Mahnoor is into a game where you keep pets.

Mahnoor's pet is Euan. Initially, Euan's *STR* is *X* and *EXP* is 0. These parameters increase in the following two kinds of training:

- Go to Stevie Gym: the *STR* gets multiplied by *A*, and the *EXP* increases by 1.
- Go to Bank Street Bar: the *STR* increases by *B*, and the *EXP* increases by 1.

Euan evolves when his *STR* becomes *Y* or greater, but Mahnoor thinks that makes him less cute.
Find the maximum possible *EXP* of Euan when he is trained without letting him evolve.

Input Format

Given as standard input:

- *X Y A B*

Constraints

- $1<=X<Y<=10^{18}$
- $2<=A<=10^{9}$
- $1<=B<=10^{9}$

All values in input are integers.

Output Format

Print the maximum possible *EXP* of Euan under the given situation as an integer.

Sample Input 0

```
4 20 2 10
```

Sample Output 0

```
2
```

Explanation 0

Initially, Euan's *STR* is 4. We can make his *EXP* 2 in the following course of training: First, go to Stevie Gym, which makes his *STR* 8 and his *EXP* 1. Then, go to Bank Street Bar, which makes his *STR* 18 and his *EXP* 2. On the other hand, there is no way to train him so that his *EXP* becomes greater than 2.

Sample Input 1

```
1 1000000000000000000 10 1000000000
```

Sample Output 1

```
1000000007
```

Explanation 1

Watch out for overflows