Problem E: Hotter Colder

The children's game *Hotter Colder* is played as follows. Player A leaves the room while player B hides an object somewhere in the room. Player A re-enters at position (0,0) and then visits various other positions about the room. When player A visits a new position, player B announces "Hotter" if this position is closer to the object than the previous position; player B announces "Colder" if it is farther and "Same" if it is the same distance.

Input consists of up to 50 lines, each containing an x,y coordinate pair followed by "Hotter", "Colder", or "Same". Each pair represents a position within the room, which may be assumed to be a square with opposite corners at (0,0) and (10,10). For each line of input print a line giving the total area of the region in which the object may have been placed, to 2 decimal places. If there is no such region, output 0.00.

Sample Input

```
10.0 10.0 Colder
10.0 0.0 Hotter
0.0 0.0 Colder
10.0 10.0 Hotter
```

Output for Sample Input

```
50.00
37.50
12.50
0.00
```