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The Song of Ducks and Dragons [2025]

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Quest 16: Harmonics of Stone

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Part I

Story section

You come out of the tunnel into a wide open area. The sun's rays warm your scales, and the fresh air fills your lungs. In front of you is a magnificent scene with tall peaks and valleys covered in morning fog.

You see a path that goes down from the cave you came out of to a small village on the slope of one of the mountain valleys. A few brick structures blend in with the scenery so well that they are hard to notice. You decide to check it as a potential chance of help for injured dragonducks.

As you get closer, you realise that this is not an ordinary settlement. Everything is in perfect order - even the stones in the courtyards are laid at precise, equal intervals. Each of the inhabitants carries a solid sword on their belt, yet their clothing looks remarkably simple and modest. One of them approaches. His gaze is calm and attentive, as if he had been awaiting your arrival for a long time. Your intuition tells you that you are safe here.

"Welcome to the Guardian's Hearth. Our medics are already waiting for you", he says, pointing to one of the courtyards. "My name is Ascalgar. You cannot imagine how long we've waited to meet you!" the man continues with a faint smile, clearly directed at you.

The dragonducks head to the indicated courtyard where the settlers immediately tend to the wounded, while Ascalgar invites you in the opposite direction. You walk toward the wall surrounding the settlement. It's a very original construction. Each brick is perfectly aligned in neat columns. Ascalgar continues:

"We are an order founded by the first dragonducks, descendants of dragons and Golden Ducks. Our mission is to preserve the knowledge and heritage of these extraordinary beings and protect the entrance to the Golden Temple. The Golden Ducks vanished, but not entirely without a trace, as the common legends claim. They left behind many prophecies, and one of them recently began to come true."

The Promised Prince will hatch from an egg in a land far away.

He will return to save everyone who believes from the black doom and usher in a New Order!

Your wings tense. The facts seem obvious, yet your mind still refuses to accept them. A prince?

"It was your egg, wasn't it?" Ascalgar says calmly. "And now you've come to save the kingdom from the Black Knight and his plan to weaponise dragonduck saliva. You are a descendant of the ancient dragonducks. I can tell at once by the golden glow still present in your scales. Surely you've already noticed that your powers are unlike any others. If you'd like more proof, the founders of our order hid a few riddles in our settlement - puzzles that only their true descendants could solve. How about a little challenge?"

Look at the part of the wall in front of us. The blocks line up in neat columns because it's a result of the Pattern Charm spell. This spell places blocks following a list of numbers, which can be adjusted by the spellcaster. Each number tells how often to place a block:

- 1 - place a block in every column
- 2 - place a block in every other column
- 3 - place a block in every third column, and so on

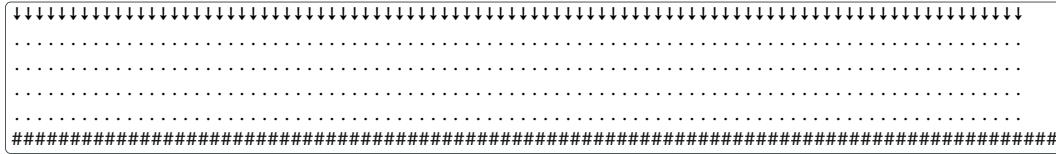
The builders had to plan the number of blocks needed for the given spell and the intended wall length. The rest was quick and effortless. Here's an example Pattern Charm spell (your notes). Can you tell how many blocks are needed for a wall 90 columns long?

Example based on the following notes:

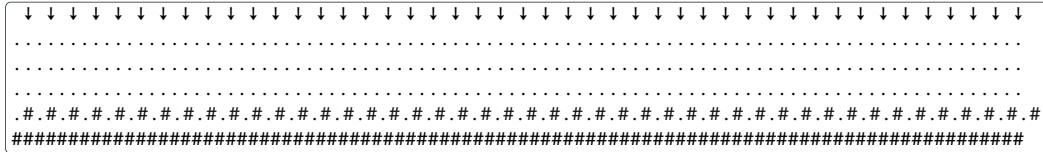
1, 2, 3, 5, 9

Below is the plan for constructing a wall with a length of 90 columns, for a spell above.

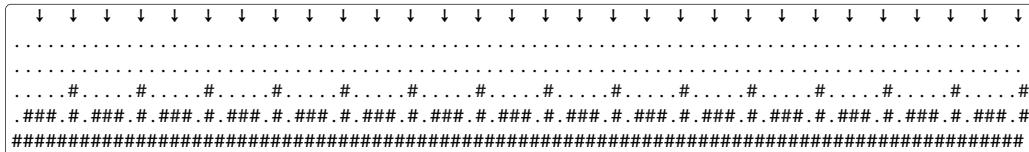
Since the first number is 1, we place one block in each column.



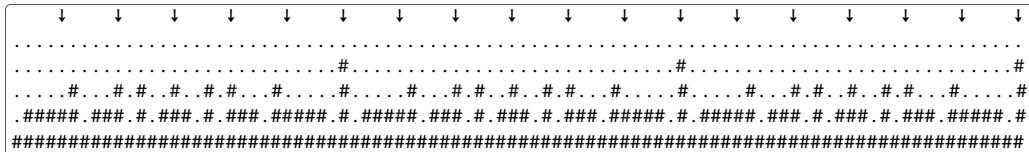
The second number is 2, so we place one block in every second column.



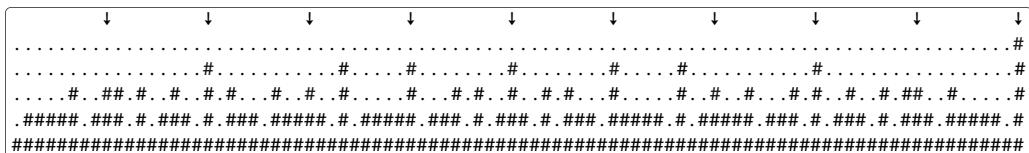
Similar to that, we consider the next number: 3.



And the next one: 5.



And also the last number: 9, for which every ninth column will receive a new block.



If we count blocks in each column, we get the following list: 1, 2, 2, 2, 2, 3, 1, 2, 3, 3, 1, 3, ..., 1, 5

Now you just need to add all the numbers from the list to get the sum of the required blocks:

$$1 + 2 + 2 + 2 + 2 + 3 + 1 + 2 + 3 + 3 + 1 + 3 + \dots + 1 + 5 = 193$$

How many blocks are needed to build a wall with a length of 90 columns according to the spell?

Your notes for this part:

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Part 1 solved with answer: 250

Check your progress

Part II

Of course, this isn't the challenge I mentioned - it's just a verification step to ensure the method of building the wall is properly understood. To be even more certain, this time let's try the reverse process.

I'll give you a list of numbers again, but this time it represents the beginning of a wall (your notes). Each element of the list corresponds to the number of blocks in consecutive columns. Your task is to identify the spell that generated this wall fragment. As your final answer, calculate the product of all numbers from the spell that created the wall.

Example based on the following notes:

1,2,2,2,2,3,1,2,3,3,1,3,1,2,3,2,1,4,1,3,2,2,1,3,2,2

This example represents the beginning of the wall from Part I (as a number of blocks in each column). You know that the spell that created this fragment was: 1, 2, 3, 5, 9

Multiplying all the elements of the spell together gives the final answer:

$1 * 2 * 3 * 5 * 9 = \boxed{270}$

Find the spell that generated the wall fragment and calculate the product of all numbers from the spell.

Your notes for this part:

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Part 2 solved with answer: 131514679296

 Check your progress

Part III

Excellent! We now know you fully understand the wall-building rules, so it's time for the actual challenge.

Look at the beginning of the wall we're standing in front of. I can assure you that this fragment is long enough to include at least one block corresponding to each number in the spell that created it.

Your goal is to find out how long the wall is (how many columns it has), knowing the builders had 202520252025000 blocks. Only full columns can be built, so some blocks may be left unused by the spell.

You count the number of blocks in each column you see in front of you (your notes), and think of ways to calculate the wall length.

Example based on the following notes:

1,2,2,2,2,3,1,2,3,3,1,3,1,2,3,2,1,4,1,3,2,2,1,3,2,2

The example here is the same as in Part II, so the spell is also the same: 1, 2, 3, 5, 9.

Here are a few examples showing how long a wall can be built with different numbers of available blocks:

blocks	the length of the wall
1	1
10	5
100	47
1000	467
10000	4664
100000	46633
1000000	466322
10000000	4663213
100000000	46632125
1000000000	466321244
10000000000	4663212435
100000000000	46632124353
1000000000000	466321243524
10000000000000	4663212435233
100000000000000	46632124352332
202520252025000	94439495762954

How long is the wall (in columns) if the spell had 202520252025000 blocks to use?

Your notes for this part:

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Part 3 solved with answer: 97963114318527

 Check your progress

Puzzle solved! Don't stop now!

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

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