UWPC

Question 15

Spiral Memory Manhattan Distance

You are working with an experimental memory system organized in a spiral on a two-dimensional grid. Each square on the grid is numbered starting at 1 at the center and increasing as it spirals outward. Your task is to calculate the Manhattan Distance from a given square back to square 1, which is the location of the memory system's access port. The Manhattan Distance is the sum of the absolute differences in their X and Y coordinates.

```
17  16  15  14  13
18   5   4   3  12
19   6   1   2  11
20   7   8   9  10
21  22  23---> ...
```

Input

- A single integer representing the square number for which you need to find the Manhattan Distance to square 1.

Output

- A single integer, representing the Manhattan Distance from the given square to square 1.

Sample 1

Input

```
1
```

Output

```
0
```

Explanation: Square 1 is the access port, so the distance is 0 steps.

Sample 2

Input

```
23
```

Output

```
2
```

Explanation: Data from square 23 can be carried by moving up, up, a total of 2 steps.

Sample 3

Input

```
12
```

Output

```
3
```

Explanation: Data from square 12 can be carried by moving down, left, left, a total of 3 steps.