Advent of Code   [About] [Events] [Shop] [Settings] [Log Out]   Rodica Vasilescu 39*
    $year=2018;   [Calendar] [AoC++] [Sponsors] [Leaderboard] [Stats]

--- Day 23: Experimental Emergency Teleportation ---

Using your torch to search the darkness of the rocky cavern, you finally
locate the man's friend: a small reindeer.

You're not sure how it got so far in this cave. It looks sick - too sick to
walk - and too heavy for you to carry all the way back. Sleighs won't be
invented for another 1500 years, of course.

The only option is experimental emergency teleportation.

You hit the "experimental emergency teleportation" button on the device and
push I accept the risk on no fewer than 18 different warning messages.
Immediately, the device deploys hundreds of tiny nanobots which fly around
the cavern, apparently assembling themselves into a very specific
formation. The device lists the X,Y,Z position (pos) for each nanobot as
well as its signal radius (r) on its tiny screen (your puzzle input).

Each nanobot can transmit signals to any integer coordinate which is a
distance away from it less than or equal to its signal radius (as measured
by Manhattan distance). Coordinates a distance away of less than or equal
to a nanobot's signal radius are said to be in range of that nanobot.

Before you start the teleportation process, you should determine which
nanobot is the strongest (that is, which has the largest signal radius) and
then, for that nanobot, the total number of nanobots that are in range of
it, including itself.

For example, given the following nanobots:

```
pos=<0,0,0>, r=4
pos=<1,0,0>, r=1
pos=<4,0,0>, r=3
pos=<0,2,0>, r=1
pos=<0,5,0>, r=3
pos=<0,0,3>, r=1
pos=<1,1,1>, r=1
pos=<1,1,2>, r=1
pos=<1,3,1>, r=1
```

The strongest nanobot is the first one (position 0,0,0) because its signal
radius, 4 is the largest. Using that nanobot's location and signal radius,
the following nanobots are in or out of range:

  - The nanobot at 0,0,0 is distance 0 away, and so it is in range.
  - The nanobot at 1,0,0 is distance 1 away, and so it is in range.
  - The nanobot at 4,0,0 is distance 4 away, and so it is in range.
  - The nanobot at 0,2,0 is distance 2 away, and so it is in range.
  - The nanobot at 0,5,0 is distance 5 away, and so it is not in range.
  - The nanobot at 0,0,3 is distance 3 away, and so it is in range.
  - The nanobot at 1,1,1 is distance 3 away, and so it is in range.
  - The nanobot at 1,1,2 is distance 4 away, and so it is in range.
  - The nanobot at 1,3,1 is distance 5 away, and so it is not in range.

In this example, in total, 7 nanobots are in range of the nanobot with the
largest signal radius.

Find the nanobot with the largest signal radius. How many nanobots are in
range of its signals?

Your puzzle answer was 652.

The first half of this puzzle is complete! It provides one gold star: *

--- Part Two ---

Now, you just need to figure out where to position yourself so that you're actually teleported when the nanobots activate.

To increase the probability of success, you need to find the coordinate which puts you in range of the largest number of nanobots. If there are multiple, choose one closest to your position (0,0,0, measured by manhattan distance).

For example, given the following nanobot formation:

```
pos=<10,12,12>, r=2
pos=<12,14,12>, r=2
pos=<16,12,12>, r=4
pos=<14,14,14>, r=6
pos=<50,50,50>, r=200
pos=<10,10,10>, r=5
```

Many coordinates are in range of some of the nanobots in this formation. However, only the coordinate 12,12,12 is in range of the most nanobots: it is in range of the first five, but is not in range of the nanobot at 10,10,10. (All other coordinates are in range of fewer than five nanobots.) This coordinate's distance from 0,0,0 is 36.

Find the coordinates that are in range of the largest number of nanobots. What is the shortest manhattan distance between any of those points and 0,0,0?

Although it hasn't changed, you can still get your puzzle input.

Answer: _____ [Submit]

You can also [Share] this puzzle.