

--- Day 16: Reindeer Maze ---

It's time again for the **Reindeer Olympics**! This year, the big event is the **Reindeer Maze**, where the Reindeer compete for the **lowest score**.

You and The Historians arrive to search for the Chief right as the event is about to start. It wouldn't hurt to watch a little, right?

The Reindeer start on the Start Tile (marked **S**) facing **East** and need to reach the End Tile (marked **E**). They can move forward one tile at a time (increasing their score by **1** point), but never into a wall (**#**). They can also rotate clockwise or counterclockwise 90 degrees at a time (increasing their score by **1000** points).

To figure out the best place to sit, you start by grabbing a map (your puzzle input) from a nearby kiosk. For example:

```
#####
#.....#...E#
#.#.##.#.##.#
#....#.#...#.#
#.#.#.####.#.#
#.#.#.....#.#
#.#.####.#.##
#.....#.#.#
###.#.####.#.#
#..#.....#.#.#
#.#.#.##.#.#.#
#....#...#.#.#
#.#.#.#.#.#.#.#
#S.....#
#####
```

There are many paths through this maze, but taking any of the best paths would incur a score of only **7036**. This can be achieved by taking a total of **36** steps forward and turning 90 degrees a total of **7** times:

```
#####
#.....#...E#
#.#.##.#.##^#
#....#.#...^#
#.#.#.####^#
#.#.#.....^#
#.#.####.##^#
#..>>>>>>v^#
###^#.#.###v^#
#>>^#.....v^#
#^#.#.##.#v^#
#^....#...v^#
#^###.#.#v^#
#S.....>>^#
#####
```

Here's a second example:

```
#####
#...#...#...E#
#.#.#.#.#.#.#
#.#.#.#.....#.#
#.#.#.###.#.#.#
#...#.#.#...#.#
#.#.#.#.####.#
#.#...#.#.....#
#.#.####.#.##.#
#.#.#.....#...#
#.#.###.####.###
#.#.#...#...#.#
#.#.#.####.###.#
#.#.#.....#.#
#.#.#.####.###.#
#S.....#
#####
```

In this maze, the best paths cost **11048** points; following one such path would look like this:

```
#####
#...#...#...E#
#.#.#.#.#.#^#
#.#.#.#.....^#
#.#.#.###.#^#
#>>v#.#.....^#
#^#v#.#.#.###^#
#^#v#.#.#.>>>>^#
#^#v###.#^###.#
#^#v#..>>>>^#...#
#^#v###^###.###
#^#v>>>^#....#.#
#^#v#^###.##.#
#^#v#^.....#.#
#^#v#^#####.#
#S#>>^#.....#
#####
```

Note that the path shown above includes one 90 degree turn as the very first move, rotating the Reindeer from facing East to facing North.

Analyze your map carefully. **What is the lowest score a Reindeer could possibly get?**

Your puzzle answer was **90460**.

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

--- Part Two ---

Now that you know what the best paths look like, you can figure out the best spot to sit.

Every non-wall tile (**S**, **.**, or **E**) is equipped with places to sit along the edges of the tile. While determining which of these tiles would be the best spot to sit depends on a whole bunch of factors (how comfortable the seats are, how far away the bathrooms are, whether there's a pillar blocking your view, etc.), the most important factor is **whether the tile is on one of the best paths through the maze**. If you sit somewhere else, you'd miss all the action!

So, you'll need to determine which tiles are part of **any** best path through the maze, including the **S** and **E** tiles.

In the first example, there are **45** tiles (marked **O**) that are part of at least one of the various best paths through the maze:

```
#####
#.....#...O#
#.#.##.#.##O#
#....#.#...O#
#.#.#.####O#
#.#.#.....O#
#.#.####.##O#
#..00000000O#
###O#O####O#
#000#O...#O#
#O#O#O##.#O#
#0000#...#O#
#O###.#.#O#
#O.....#000#
#####
```

In the second example, there are **64** tiles that are part of at least one of the best paths:

```
#####
#...#...#...O#
#.#.#.#.#.#O#
#.#.#.#...#O#
#.#.#.###.#O#
#000#.#.#...#O#
#O#O#.#.#.###O#
#O#O...#.#.#0000#
#O#O####.#O##O#
#O#O#..0000#000#
#O#O##O####O###
#O#O000#..000#.#
#O#O#O####O##.#
#O#O#0000000..#.#
#O#O#O#####.#
#O#000.....#
#####
```

Analyze your map further. **How many tiles are part of at least one of the best paths through the maze?**

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

Although it hasn't changed, you can still [get your puzzle input](#).

You can also [\[Share\]](#) this puzzle.

Our [sponsors](#) help make Advent of Code possible:

Zero To Mastery - Ready to upgrade your earning power? If you like AoC, you'll like our courses built by programmers (not influencers), for programmers. ZTM helps you get a better job, and earn more with one trick: quality, not gimmicks.