Problem 2

Ulam Spiral Walkway

The Ulam spiral walkway can be constructed as follows: Consider a rectangular grid. We start with the central point and arrange the positive integers in a spiral fashion (counter-clockwise), as below, on the rectangular slabs on the walkway.

37	36	35	34	33	32	31
38	17	16	15	14	13	30
39	18	5	4	3	12	29
40	19	6	1	2	11	28
41	20	7	8	9	10	27
42	21	22	23	24	25	26
43	44	45	46	47	48	49

Your job is to find the minimum number of steps that it takes to travel from one rectangular slab to another rectangular slab. It takes one (1) step to travel to an adjacent horizontal or vertical slab. It takes one and a half (1.5) steps to travel to a slab that is on its diagonal.

The input file (**DATA21.txt** for the first submission and **DATA22.txt** for the second submission) will contain five lines of data. Each line will contain two integers, M and N, the slab numbers that we wish to travel from and to. $1 <= M, N <= 10\ 000\ 000$.

The output file (**OUT21.txt** for the first submission and **OUT22.txt** for the second submission) will contain five lines of data, corresponding to each line of the input file. Each line will contain the minimum number of steps (to one decimal place) to travel from slab M to slab N.

Sample Input	Sample Output
1 2 3 13 8 11 20 10 44 59	1.0 1.5 2.5 4.0 9.0

To learn about the Ulam Spiral visit: http://en.wikipedia.org/wiki/Ulam_spiral