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--- Day 23: Coprocessor Conflagration ---

You decide to head directly to the CPU and fix the printer from there. As you get close, you find an **experimental coprocessor** doing so much work that the local programs are afraid it will **halt and catch fire**. This would cause serious issues for the rest of the computer, so you head in and see what you can do.

The code it's running seems to be a variant of the kind you saw recently on that **tablet**. The general functionality seems **very similar**, but some of the instructions are different:

- **set X Y** **sets** register **X** to the value of **Y**.
- **sub X Y** **decreases** register **X** by the value of **Y**.
- **mul X Y** sets register **X** to the result of **multiplying** the value contained in register **X** by the value of **Y**.
- **jnz X Y** **jumps** with an offset of the value of **Y**, but only if the value of **X** is **not zero**. (An offset of **2** skips the next instruction, an offset of **-1** jumps to the previous instruction, and so on.)

Only the instructions listed above are used. The eight registers here, named **a** through **h**, all start at **0**.

The coprocessor is currently set to some kind of **debug mode**, which allows for testing, but prevents it from doing any meaningful work.

If you run the program (your puzzle input), **how many times is the `mul` instruction invoked?**

Your puzzle answer was **4225**.

--- Part Two ---

Now, it's time to fix the problem.

The **debug mode switch** is wired directly to register **a**. You flip the switch, which makes **register a now start at 1** when the program is executed.

Immediately, the coprocessor begins to overheat. Whoever wrote this program obviously didn't choose a very efficient implementation. You'll need to **optimize the program** if it has any hope of completing before Santa needs that printer working.

The coprocessor's ultimate goal is to determine the final value left in register **h** once the program completes. Technically, if it had that... it wouldn't even need to run the program.

After setting register **a** to **1**, if the program were to run to completion, **what value would be left in register h?**

Your puzzle answer was **905**.

**Both parts of this puzzle are complete! They provide two gold stars: \*\***

At this point, you should **return to your advent calendar** and try another puzzle.

If you still want to see it, you can **get your puzzle input**.

You can also **[Share]** this puzzle.

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