DMPG '16 S2 - Pandemic

Time limit: 0.6s   **Memory limit:** 64M

cheesecake is playing a mobile game where the goal is to spread a disease across the world. At any point in time, he may infect a healthy person with the pathogen, creating a *patient zero*. This pathogen spreads very quickly. Specifically, the number of infected people increases by a factor of K each day, with the game starting on day 0.

cheesecake is trying to complete a very delicate mission in which he has to infect **exactly** N people over a course of D days. In other words, there must be **exactly** N infected people on day D. Help him find the minimum number of patient zeros he would have to create to complete his mission.

Constraints

For all subtasks:

$0 \leq N \leq 10^{18}$

$2 \leq K \leq 1\,000$

$0 \leq D \leq 1\,000$

Subtask 1 [20%]

$K = 2$

Subtask 2 [20%]

$D = 1$

Subtask 3 [60%]

No additional constraints.

Input Specification

The only line of input will have N, K, and D, separated by spaces.

Output Specification

Output the required answer, the minimum number of patient zeros **cheesecake** would have to create.

Sample Input 1

```
8 2 1
```

Sample Output 1

```
4
```

Sample Input 2

```
9 3 2
```

Sample Output 2

```
1
```

Sample Input 3

```
10 7 10
```

Sample Output 3

```
4
```

Explanation for Sample Outputs

In the first case, the optimal solution is to infect 4 people on day 0.

In the second case, **cheesecake** should infect just one person on day 0. On day 1 there will be 3 people infected. And on day 2 there will be 9, as required.

In the third case, **cheesecake** should wait until day 9, infect one person, then infect 3 more on day 10.