

## 111404 Hotter Colder

The children's game *Hotter Colder* is played as follows. Player A leaves the room while player B hides an object somewhere within. Player A re-enters at position  $(0,0)$  and then visits various other locations 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, "Colder" if it is farther, and "Same" if it is the same distance.

### Input

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  $(10,10)$ .

### Output

For each line of input, print a line giving the total area of the region in which the object may have been placed, to two 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
```

### Sample Output

```
50.00
37.50
12.50
0.00
```