6212 BeepBeep

Swamp County College is running an engineering contest. Each competing team is given a bucket of parts with which to design and build a mini robot that has to maneuver around a square game board.

Your team's job is to determine the location of the robot when it stops at various grid point locations on the board. The most promising items in the bucket appear to be three old WiFi enabled smart phones. A quick check of the GPS reception in the contest location shows that GPS doesn't work reliably. Sound looks promising but the first tests are pretty disappointing: it doesn't seem possible to synchronize the clocks of the phones close enough, and even if you could, there seems to be an unpredictable delay between commanding a beep and the beep being emitted.

Luckily you have access to the awesome ACM Digital Library, and quickly find a paper by Peng, Shen, and Zhang that makes things clear. What the phones can do reliably is record sounds. These phones, like most phones, take 44,100 samples per second. The key is to use the recorder to determine when the beep is actually emitted rather than when it is commanded.

We can put two of the phones, P1 and P3, at known fixed locations and the third phone, P2, on the robot. After determining the distances between phones P1 and P2 (P12) and phones P2 and P3 (P23) we can intersect the distance circles to find the location of the robot. The equation of a circle of radius r centered at (h, k) is:

$$(x - h)^2 + (y - k)^2 = r^2$$

The robot moves around a board divided into 100 by 100 grid lines as shown in Figure 1. Reflective markers are placed at the intersections of the grid lines. The robot stops on one of these markers after each move.

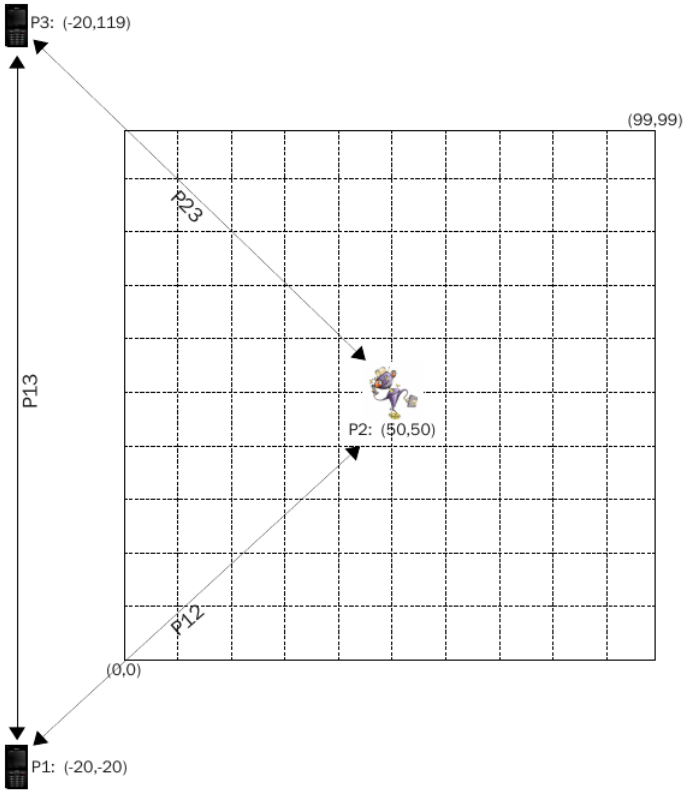

Figure 1. Fixed phones and initial position of robot.

See Figure 2 for a time diagram of the sound events. Note that there is no vertical scale in it.

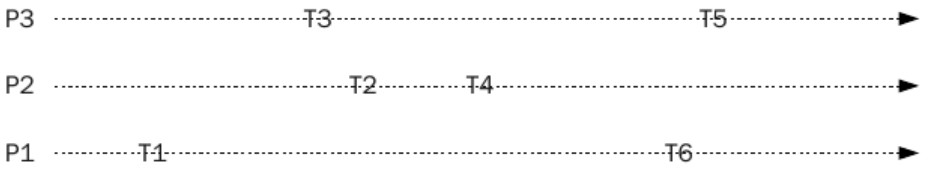

Figure 2. Independent time lines showing times of beeps received at each phone.

A beep is emitted from P1 and received by P1 at T1, at P2 at T2, and P3 at T3. Some time after T2, P2 emits a beep that is received by P2 at T4, at P3 at T5, and P1 at T6.

The known quantities are P13, the distance between the fixed phones, and the differences between the events at each phone: I3 = (T5 - T3), I2 = (T4 - T2), and I1 = (T6 - T1). We need to find P12 and P23. We can see, for example, that I1 = I2 + twice the time it takes sound to go from P1 to P2.

The known fixed locations for P1 and P3 need to be at least a few samples away from the board grid and located so as to make sure the distance circles always intersect in two points, only one of which is on the board square.

We will label the grid lines 0..99, locate P1 at (-20, -20), and locate P3 at (-20, 119). We don't know the spacing of the grid lines but it is at least 5 cm and not greater than 10 cm. To determine the speed of sound we will start the robot at (50, 50).

Input

Your program is to read a series of lines terminated by end of file. Each line will have three integers separated by whitespace. Each integer will be greater than zero and less than 100,000. The integers represent the number of samples between the beeps at P1, P2, and P3 for each location of the robot.

Output

For each line in the input print the location x and y coordinates to the nearest integer. The correct answer to the first line will be

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50 50
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Print no spaces before the x coordinate, one space between x and y, and no spaces between y and a newline. Print no sign on x or y.

Sample Input

```
1297 13 391
1361 87 455
1374 110 478
1267 77 571
1600 36 1008
919 99 472
389 23 87
1008 64 100
1462 100 288
1727 27 920
1770 96 589
2202 20 992
```

Sample Output

```
50 50
49 50
49 49
60 25
99 0
40 0
0 0
0 50
25 75
99 35
58 83
99 99
```