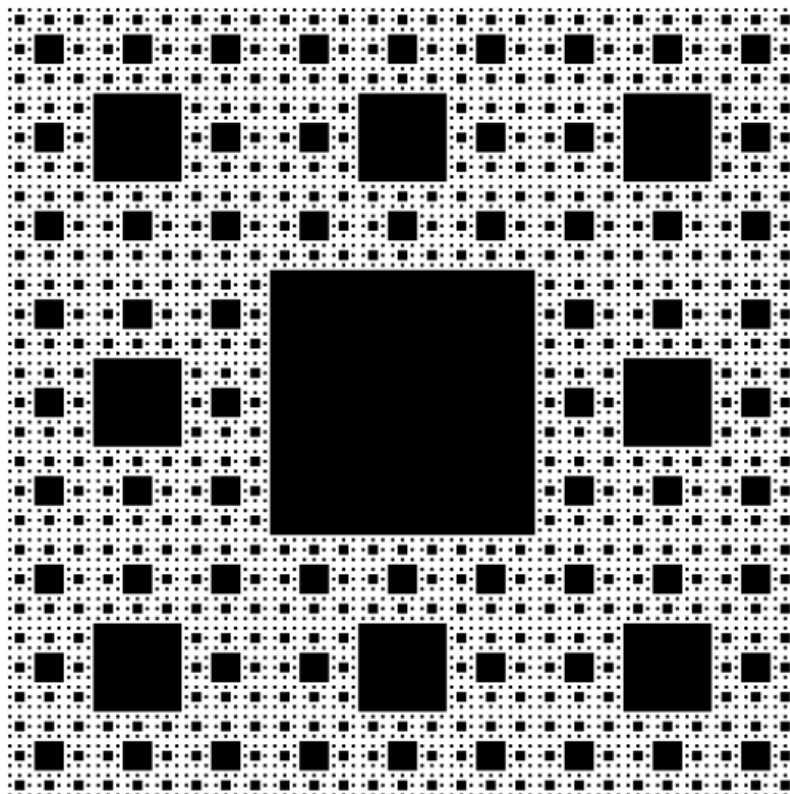


Problem D. Serpentine

Input file: *standard input*
 Output file: *standard output*
 Time limit: 1 second
 Memory limit: 512 mebibytes

Sierpinski carpet is defined as follows. Take a white square. Divide it into 9 equal squares. Paint the centre square black. For the other eight squares, repeat the procedure recursively. Sierpinski carpet is the set of black points. It looks like this:



Consider Sierpinski carpet made from a unit square with opposite vertices in $(0,0)$ and $(1,1)$. You are given a line. The intersection between the line and the carpet is a (maybe infinite) set of line segments. Let l_i be the (maybe infinite) sequence of lengths of these segments (in any order). Find the sum of p -th powers of segment lengths: $\sum l_i^p$.

It is guaranteed that the aforementioned series converges.

Input

The only line contains integers a, b, c and a real number p ($1 \leq a, b \leq 100$, $1 \leq c \leq a+b-1$, $1.05 \leq p < \pi$).

The line is defined as $a \cdot x + b \cdot y = c$.

The real number p is given with exactly two digits after the decimal point.

Output

Output one real number — the sum of p -th powers of intersection segment lengths. The absolute or relative error must not exceed 10^{-9} .

Examples

standard input	standard output
1 2 1 1.10	0.0000000000000000
2 3 2 2.14	0.040073575677343