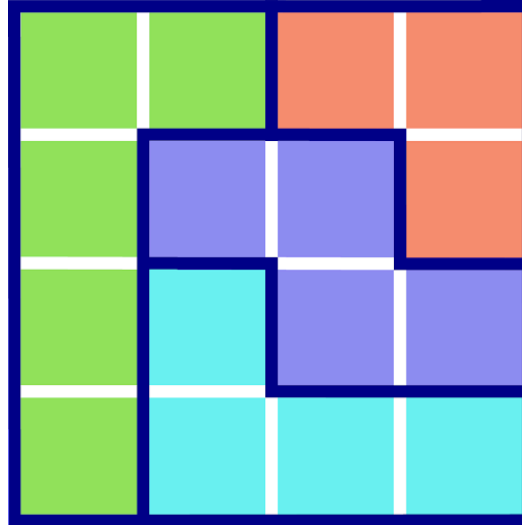


Block Battle

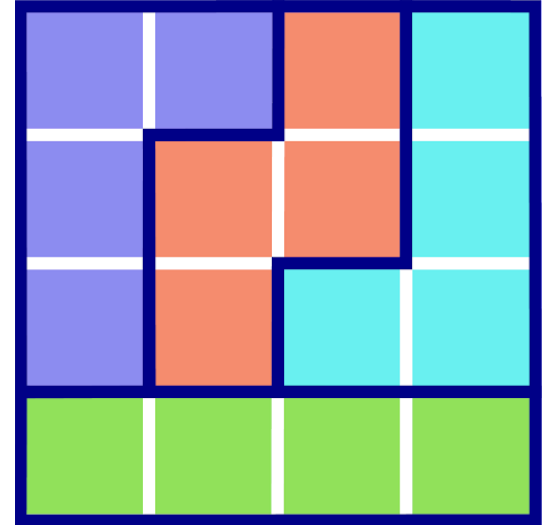
Puzzle 7



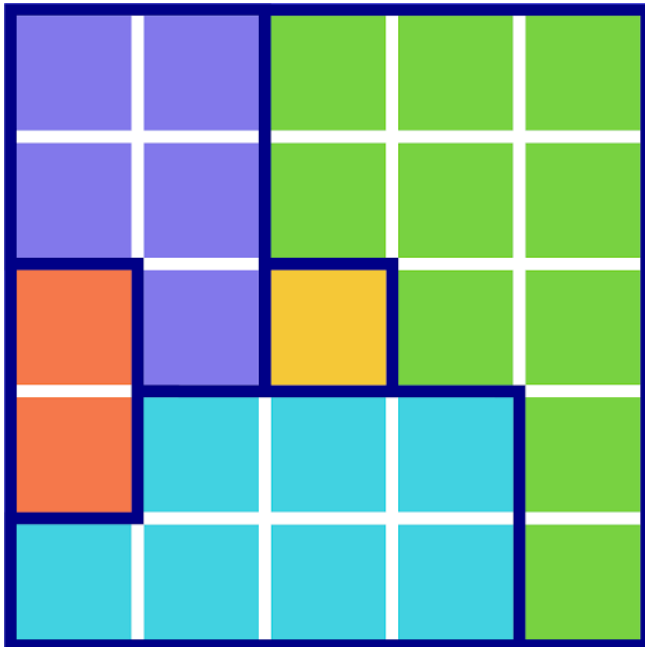
Puzzle 8



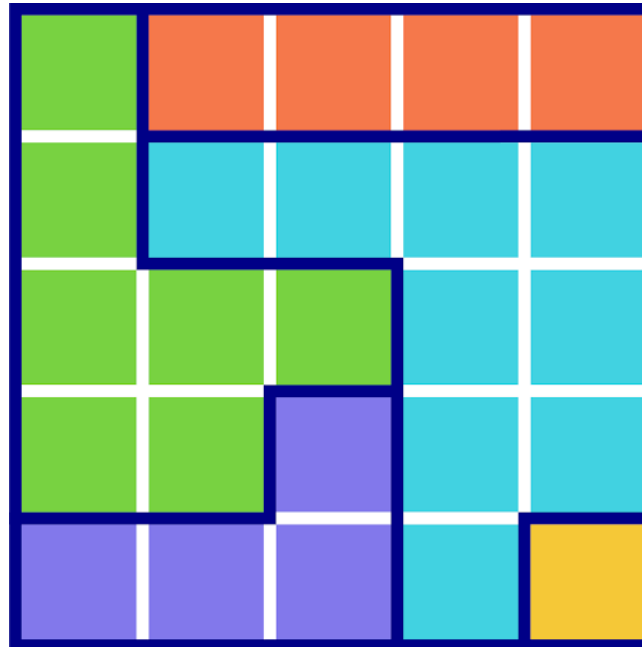
Puzzle 9



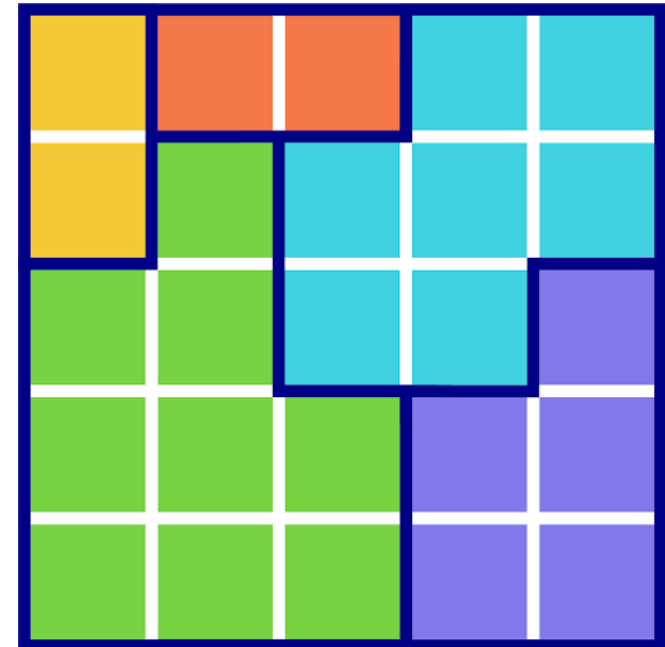
Puzzle 10



Puzzle 11

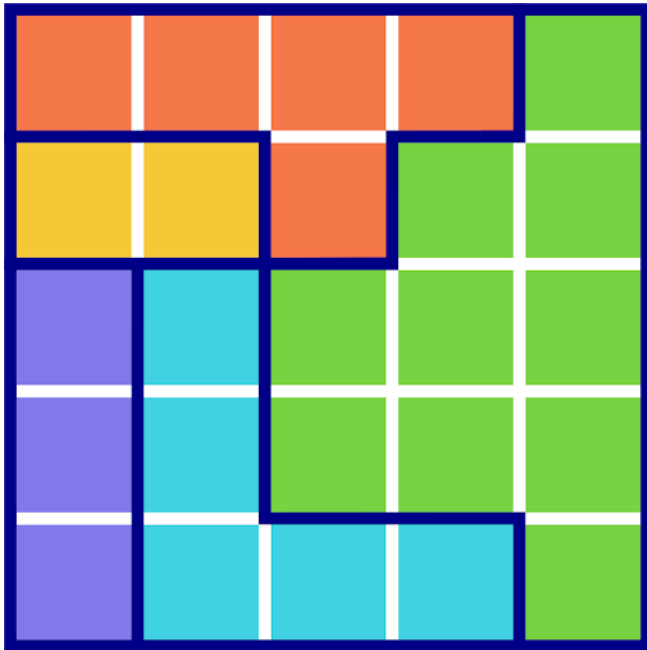


Puzzle 12

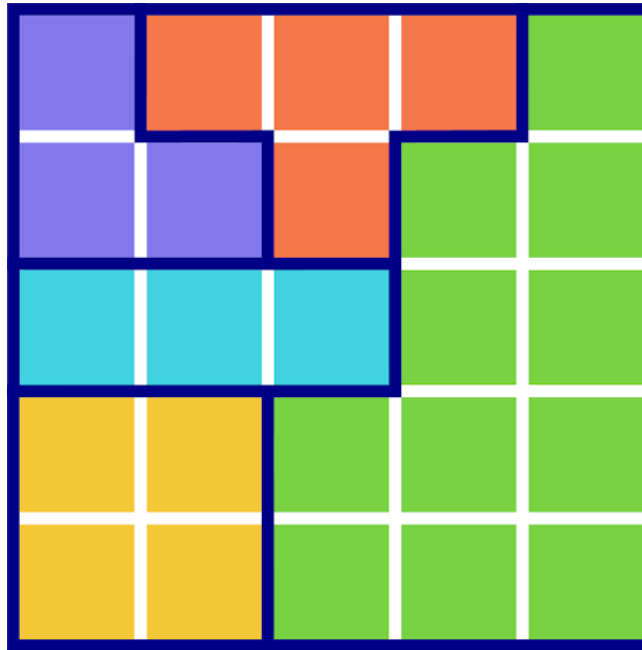


Block Battle

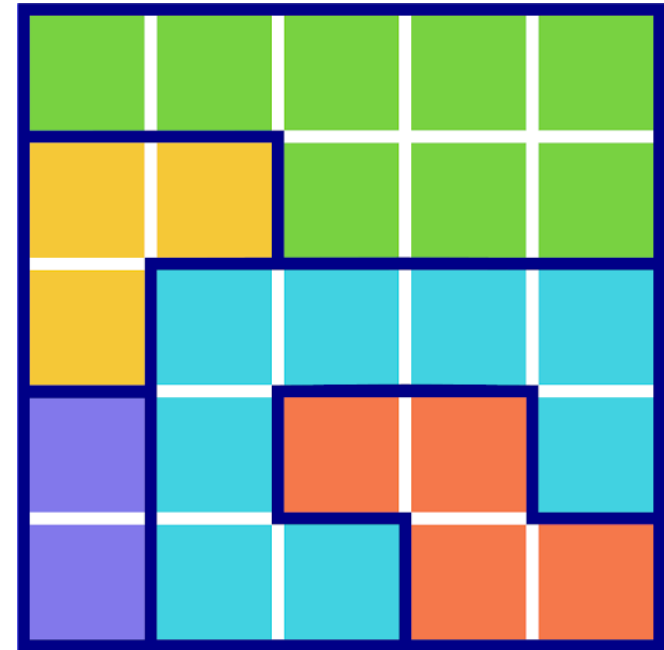
Puzzle 13



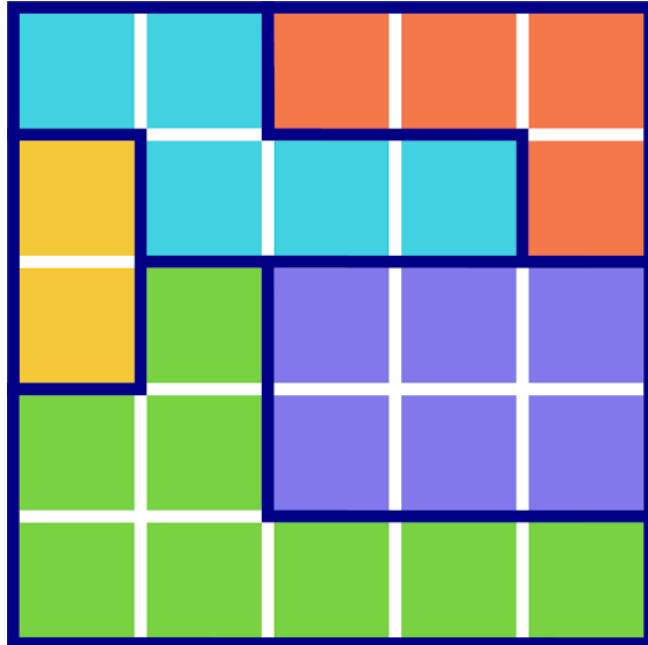
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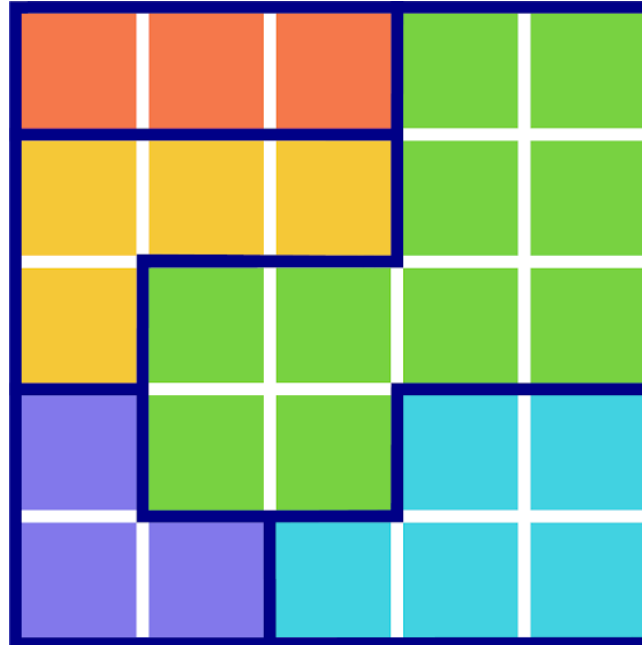
Puzzle 15



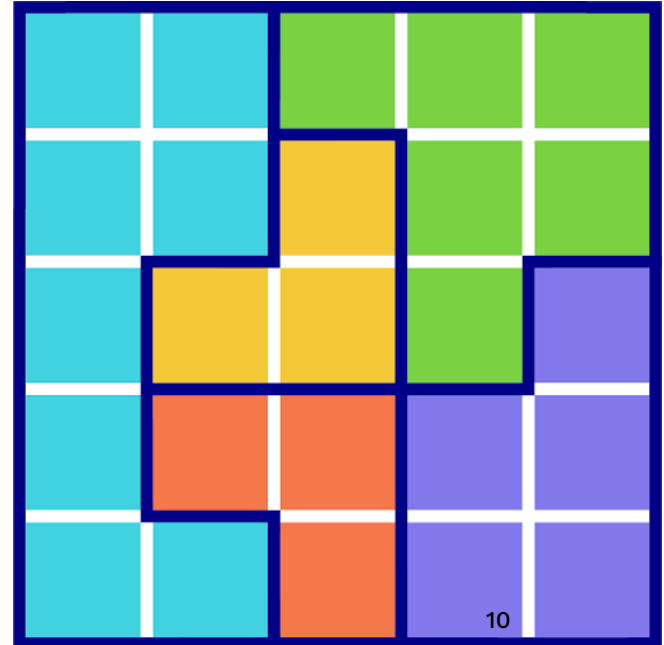
Puzzle 16



Puzzle 17

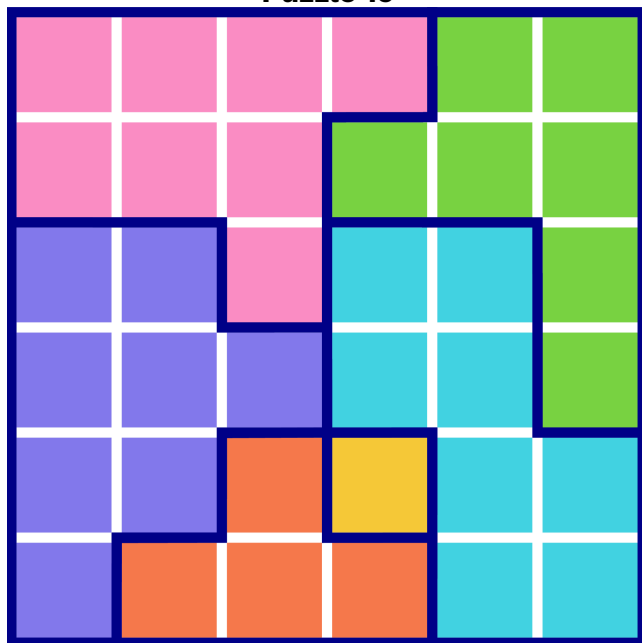


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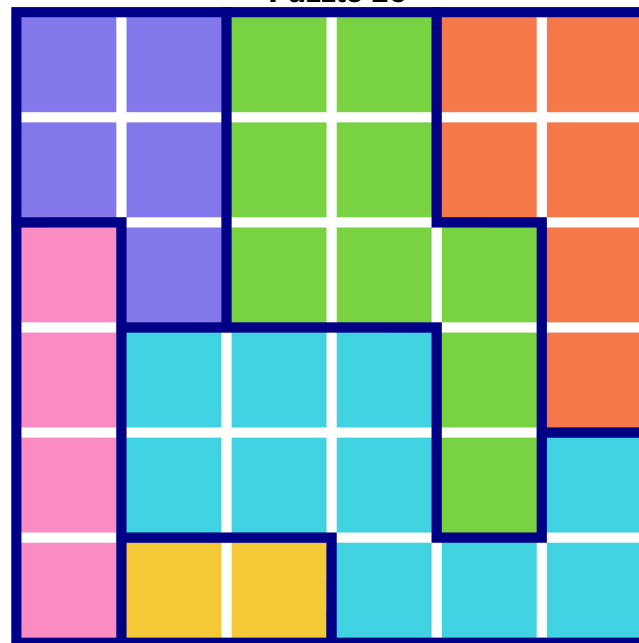


Block Battle

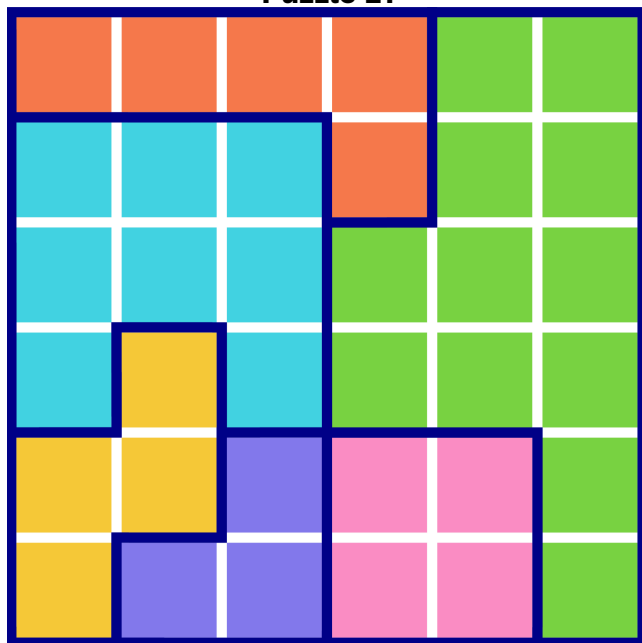
Puzzle 19



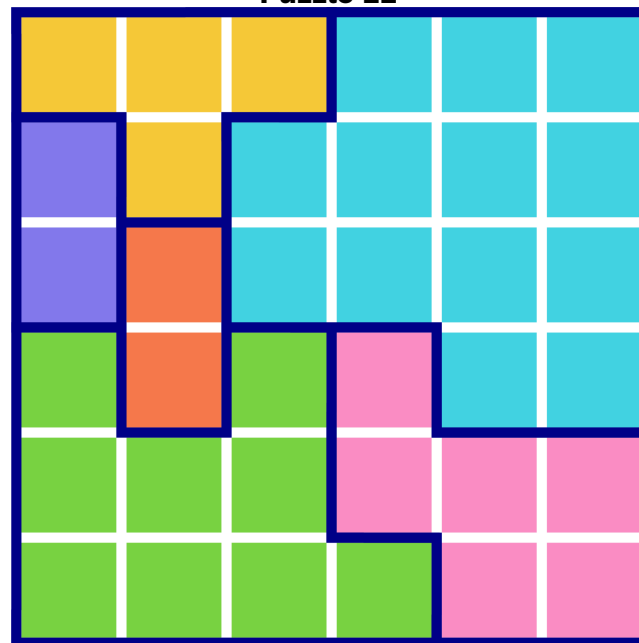
Puzzle 20



Puzzle 21

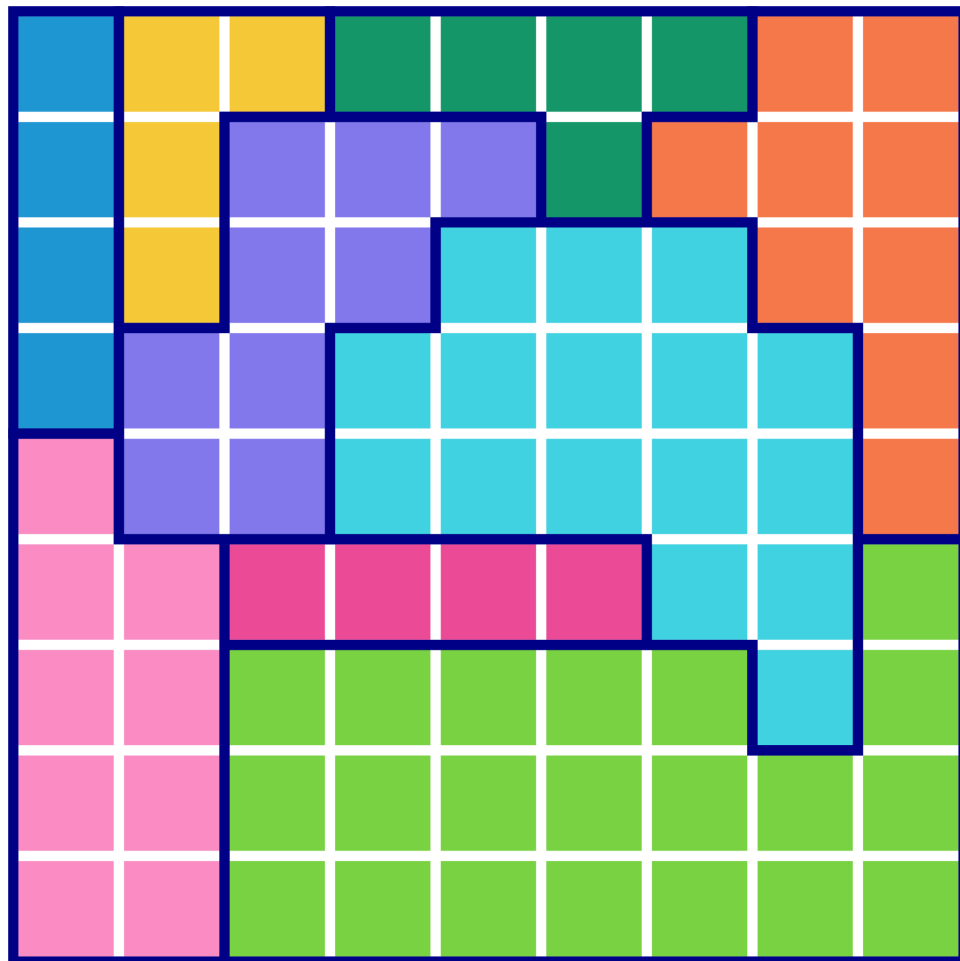


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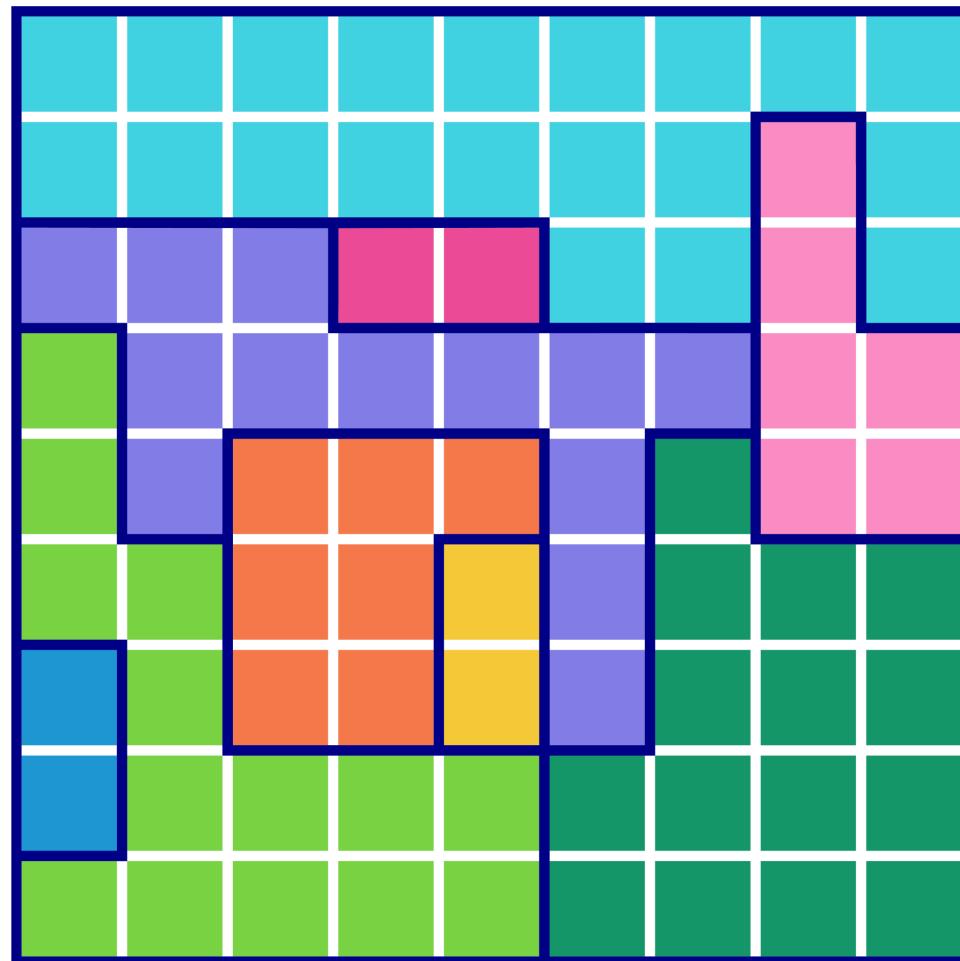


Block Battle

Puzzle 23

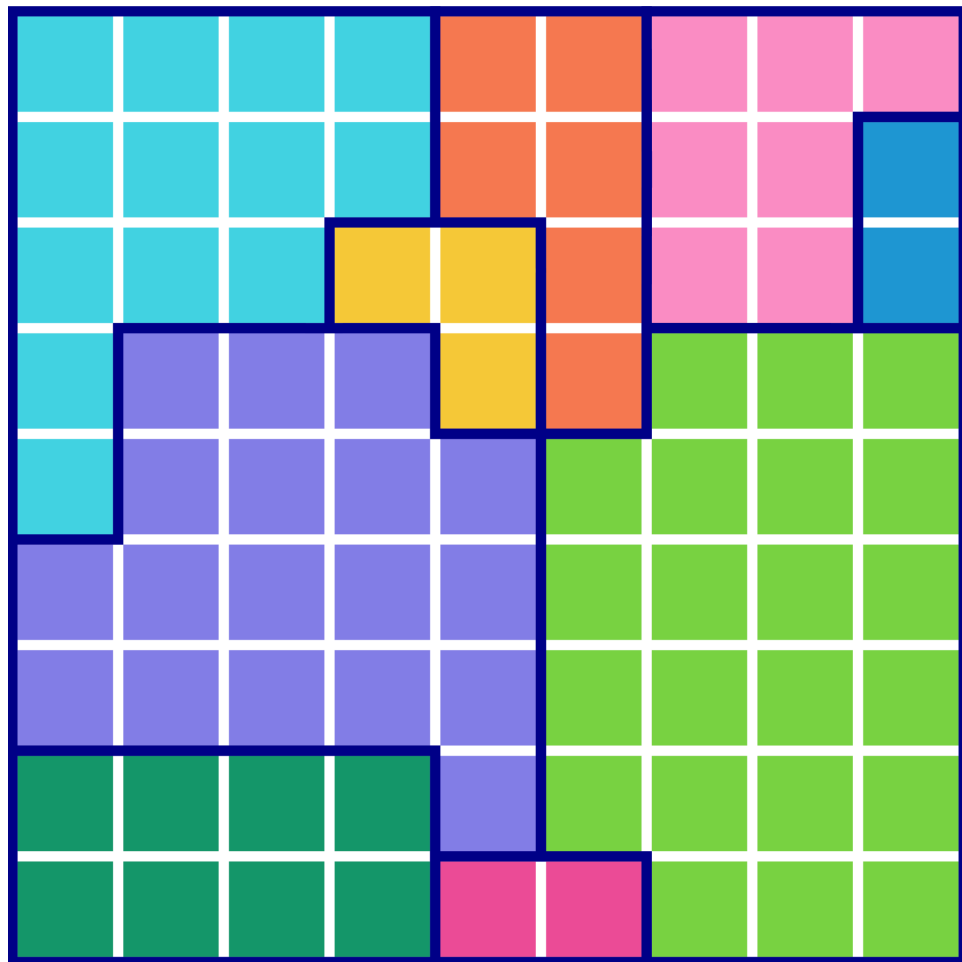


Puzzle 24

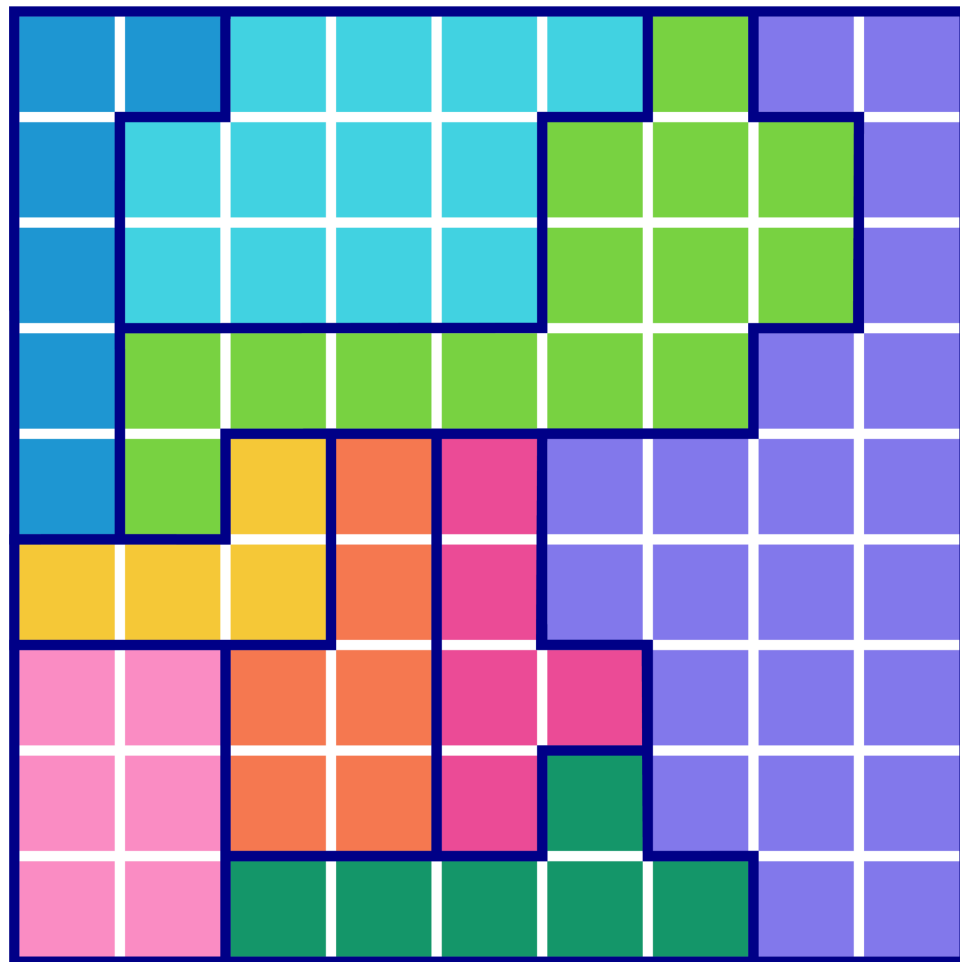


Block Battle

Puzzle 25

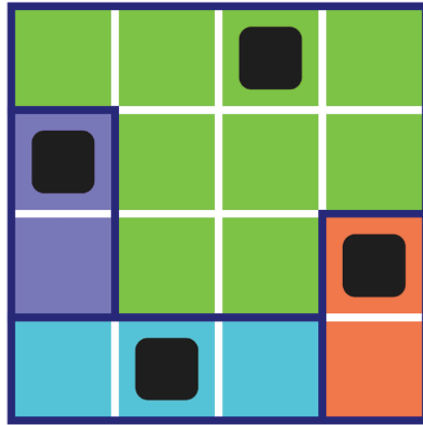


Puzzle 26





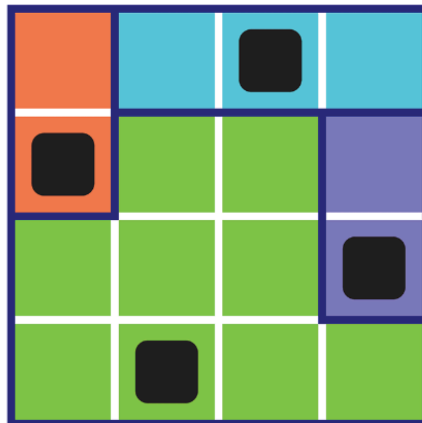
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