

## Problem 2—Ladders

While hurrying home for an intimate dinner with his fiancée Iris West, police scientist Barry Allen notices two ladders in an alley through which he is running. The base of each ladder rests against a building; the top rests against the building on the opposite side of the alley. The base of each ladder rests against the same building as the top of the other ladder, so that they form a crude “X.”

After some quick thought, Barry realizes that if he knows the height of the crossing point of the ladders as well as the length of the ladders, he has enough information to compute the width of the alley. Although Barry is a whiz at high-speed mental arithmetic, he would appreciate some computer assistance. Given the height of the crossing point and the length of the two ladders, how wide is the alley?

**INPUT SPECIFICATION.** Each data case consists of a line of three positive floating pointing numbers separated by exactly one space. The first two numbers are the lengths of the ladders in feet; the last number is the height of the crossing point in feet. The line is terminated by <EOLN>. Following the last data case will be a line consisting of three zeroes. This line is not to be processed; it merely signifies the end of the input.

**OUTPUT SPECIFICATION.** The output cases should appear in the same order as their respective input cases. The output should be in the format “Case c: The alley is x feet across.” C is the case number; x is the width in feet of the alley to the nearest thousandth of a foot, printed with three digits following the decimal point. It is possible that one or more input cases contain ladder lengths and crossing points that do not yield a solution. In such a situation, your program should print “Case c: Barry mismeasured.” Again, c is the case number. Each output case should be followed by exactly one <EOLN>.

### **SAMPLE INPUT.**

```
10·10·3<EOLN>
10·20·30<EOLN>
0·0·0<EOLN>
<EOF>
```

### **SAMPLE OUTPUT.**

```
Case·1:·The·alley·is·8.000·feet·across.<EOLN>
Case·2:·Barry·mismeasured.<EOLN>
<EOF>
```