

5079 Robots

In preparation for the ACM/ICPC in Hanoi in 2020, a huge amount of robots is needed to serve as volunteers. However, the organizers own only a certain number of robots. Fortunately, these robots can automatically duplicate themselves. More precisely, a group of R robots together in T time units can build a new robot like themselves. The new robot also has the ability to join a group of robots to build another robot. Each robot can join only one group for building new robots at a time.

For example with $R = 4$ and $T = 6$, a group of 4 initial robots takes 6 time units to build the 5-th robot, another 6 time units to build the 6-th robot, another 6 time unit to build the 7-th robot, and another 6 time unit to build the 8-th robot. After that, two groups can be formed to build new robot concurrently, which take only 6 time unit to build 2 new robots. So it takes 30 time units to have 10 robots from 4 initial robots.

Given 3 positive integers R , T and N ($1 \leq R \leq 1024$, $1 \leq T \leq 10^4$, $R < N \leq 10^9$), your task is to write a program to determine the smallest time units required to build a team of N robots from R initial robots.

Input

The input file consists of several data sets. The first line of the input file contains the number of data sets which is a positive integer and is not bigger than 30. The following lines describe the data sets.

Each data set consists of only one line that contains three integers R , T and N separated by a space.

Output

For each data set, write in a single line the smallest time unit required.

Sample Input

```
2
4 6 10
4 6 11
```

Sample Output

```
30
36
```