**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**

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 2 decimal places. If there is no such region, output 0.00.

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| **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 |