# Meta-Loop 

## LMI Fun Contest: April 24-29, 2020 Jonah Ostroff

## Meta Rules

Draw a single, non-intersecting (except as specified below) loop through the centers of some cells in the grid. The grid is divided into six zones, each of which is further divided into rooms, some of which are labeled with number clues. Each zone has a room rule which explains what the number clues mean, and which may also include further constraints for the loop in that zone. Each zone also contains one large room with a ? clue, whose value is an integer from 1 to 6 , inclusive. Finally, some cells will contain circle clues, and each zone has a circle rule that applies to the circle clues in its cells.

The six room rules and circle rules are described below. It is up to the solver to match up the zones, room rules, circle rules, and ? values. Each will be used exactly once.

## Room Rules

Country Road: The loop must visit each room in this zone at most once. (Note the "at most", which is different from other versions of Country Road.) A number clue indicates how many cells in its room are visited. Unused cells in this zone cannot be orthogonally adjacent across a room boundary.

Detour: The loop must visit all cells of this zone. A number clue indicates how many turns the loop makes in its room.


Haisu Loop: The loop must visit all cells of this zone. A number clue indicates how many times the loop visits its room.


Liar Loop: The loop must visit all cells of this zone. A number clue of $n$ means that all visits to its room must not be exactly $n$ cells long.


Maxi Loop: The loop must visit all cells of this zone. A number clue indicates the length (in cells) of the longest visit to its room.


Variety Loop: Consider the 7 possible shapes a loop may make in a cell:


A number clue indicates how many of these 7 appear in its room.


## Circle Rules

Balance Loop: The loop must visit each circle clue in this zone, and each circle clue must follow the rules of a white balance loop pearl: the two straight-line loop segments (until the nearest turn) on both sides of the clue must have equal lengths.

Empty Cell: The loop must not visit any of the circle clues in this zone. Note: This overrides the "visit all cells" rules in the Detour, Haisu Loop, Liar Loop, and Maxi Loop room rules! If any of those room rules are paired with the Empty Cell circle rule, then the loop must visit all cells except those with a circle clue.


Ice Barn: The loop must visit each circle clue in this zone, and cannot turn on a circle clue. Furthermore, the loop may visit a circle clue twice, crossing over itself as it does so. Note: If the Variety Loop room rule is paired with the Ice Barn circle rule, then a crossing counts as an eighth possible loop shape in a cell.


Masyu: The loop must visit each circle clue in this zone, and in each such clue must follow the rules of a black or white masyu pearl: either the loop turns on the circle clue and goes straight in the cells before and after the clue, or it goes straight through the circle clue and turns in the cells before or after the clue (or both).

Palindrome Pearls: The loop must visit each circle clue in this zone. Within each visit to a room in this zone, consider the sequence of cells with and without circle clues along the loop's path. This sequence must be a palindrome.


Persistence of Memory: The loop must visit each circle clue in this zone. The paths that the loop makes in each cell with a circle clue in this zone must be identical, without rotation.


Answer Entry: Record the length (in cells) of each visit to the marked rows that the loop makes, from left to right. Ignore vertical segments in Ice Barn crossings. Also, in order A-F, record the rules and ? value for each zone as a 3-digit number using the digits 1-6 as ordered in the matchmaker grid, separating zones by commas. See example below.


## Contest Details

This test uses instant grading where a solver can submit the answer key and receive confirmation that the solution is correct or not.

## Contest Length

None. After you start the contest, you can submit until the end of the contest.

## Bonus

None. (Solvers are sorted by solving time.)

## Penalty

Each incorrect submission adds 2 minutes to the actual submission time.

## Submission Link

http://logicmastersindia.com/2020/04F
Discussion Thread
https://logicmastersindia.com//forum/forums/thread-view.asp?tid=2738

## Online Solving

No.

