DWITE Online Computer Programming Contest
December 2004

Problem 3

Reflections

In this problem, you are given two parallel lines of length L, running horizontally as depicted below, that are a distance D apart. Imagine a person standing at the point marked P holding a laser. Note that P is EXACTLY at the left end point of the lines and P is EXACTLY halfway between the two of them vertically.

At some time, the person standing there fires a shot from his laser at some angle x, from the horizontal, as indicated in the figure. You are to find the number of times the laser is reflected off the two parallel lines before exiting at the other end.

The input file (**DATA31.txt** for the first submission and **DATA32.txt** for the second submission) will contain five sets of data. Each set of data will contain three lines. Each line will contain a floating point value. The first line of each set will contain L, the length of the lines. The second line of each set will contain D, the distance between the two lines. The third line of each set will contain x, the angle from the horizontal, in degrees, at which the laser is shot, $0 <= x < 90$.

The output file (**OUT31.txt** for the first submission and **OUT32.txt** for the second submission) will contain five lines of data, corresponding to each set in the input file. It will contain a single integer, which is the number of reflections made.

Sample Input (Only three sets of data given)	**Sample Output**
1 1 45 0.5 1.5 45 10 3.5 30.5	1 0 2