Problem 1: Oh What a Tangled Web We Weave

Overview
One of the most obvious concerns to all artists is to ensure that they have enough materials on hand to finish a given work before they begin it. This is particularly challenging for fiber artists as different lots of their raw materials, e.g. cloth, yarn, thread, are likely to have varied characteristics, e.g. exact color, tensile strength. The artist can’t just run down to KraftMart and buy equivalent materials partway through the process.

Problem
In this problem, you will estimate the amount of thread necessary to complete a weaving. A weaving contains threads on both the warp (vertical) and weft (horizontal). How these thread cross dictates the pattern shown in the weaving. You will be told the total dimensions of each of the warp and the weft, the number of threads per inch in the final weaving, and the elasticity of the thread (how much it could potentially stretch). You are to determine the total amount of thread that is needed to complete the weaving. You may make the following assumptions: 1) threads on the warp must extend two inches in each direction beyond the weaving in order to hold the product on the loom; this distance must be accounted for, 2) the thread may be assumed not to stretch and the selvedge may be ignored. [The theory behind the second assumption is that stretching would make the weaver need less thread, but counting selvedge would require more and that these two effects cancel each other out.]

Input
The input to this problem consists of four real numbers on a single line. The first (between 1 and 100 inclusive) is the vertical (warp) distance of the final product. The second (between 1 and 30 inclusive) is the horizontal (weft) dimension of the final product. The third (between 0.5 and 100 inclusive) is the number of threads per inch, essentially the inverse of the width of a thread. The fourth (between 1.0 and 2.0 inclusive) is the elasticity of the thread; an elasticity of 1 means the thread is not at all stretchable while an elasticity of 2 would mean that its length could double via stretching.

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1 In reality what we are calling thread might be traditional thread, but might also be yarn, or even rags (if one were weaving a “rag rug”).
Output

The output is a single line of output formatted as in the example featuring the total length of thread needed. [Note: any number accurate to within one half inch may be printed; don’t worry about rounding or formatting.]

Example 1

Input

10 10 10 1.0

Output

You need 2400.0 inches of thread.

Example 2

Input

48 12.5 18 1.5

Output

You need 22500.0 inches of thread.