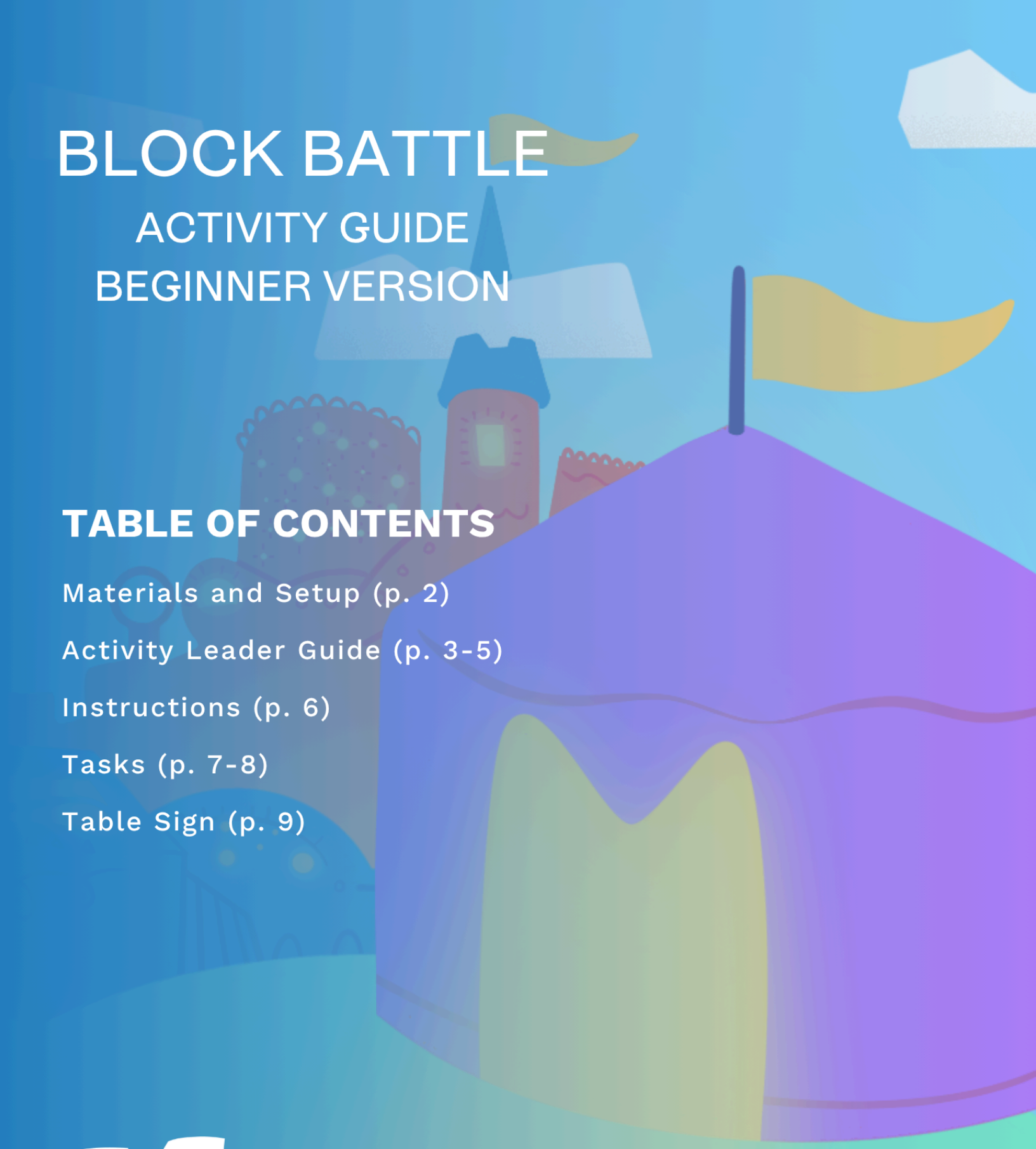
BLOCK BATTLE

ACTIVITY GUIDE
BEGINNER VERSION



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Julia Robinson Mathematics 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 a minimum of 4 small colored blocks. Some students like to leave their solutions showing, so it's good to have more blocks handy.	
3 copies of Instructions	1 page each	p. 6
5 copies of Tasks	2 pages each *can be printed double-sided*	p. 7-8
1 copy of Table Sign	1 page *print on cardstock for sturdiness*	p. 9

Per Table	Purchasing Materials		
5 sets of min 4 colored blocks	pack of 100 for $14.99		
13 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.

What does “beginner version” mean?

This version of Block Battle was created with PreK - 2nd grade students in mind. However, “beginner” does not mean “easy,” and this version of Block Battle can be an effective way to engage students of any age who:

- Have strong math anxieties
- Don’t feel confident with math or math puzzles
- Have learning differences
- Want a gentler start to the activity

Older students and parents at our events often engage with this beginner version and move on to the regular version when they feel ready.

Objective

Place blocks on a grid.

Rules:
1. Each color needs one block.
2. Blocks cannot touch (horizontally, vertically, or diagonally).

Materials

Each Block Battle table should be prepped for 5 stations.
Each station needs:
1. At least 4 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. Use the first puzzle to demonstrate the rules.
    a. Have the student count/point out all the colors in the grid.

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b. Ask the student if they could find a way to place one block in each color so that none touch. Encourage them to explain their thinking out loud as they place them.

2. Have the student explore the next puzzles.

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.

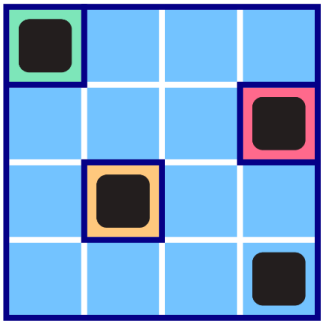
2. Ask students about choices.
   a. When a student is stuck or shows you a wrong answer, instead of jumping in and showing the student the correct answer, start by asking about the choices that the student made along the way. Here are some suggested steps to follow:
      i. Start from the beginning.
      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 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.

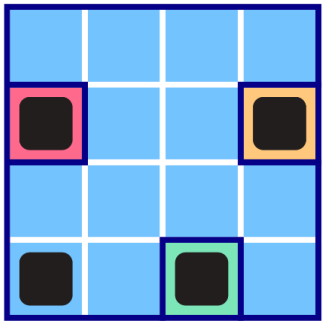
Answers

Some puzzles have more than one solution, so answers may vary.

Puzzle 1



Puzzle 2



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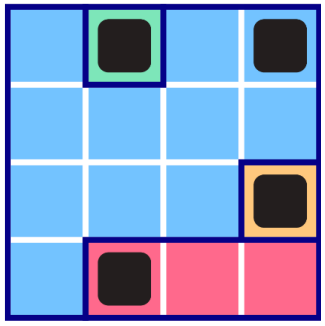

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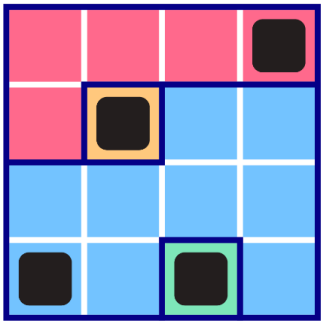

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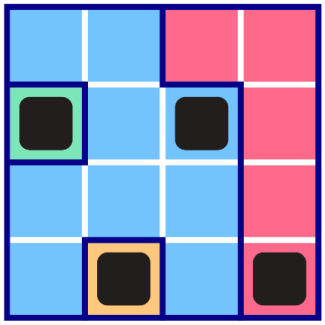

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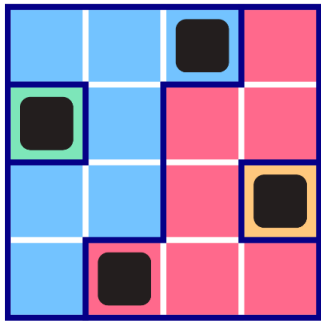

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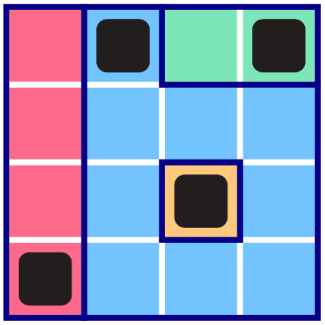
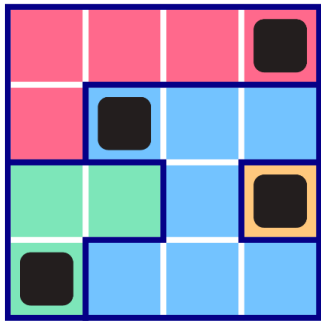


Puzzle 8

Puzzle 9



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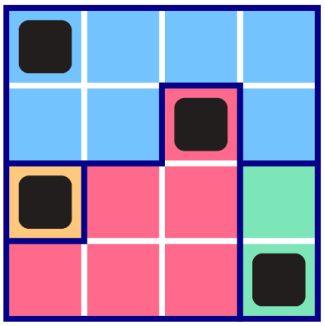

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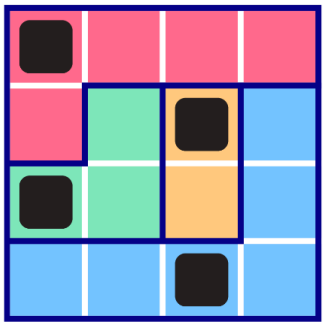

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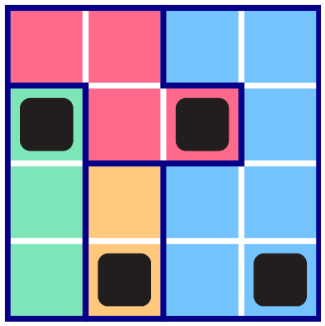

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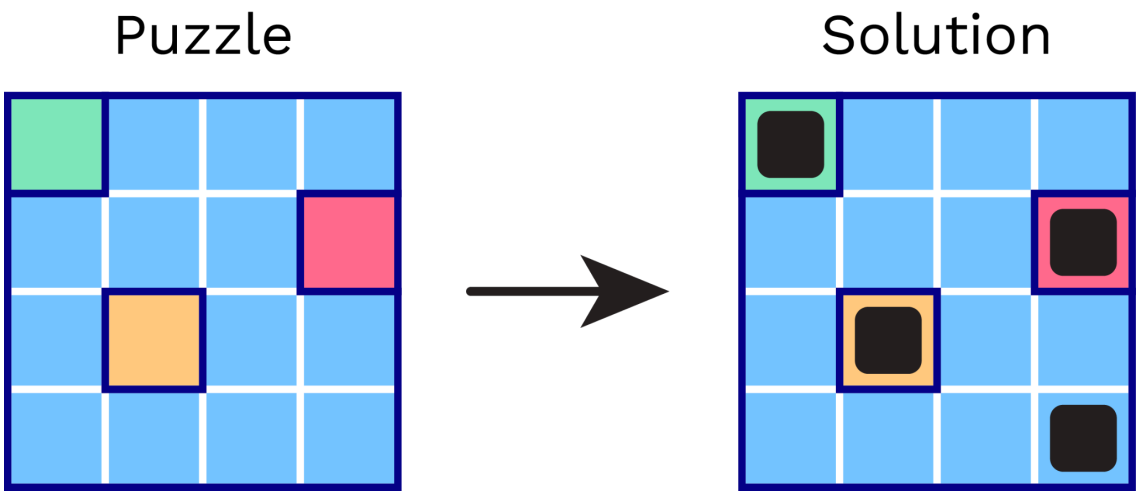
BEGINNER

Block Battle Instructions
(Beginner Version)

Rules:

- Each color needs one block.
- Blocks cannot touch (horizontally, vertically, or diagonally).



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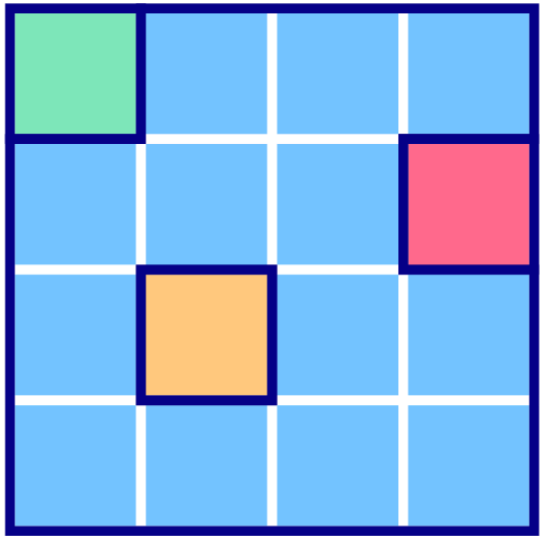

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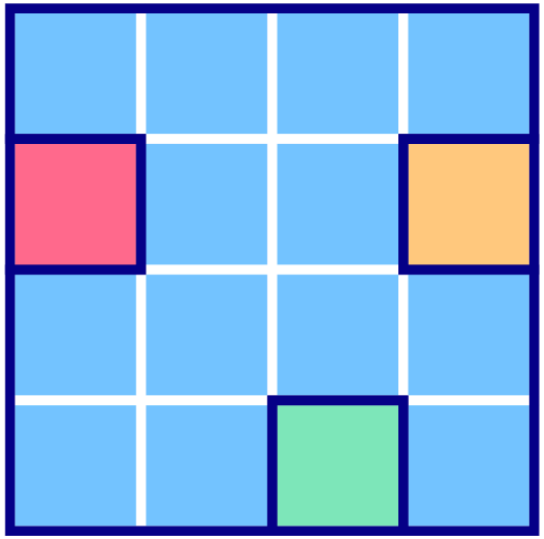

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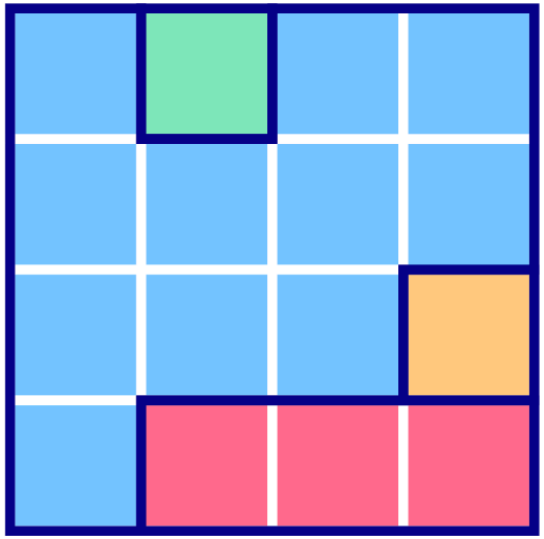

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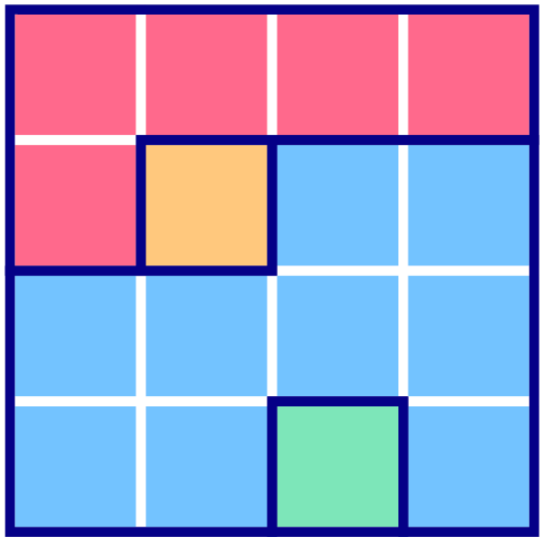

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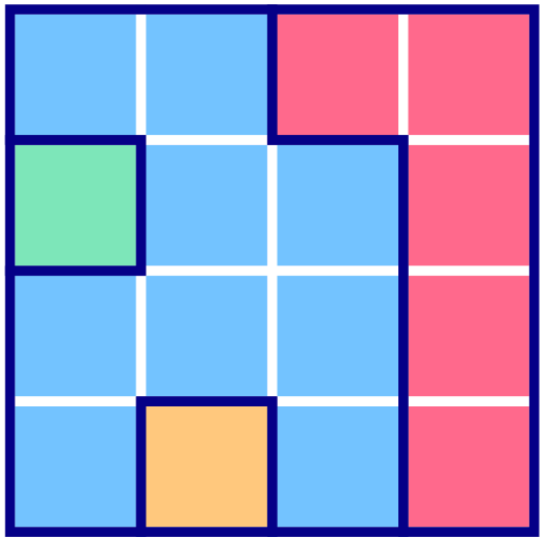

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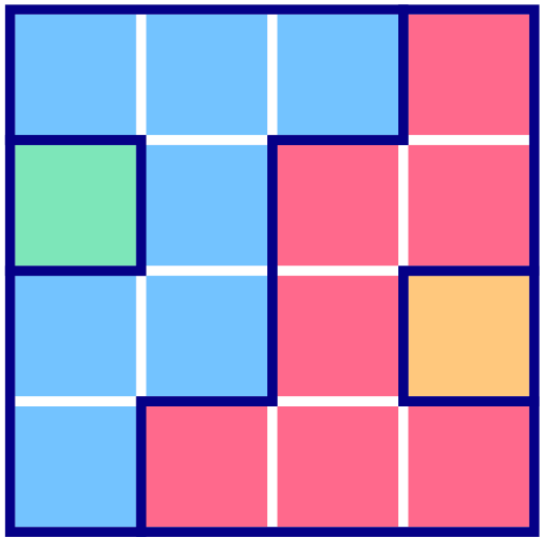

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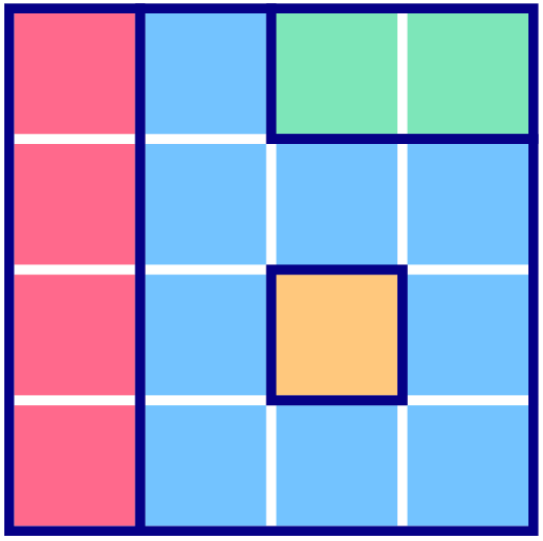

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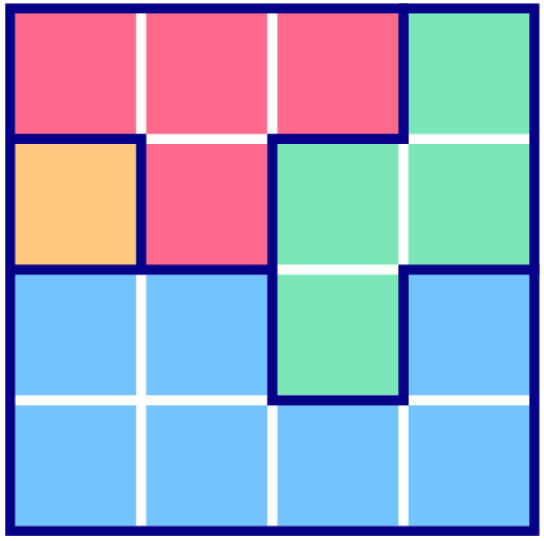

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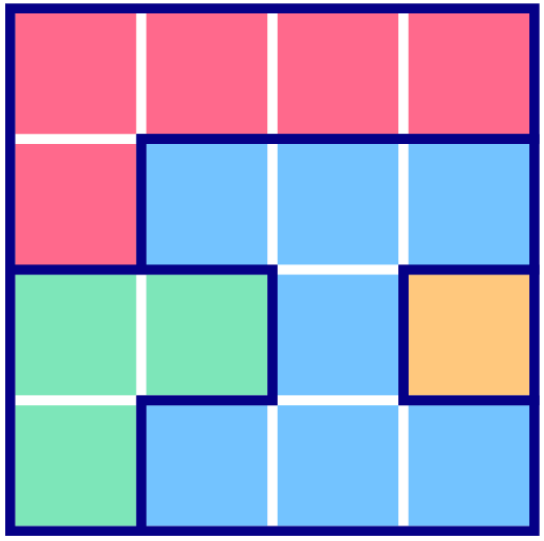

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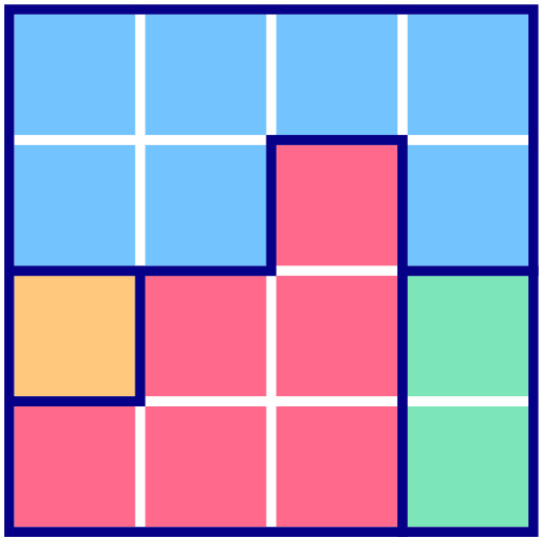

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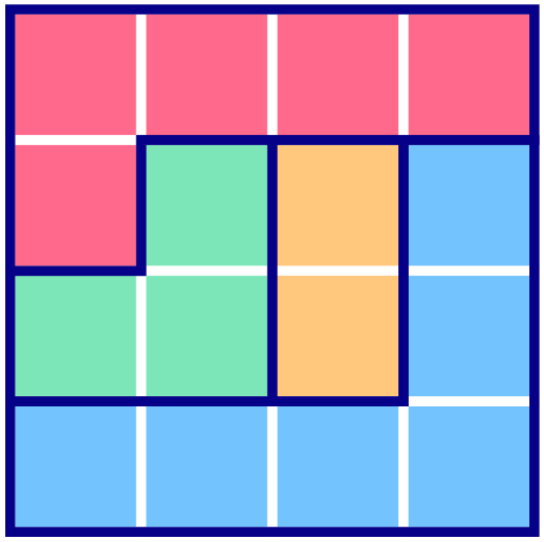

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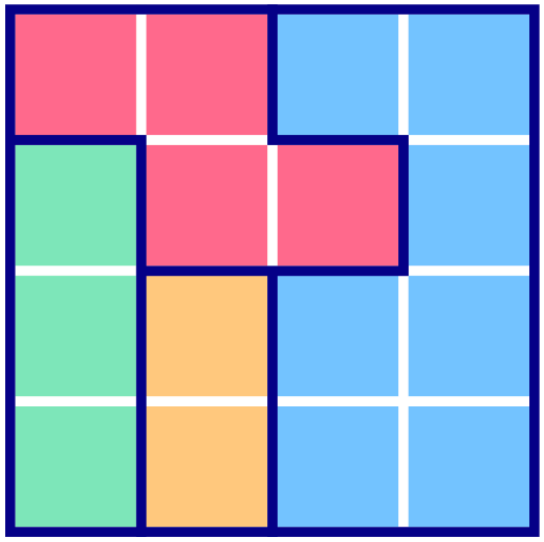

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