7626 Scrunched

You are faced with a challenge of epic proportions: a curtain manufactured from a given width of fabric is to be fitted to a window of a known width, subject to the constraint that the curtain must have an exact, specified number of folds. Since this is a curtain manufactured to superior standards, it is guaranteed to naturally fold along a perfect sinusoidal curve.

What should the amplitude of the folds be in order to produce the required number of folds at the desired scrunched width?

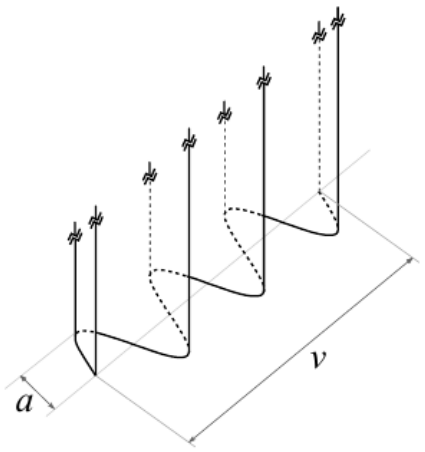

Figure 1: Curtain geometry. Note that this particular example illustrates 3 folds in a window width of v.

Input

Your input consists of an arbitrary number of records, but no more than 40. Each record comprises three values appearing on a single line: The actual width of the fabric $w \in \mathbb{R}$, with $1 < w \leq 150$; the target width of the scrunched curtain $v \in \mathbb{R}$, with $0.5 < v \leq 10$, subject to $w - v > 0.00004$; the desired integer number of folds $n \in \mathbb{N}$, $2 \leq n \leq 30$.

The end of input is indicated by a line containing only the value '`-1`'.

Output

For each input record, output the amplitude of the sinusoidal folds required to produce n folds in a width of v using a curtain made using fabric with a of width w. The amplitude, a, is defined such that the folds form a curve in the shape $a \sin(\frac{2\pi n}{v} x)$, with $0 \leq x \leq v$, and $a > 0$.

Your program must output the value of a, truncated to a multiple of 0.001, and formatted to three digits after the decimal period.

Sample Input

```
10.01775695 7.0 11
7.64279256 6.28318530 10
-1
```

Sample Output

```
0.152
0.100
```