Quest 13: Unlocking the Mountain

Quest 12 Quest 14

Part I

Story section

Explosions shake the air, and pillars of fire light up the sky. The barrels that haven't exploded topple over, their contents flowing down the slope like a river of lava, heading straight for the castle! Shouts echo through the courtyard. People spring into action, trying to stop the impending disaster. Soldiers bring sandbags; others dig trenches to redirect the substance - everyone is busy.

The pulsing signal still flickers in the distance, guiding you to the entrance of a cave on the mountainside. You glide towards it. In front of the massive iron gates stands a lone guard. He seems more concerned about reading documents than actually doing any guarding.

You land a few steps away and, without hesitation, spit a fireball that lands at his feet. The guard jumps, his face turning pale. He doesn't even try to fight. Instead, he throws down the papers in his hands and runs away as fast as his legs will carry him.

You pick up the papers and begin to look through them. It appears that these documents contain instructions for crafting the lock to the gate in front of you! If your suspicions are correct, the dragonducks will soon be free.

You approach the massive door and see three enormous wheels mounted at its centre. Each one has a dial in the middle and a series of numbers written around the edge. Above each dial is a small arrow pointing to a number on the wheel. It looks like you need to set all three dials correctly to open the gate.

The instructions for crafting the first wheel include a list of numbers (your notes). Initially, the wheel has only one number written at the highest point: 1, and as many free spots as there are numbers on the list. The numbers from the list should be placed on the wheel in a clockwise and counterclockwise pattern from this point. The first number is placed at the first free spot to the right (clockwise) of 1. The second number is placed at the first free spot to the left (counterclockwise) of 1. The third number is placed to the right again, and so on.

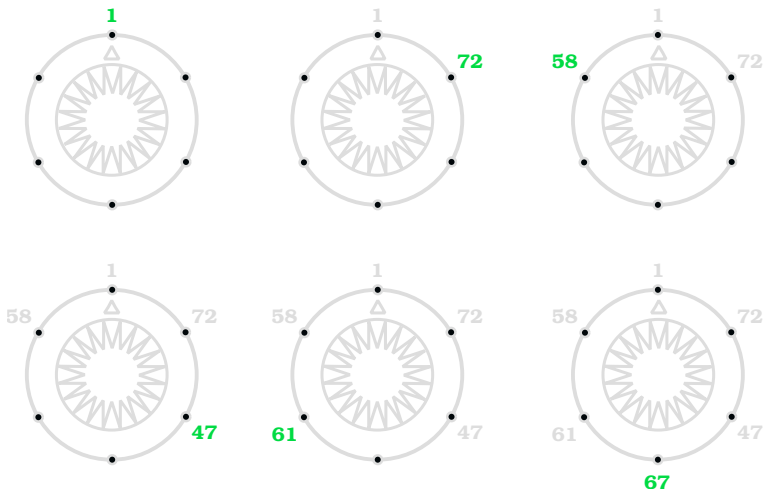
The instructions state that the first lock should open after turning the dial 2025 positions clockwise, starting from the initial number 1.

Example based on the following notes:

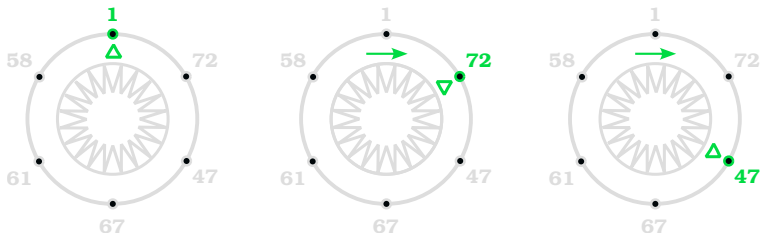
```
72
58
47
61
67
```

The steps for constructing the wheel based on the given list are shown below. The first number from the list is placed on the first available position clockwise from 1. The second number from the list is placed counterclockwise from 1. The third number is again placed clockwise, and so on, alternating directions.

Everybody Codes is possible thanks to:



If the dial is set to the number `1`, turning it one position clockwise will point to the number `72`, and turning it two positions will point to the number `47`.



If we turn the dial by a very large number of positions, we will pass through exactly the same spots multiple times along the way. For example, turning the dial from `1` by 6 or 12 positions will cause the pointer to return to the number `1`.

If we turn the dial `2025` positions clockwise, the pointer will land on the number `67`.

What number should the pointer of the first dial be set to?

Your notes for this part:

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Part 1 solved with answer: 938

Check your progress

Part II

After setting the first dial, you hear a faint "click!" confirming that your interpretation of the documents is correct.

The instructions for the second wheel are very similar, but instead of individual numbers, they contain entire ranges of numbers, for example, `5-19` means the numbers `5,6,7,8,9,10,11,12,13,14,15,16,17,18,19`.

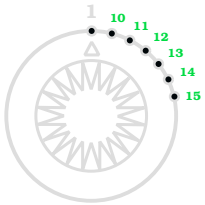
The method of adding numbers to the wheel is almost identical, but instead of alternately adding individual numbers, entire ranges of numbers are added on one side or the other. All numbers from the first range on the list should be added clockwise from `1`. All numbers from the second range should be added counterclockwise from `1`, and so on.

To unlock the second lock, the dial must be turned `20252025` positions clockwise, starting from the number `1`.

Example based on the following notes:

```
10-15
12-13
20-21
19-23
30-37
```

The entire first range `10-15` is placed clockwise from `1`:



The second range, containing only numbers `12` and `13`, is placed in the opposite direction from `1`. After adding all the ranges and listing all numbers in a clockwise direction, we get the following list:

`1,10,11,12,13,14,15,20,21,30,31,32,33,34,35,36,37,23,22,21,20,19,13,12`

If we turn the dial `20252025` positions clockwise, the pointer will land on the number `30`.

What number should the pointer of the second dial be set to?

Your notes for this part:

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Part 2 solved with answer: 5158

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Part III

The third wheel differs from the second one only in size. There are more ranges on the list, and the numbers are larger, but all construction rules remain unchanged. Your solution for Part II should work for this one as well.

To unlock the last lock, you need to turn the dial `202520252025` positions clockwise.

What number should the pointer of the third dial be set to?

Your notes for this part:

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Part 3 solved with answer: 294666

Check your progress

Puzzle solved! Don't stop now!

Post your solution, compare ideas, and help others grow on Reddit