



General Format

This Mounting Mayhem round is about a type of puzzle called **Slitherlink**. The round consists of some classic Slitherlink puzzles, as well as a few variants that modify the rules of the puzzle slightly. You will have 15 minutes to read through this rules document, and then 60 minutes to complete the puzzles. The puzzles are divided into 3 variants:

- **Variant 1 (Standard Slitherlink)**: 10 puzzles
- **Variant 2 (Pigs and Wolves)**: 6 puzzles
- **Variant 3 (Non-Square Slitherlink)**: 6 puzzles.

Within each variant, half the puzzles are introductory and half of them are advanced. No partial credit will be given to incorrect puzzles, even if the errors are minor. It is highly recommended that all members of your team read through all of the provided rules and perhaps discuss strategies if time allows.

Submission Instructions

Your team will receive 4 “scratch paper” packets of the puzzles that you can work on to solve the puzzles in the round. You can take these apart, give one to each team member, etc.

Your team will also receive one final answer packet for your team, which will contain a copy of each puzzle from the round - you should NOT take this apart. Additionally, you should only draw on this sheet once you are confident in your answer. Draw clear, thick lines, and if you have to erase, erase neatly! Smudged or confusing lines may result in incorrect grading.

Each puzzle on the answer sheet will have a number of points as well as a difficulty rating associated with it. You can use this information to inform your strategies in this round.

1 Introduction to Slitherlink

Standard Slitherlink is played on a rectangular grid of dots, with some numbers in the cells formed by this grid. Your goal is to connect horizontally or vertically adjacent dots to draw a path that follows certain rules.

		3	
3	0		
		0	2
	1		

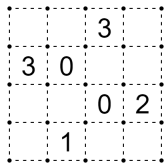
For standard Slitherlink, the rules are as follows:

- **Loop Rule**
The path needs to be a single closed loop, with no branches or points where it crosses itself.
- **Given Numbers Rule**
A number clue within a cell indicates the number of segments of the path that surround that cell.

Not all cells will have number clues – for these empty cells, any number of segments may surround the cell. All puzzles in the Mounting Mayhem Round have unique solutions that can be deduced logically. If you believe that there are multiple solutions, it is likely that you have misinterpreted the rules of the puzzle.

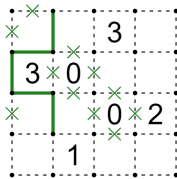
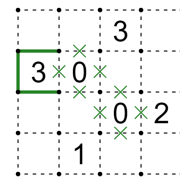
Example Walkthrough

[**Bolded letters**] indicate common patterns that appear throughout the walkthrough.



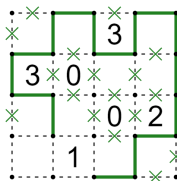
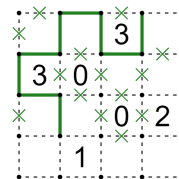
Here is a small sample Slitherlink. You might want to attempt to solve it yourself before continuing to read this section. If you obtain the correct solution (provided on the bottom-right corner of the page), your grasp of the rules should be solid! Let's walk through how you can find the solution for this Slitherlink example.

We can start any Slitherlink by using the given 0 clues. We know that there must not be any segments surrounding them, so we use x's to mark the edges around the 0's [**X**]. Now consider the left 3. There are only three remaining possible edges around the cell, and by the *Given Numbers Rule*, they must be part of the loop [**A03**].



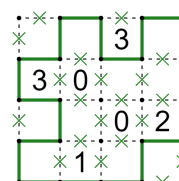
We'll continue focusing on the left cell with the 3. In the upper-right and lower-right corner of the 3, the loop continues in the only possible way [**X**]. In the upper-left and lower-left corner, there can't be extra segments or else the loop would branch, violating *Loop Rule*, so we can mark the spaces around those corners with x's [**A03**, **X**]. In the upper-left corner point of the grid, we can mark another x, as a segment reaching that point would have nowhere to continue [**X**].

Let's continue to construct the loop near the top of the grid. After turning right because of the x to its left, the loop arrives at the upper-left corner of the upper 3. Consider if the loop continued right from this point. Then, there would be no way to complete the 3 without the loop dead-ending, violating the *Loop Rule* [**GC**]. So the loop continues down and around the 3 as shown. Also, the spaces around the lower-right point of the 3 can be marked with x's to avoid branching [**X**].



Now focus on the cell with the 2. Around its upper-left point, we mark another x because a segment would now have nowhere to go [**X**]. This leaves only two edges for the loop around the 2 clue, so there must be loop segments there. We then continue this segment downwards, and connect this part of the loop upwards to reach the part from the upper 3 cell.

Finally, we consider the cell with the 1. The loop cannot go through the left and upper edges of the 1, because then it would be forced to continue by the 1 to complete the loop and create 1 edges next to it, violating the *Given Numbers Rule* [**GC**]. So, the segment needs to be on the bottom edge, and we can fill in the rest of the loop around the lower left corner of the grid to finish the puzzle.



Common Patterns

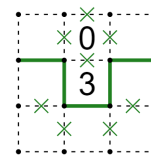
Some patterns are common in lots of Slitherlink puzzles. Let's expand on a few of them here:

- **[X] Using x's**

If there are two segments sharing a point, the other two must be x's to avoid branching. If a path goes into a point where all remaining edges but one are marked by x, the path must take the last edge to make one continuous loop. If there are three x's on a point, the fourth must be an x. You'll likely find it very helpful to mark x's as you solve Slitherlink puzzles. **Please DO NOT mark x's on the final submission sheets.**

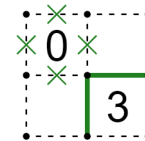
- **[A03] Adjacent Zero and Three**

When a 0 and a 3 are adjacent, the loop segment must be as shown. This is because the 3-clue needs to have only one empty edge around it, while the 0-clue can't have any segments around it.



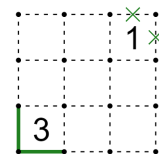
- **[D03] Diagonal Zero and Three**

Two edges around the point that is common to both the 0 and 3 cell have to be marked with an x due to the 0 clue. For the remaining edges, they must both be empty or both contain a segment to satisfy the loop rule. A 3 cannot have two empty edges, so these two edges must contain segments.



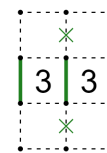
- **[CC] Clues in Corners**

The key to this tip is that in a corner of the grid, the two edges around the corner must both have a segment or both not have a segment. Since a 3 can only have one empty edge, if it's in a corner, then both edges around the corner must contain part of the loop. If a 1 is in a corner, both edges around the corner must be empty.



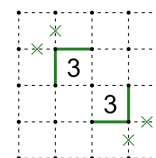
- **[A33] Adjacent Threes**

The center edge must contain a segment, otherwise, the loop would close around these two 3's. Each outer edge must also contain a segment. Finally, we draw x's as otherwise these edges would be unable to connect together around the 3s.



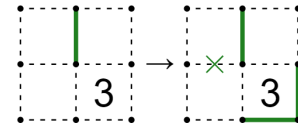
- **[D33] Diagonal Threes**

If either of these 3's had two segments around the point they both share, then the other 3 would have two x's there, which is not allowed. So the x's must be around the shared point, which means the outer edges must all have segments (recall that all 3s must have three segments and one x around them).



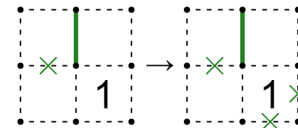
- **[L3] Leading into Three**

When a segment is leading into a three, it cannot turn away from the three, since this would create a corner, meaning that two edges around the 3 would have x's. Then the two farther edges must have segments in both remaining configurations of the loop segment.



- **[L1] Leading into One**

When a segment is leading into a one, and unable to turn away from that one, it must go into one of the closer edges. This means that the farther edges are unreachable and can be marked with x's.



- **[GC] Guess and Check**

Sometimes, on a very local scale, it can be helpful to try out a possibility and see if you reach a contradiction. However, we caution you against making many guesses one after the other - this can often lead to trouble retracing your steps!

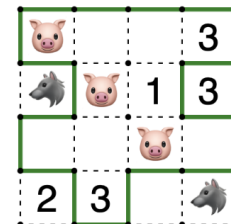
2 Pigs and Wolves

In addition to the standard Slitherlink rules, we add the following rule:

- **Pigs and Wolves Rule**

All the pigs must be on the inside of the loop, and all the wolves must be on the outside of the loop.

*One might even say that we're creating a **pigpen** for the pigs to keep them away from the wolves.*



As you solve, it is often helpful to shade the cells with different colors or textures to help you keep track of which cells are inside and outside the loop. **Please DO NOT shade on the final submission sheets.**

3 Non-Square Slitherlink

The rules of standard Slitherlink stay the same. The only difference is that now the grid - unlike in the previous two variants - does not need to be made of congruent squares.

You might be wondering which non-square grids will be used in the puzzles. Be patient, you'll only see them when the solving period begins!

Wrapup

You should be all set for the Mounting Mayhem Round now! If the reading period is not over yet, consider rereading key sections or discussing strategies with your team. Good luck!