--- Day 22: Reactor Reboot ---

Operating at these extreme ocean depths has overloaded the submarine's reactor; it needs to be rebooted.

The reactor core is made up of a large 3-dimensional grid made up entirely of cubes, one cube per integer 3-dimensional coordinate (`x,y,z`). Each cube can be either `on` or `off`; at the start of the reboot process, they are all `off`. (Could it be an old model of a reactor you've seen before?)

To reboot the reactor, you just need to set all of the cubes to either `on` or `off` by following a list of `reboot steps` (your puzzle input). Each step specifies a cuboid (the set of all cubes that have coordinates which fall within ranges for `x`, `y`, and `z`) and whether to turn all of the cubes in that cuboid `on` or `off`.

For example, given these reboot steps:

```
on x=10..12,y=10..12,z=10..12
on x=11..13,y=11..13,z=11..13
off x=9..11,y=9..11,z=9..11
on x=10..10,y=10..10,z=10..10
```

The first step (`on x=10..12,y=10..12,z=10..12`) turns `on` a 3x3x3 cuboid consisting of 27 cubes:

- `10,10,10`
- `10,10,11`
- `10,10,12`
- `10,11,10`
- `10,11,11`
- `10,11,12`
- `10,12,10`
- `10,12,11`
- `10,12,12`
- `11,10,10`
- `11,10,11`
- `11,10,12`
- `11,11,10`
- `11,11,11`
- `11,11,12`
- `11,12,10`
- `11,12,11`
- `11,12,12`
- `12,10,10`
- `12,10,11`
- `12,10,12`
- `12,11,10`
- `12,11,11`
- `12,11,12`
- `12,12,10`
- `12,12,11`
- `12,12,12`

The second step (`on x=11..13,y=11..13,z=11..13`) turns `on` a 3x3x3 cuboid that overlaps with the first. As a result, only 19 additional cubes turn on; the rest are already on from the previous step:

- `11,11,13`
- `11,12,13`
- `11,13,11`
- `11,13,12`
- `11,13,13`
- `12,11,13`
- `12,12,13`
- `12,13,11`
- `12,13,12`
- `12,13,13`
- `13,11,11`
- `13,11,12`
- `13,11,13`
- `13,12,11`
- `13,12,12`
- `13,12,13`
- `13,13,11`
- `13,13,12`
- `13,13,13`

The third step (`off x=9..11,y=9..11,z=9..11`) turns `off` a 3x3x3 cuboid that overlaps partially with some cubes that are on, ultimately turning off 8 cubes:

- `10,10,10`
- `10,10,11`
- `10,11,10`
- `10,11,11`
- `11,10,10`
- `11,10,11`
- `11,11,10`
- `11,11,11`

The final step (`on x=10..10,y=10..10,z=10..10`) turns `on` a single cube, `10,10,10`. After this last step, `39` cubes are `on`.

The initialization procedure only uses cubes that have `x`, `y`, and `z` positions of at least `-50` and at most `50`. For now, ignore cubes outside this region.

Here is a larger example:

```
on x=-20..26,y=-36..17,z=-47..7
on x=-20..33,y=-21..23,z=-26..28
on x=-22..28,y=-29..23,z=-38..16
on x=-46..7,y=-6..46,z=-50..-1
on x=-49..1,y=-3..46,z=-24..28
on x=2..47,y=-22..22,z=-23..27
on x=-27..23,y=-28..26,z=-21..29
on x=-39..5,y=-6..47,z=-3..44
on x=-30..21,y=-8..43,z=-13..34
on x=-22..26,y=-27..20,z=-29..19
off x=-48..-32,y=26..41,z=-47..-37
on x=-12..35,y=6..50,z=-50..-2
off x=-48..-32,y=-32..-16,z=-15..-5
on x=-18..26,y=-33..15,z=-7..46
off x=-40..-22,y=-38..-28,z=23..41
on x=-16..35,y=-41..10,z=-47..6
off x=-32..-23,y=11..30,z=-14..3
on x=-49..-5,y=-3..45,z=-29..18
off x=18..30,y=-20..-8,z=-3..13
on x=-41..9,y=-7..43,z=-33..15
on x=-54112..-39298,y=-85059..-49293,z=-27449..7877
on x=967..23432,y=45373..81175,z=27513..53682
```

The last two steps are fully outside the initialization procedure area; all other steps are fully within it. After executing these steps in the initialization procedure region, `590784` cubes are `on`.

Execute the reboot steps. Afterward, considering only cubes in the region `x=-50..50,y=-50..50,z=-50..50`, how many cubes are on?

To begin, get your puzzle input.

Answer: [Submit]

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