

# Venomous Snakes and Ladders (Solution)

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This is a logic puzzle where you need to figure out who did what from an abridged game log. The following is a complete solution; skip to the bottom if you're looking for just the extraction mechanism or the final answer.

The first piece of information we need is that all the players survive at least four turns. D dies on turn four, B and C on turn five, and A on turn six. On turn one, they all rolled different values – D rolls the largest and C the smallest. But from the start, the only possible surviving moves are rolling 2, 3, 5, and 6. Therefore, D rolled the 6, and C the 2, with A and B being either 3 or 5.

Right after that, B rolls a 1 and ends up one space ahead of D. Therefore, B must have been on the same space as D, and that means that on turn one, B rolled a 3 and went up the ladder, and A rolled the 5. One turn down!

The last (fatal) turn for each player involves each of them rolling the same number. D dies on turn four, and only C rolls higher than a 3 on that turn, so the “fatal roll” can only be a 1, 2, or 3. And, in fact, since C rolls a different number each turn and rolled a 2 on turn one, the fatal roll can only be a 1 or 3. And, since B's 1 was the only 1 rolled in the entire game, the fatal roll is a 3, and therefore we know all four players' final turns.

D's second turn roll is half of A's second turn roll, so it can only be a 1, 2, or 3. The possibilities for D's entire history, then, are 6 on turn one, {1, 2, 3} on turn two, and 3 on both turns three and four. We can try all three possibilities to see whether D dies at the appropriate time, and it turns out that the only one that works is 6, 2, 3, 3. So D's second turn was a 2 and A's second turn was a 4.

C rolled a different number each turn, survived five turns, and none of the rolls is a 1, so C's rolls must be 2, 3, 4, 5, 6 in some order. The first is a 2, and the last is a 3. Then, from the position where C starts turn two, we can try rolls of 4, 5, and 6, to see which work. The roll of 6 can be eliminated because C would die immediately, and the roll of 5 can be eliminated because C would then win the game, so C's turn two was a 4.

A rolls each number twice, and the rolls we've seen so far are 3, 4, and 5, so that means we know that A's remaining rolls (turns three through five) are 3, 4, and 5 also, in some order. At this point we need to try all six possibilities. The only ordering that has A dying at the appropriate time is 5, 4, 4, 3, 5, 3.

On turn three, two different players (that are not the narrator, D) roll the same as each other. [Normal mode is given that these two players are B and C.] That means that we now need to try a number of possibilities for B's turns. B's turn three can be 4, 5, or 6, and B's turn four can be 2 or 3. The only one where B dies at the right time is 3, 1, 5, 3, 3. This means that B and C were the players that rolled the same on turn three, and so C's history must have been 2, 4, 5, 6, 3.

Almost there! To extract the final answer, keep track of each player's turns by writing down the letter of the square that they land on, before any snake or ladder related shenanigans. If you read out the words thus formed by A, B, C, and D, you get PUZZLE TITLE FIRST HALF. The title of the puzzle is Venomous Snakes and Ladders, so the first half of the puzzle is the answer, **VENOMOUS SNAKES**.