

# UBoat

## Problem code: HS09UBT

A submarine traveling at speed  $V$  [m/s] sends a supersonic impulse of frequency  $F_1$  [kHz]. The signal bounces off a ship and comes back after time  $T$  [s] with frequency  $F_2$  [kHz]. Speed of sound in water equals 1450 [m/s]. Calculate the distance between the submarine and the ship in meters.

### Input

There is  $K$  ( $1 \leq K \leq 30000$ ) lines of standard input. Each consists of four numbers  $T, V, F_1, F_2$  ( $1 \leq T \leq 3000, 0.1 \leq V \leq 20, 20 \leq F_1, F_2 \leq 20000$ ) separated by spaces. There  $T$  – time of the supersonic impulse in seconds,  $V$  – speed of the submarine in meters per second,  $F_1$  - frequency of the impulse when sending,  $F_2$  – frequency of the impulse when received. All the input values are given with 0.1 accuracy. In the line number  $K+1$  there are four zeros which should not be processed.

### Output

Write  $K$  lines of output consistent with the input. In each line the distance between the submarine and the ship in meters.

The judge will allow relative error up to 1 percent.

### Example

```
Input: 4 1.5 30 31
5 2.1 35 37
0 0 0 0
Output: 2900
3625
```

### Scoring

For solving this problem you will score 10 points.

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Added by: Adam Dzedzej

Date: 2010-01-20

Time limit: 1s

Source  
limit: 50000B

Languages: SED C99 strict C++ 4.0.0-8 C++ 4.3.2 TCL SCALA NICE NEM BASH PHP SCM guile  
LISP sbcl LISP clisp ERL TECS TEXT DOC PDF PS PERL 6 JS

Resource: High School Programming League (thanks to Talent Association)