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--- Day 20: Donut Maze ---

You notice a strange pattern on the surface of Pluto and land nearby to get a closer look. Upon closer inspection, you realize you've come across one of the famous space-warping mazes of the long-lost Pluto civilization!

Because there isn't much space on Pluto, the civilization that used to live here thrived by inventing a method for folding spacetime. Although the technology is no longer understood, mazes like this one provide a small glimpse into the daily life of an ancient Pluto citizen.

This maze is shaped like a **donut**. Portals along the inner and outer edge of the donut can instantly teleport you from one side to the other. For example:

```

      A
      A
#####.#####
#####.....#
#####.#####.
#####.#####.
#####.#####.
##### B   ###.
BC...## C   ###.
##.##      ###.
##...DE F   ###.
##### G   ###.
#####.#####.
DE..#####.....#
#.#####.#####.
FG..#####.....#
#####.#####
      Z
      Z
  
```

This map of the maze shows solid walls (**#**) and open passages (**.**). Every maze on Pluto has a start (the open tile next to **AA**) and an end (the open tile next to **ZZ**). Mazes on Pluto also have portals; this maze has three pairs of portals: **BC**, **DE**, and **FG**. When on an open tile next to one of these labels, a single step can take you to the other tile with the same label. (You can only walk on **.** tiles; labels and empty space are not traversable.)

One path through the maze doesn't require any portals. Starting at **AA**, you could go down 1, right 8, down 12, left 4, and down 1 to reach **ZZ**, a total of 26 steps.

However, there is a shorter path: You could walk from **AA** to the inner **BC** portal (4 steps), warp to the outer **BC** portal (1 step), walk to the inner **DE** (6 steps), warp to the outer **DE** (1 step), walk to the outer **FG** (4 steps), warp to the inner **FG** (1 step), and finally walk to **ZZ** (6 steps). In total, this is only 23 steps.

Here is a larger example:

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```

      A
      A
#####.#####
#.#...#.....#.#
#.#.#.###.###.#####.##
#.#.#.....#...#.....#.#...#
#.#.#####.###.#####.#.#.###.#
#.....#.#.....#.....#
###.#####.###.#####.#.#.#
#.....#      A   C   #.#.#.#
#####      S   P   #####.#
#.#...#      #.....VT
#.#.#.#      #.#####
#...#.#      YN....#.#
#.#.###.#      #####.#
DI....#.#      #.....#
#####.#      #.###.#
ZZ.....#      QG....#..AS
###.###      #####
JO..#.#.#      #.....#
#.#.#.#      ###.#.#
#...#..DI      BU....#..LF
#####.#      #.#####
YN.....#      VT..#....QG
#.#.###.#      #.###.#
#.#...#      #.....#
###.###      J L      J   #.#.###
#.....#      O F      P   #.#...#
#.#.###.#####.#.#####.#####.###.#
#...#.#.#...#.....#.....#.#...#
#.#.#####.###.###.#.#.#####.###.#
#...#.#.#.....#...#.#.#.#.....#.#
#.#.###.#####.###.###.#.#.#####
#.#.#.....#...#.#.....#.....#
#####.###.###.#####
      B   J   C
      U   P   P

```

Here, **AA** has no direct path to **ZZ**, but it does connect to **AS** and **CP**. By passing through **AS**, **QG**, **BU**, and **JO**, you can reach **ZZ** in 58 steps.

In your maze, how many steps does it take to get from the open tile marked **AA** to the open tile marked **ZZ**?

To begin, [get your puzzle input](#).

Answer:  [\[Submit\]](#)

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