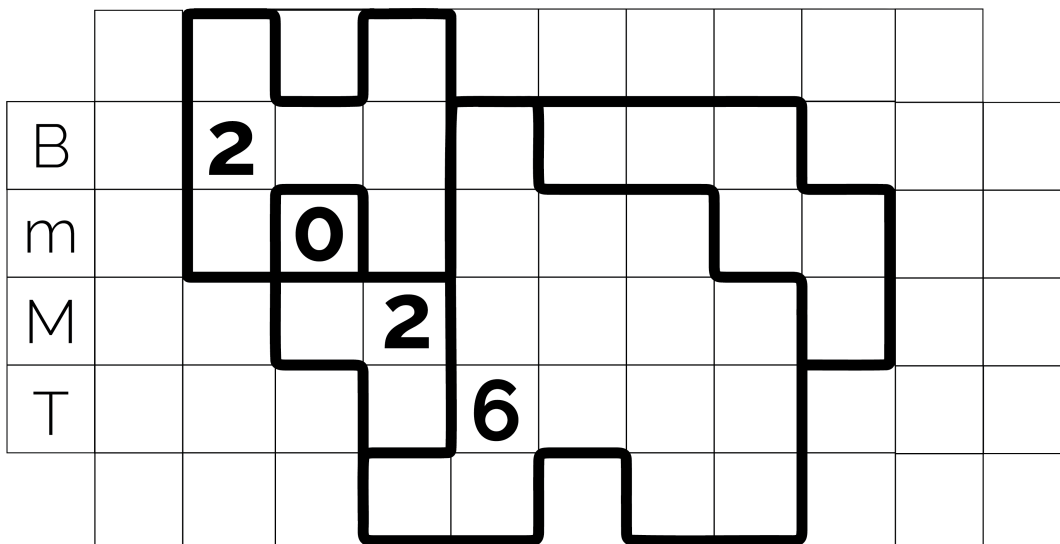


Berkeley mini Math Tournament 2026

Puzzle Round Rules



April 12, 2026

Time limit: 15 minutes for reading, 60 minutes for solving.

Instructions: For this test, you work in teams of up to five to solve a set of puzzles. You will have 15 minutes to read the rules of the Puzzle Round and to strategize. Afterwards, you will have 60 minutes to solve the puzzles. Only submit the set of answer sheets for grading.

No calculators. Protractors, rulers, and compasses are permitted.

Introduction

Welcome to the BmMT 2026 Puzzle Round! This companion document will be available to you throughout the entire round. It is highly recommended that everyone on your team reads through this carefully and works through all provided examples. Remember to submit your team's solutions on the provided answer sheet.

Each puzzle is graded on a correct/incorrect basis; there is no partial credit. Therefore, we recommend checking solutions carefully to avoid small oversights like copying errors.

Within each variant, puzzles are ordered in increasing difficulty. However, your team may find the puzzles in some variants easier than in other variants. There is a selection of challenging puzzles at the end of the test. We recommend attempting those puzzles only once you fully understand the relevant variant and have solved its other puzzles.

Each puzzle has a unique solution, so if you find multiple solutions, check to make sure that you've understood the rules fully.

Basic Aqre

A blank Aqre puzzle will look something like this:

3		2	
1	0		

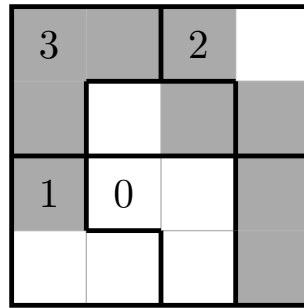
To solve the puzzle, shade some of the cells in the grid according to the following rules (a “cell” refers to an individual square on the grid):

- Each cell is either completely shaded or completely unshaded, not both.
- All shaded cells are orthogonally connected. That is, it is possible to go from any shaded cell to any other shaded cell by passing only through shaded cells that share a side (no traveling through diagonals).
- There is no run of four or more consecutive shaded **or unshaded** cells horizontally or vertically anywhere in the grid.
- If an outlined region (a group of cells outlined in bold) has a number in it, there are exactly that many shaded cells in that region.

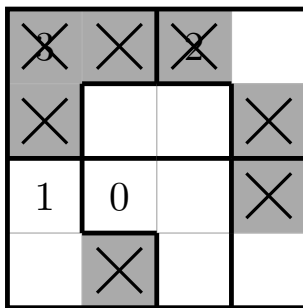
As you solve, it will be helpful to take note of which cells are definitely shaded and which cells are definitely unshaded. In your final submission, **only shaded cells should be marked.**

Try solving the example puzzle above before turning the page!

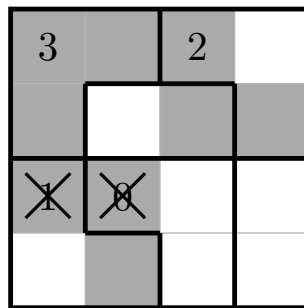
This is the **only correct solution** to the example puzzle:



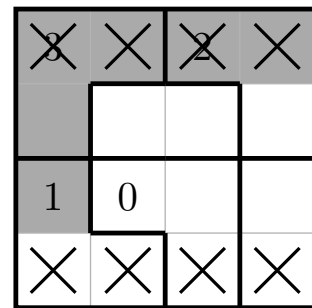
Here are some **incorrect** solutions to the example puzzle:



Shaded cells are not orthogonally connected.



Wrong number of shaded cells in two regions.

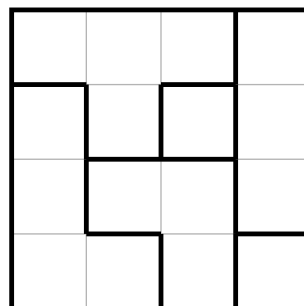


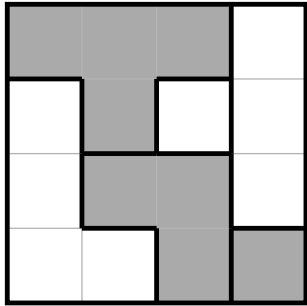
4 shaded cells and 4 unshaded cells in a row.

Variant 1: Paint

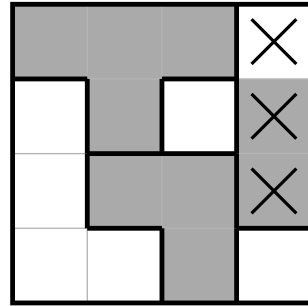
A Paint Aqre puzzle looks identical to a Basic Aqre puzzle. This variant follows all rules for Basic puzzles, with the additional rule that **each outlined region must be either fully shaded or fully unshaded**.

Give this puzzle a try before turning the page!





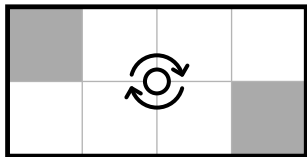
Correct! Each region is fully shaded or unshaded.



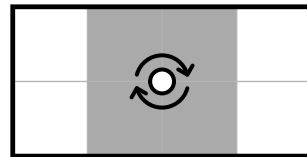
Incorrect. One region is not fully shaded or unshaded.

Variant 2: Spiral

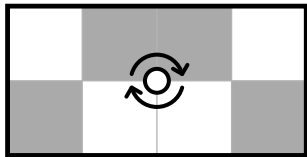
A Spiral Aqre puzzle looks identical to a Basic Aqre puzzle. This variant follows all rules for Basic puzzles, with the additional rule that **each outlined region must have 180° rotational symmetry about its center.** See the following examples:



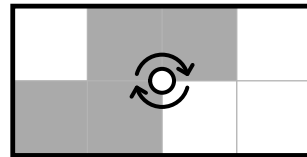
Correct symmetry!



Correct symmetry!



Incorrect symmetry!
This region has reflectional symmetry, but not rotational symmetry.



Incorrect symmetry!
The shaded squares have rotational symmetry, but not about the center of the region.

Give this puzzle a try before turning the page!

2			1
1			0

2			1
1			0

Correct! All five regions have 180 degree rotational symmetry about their centers.

2			1
×	×	×	×
×	×	×	×
1			0

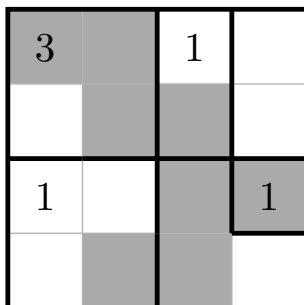
Incorrect. One region does not have 180 degree rotational symmetry about its center.

Variant 3: Binario

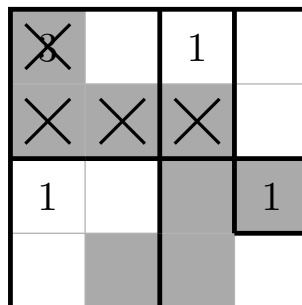
A Binario Aqre puzzle looks identical to a Basic Aqre puzzle. This variant follows all rules for Basic puzzles, with the additional rule that **each row, but not necessarily each column, must have the same number of shaded and unshaded cells.** For example, a row of length 10 should have 5 shaded cells and 5 unshaded cells.

Give this puzzle a try before turning the page!

3		1	
1			1



Correct! Each row has 2 shaded cells and 2 unshaded cells.



Incorrect. Rows 1 and 2 don't have equal numbers of shaded and unshaded cells.

Reminders

- Only your team's official answer sheet will be graded, so make sure to carefully copy all puzzle answers to that sheet.
- In your final submission, **do not mark unshaded cells in any way**. For grading purposes, any box with markings in it will be considered shaded.



Unshaded

Shaded

Shaded

Shaded

- There is no penalty for incorrect answers, and there is no partial credit for almost-correct answers.
- You can attempt the puzzles in any order. Puzzles are arranged in order of increasing difficulty within variants, but you may find some variants easier than others.
- We recommend solving all non-challenge puzzles in a variant before attempting the challenge in that variant.