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A. Birthday

time limit per test: 1 second
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

Ivan is collecting coins. There are only N different collectible coins, Ivan has K of them. He will be celebrating his birthday soon, so all his M freinds decided to gift him coins. They all agreed to three terms:

- Everyone must gift as many coins as others.
- All coins given to Ivan must be different.
- Not less than L coins from gifts altogether, must be new in Ivan's collection.

But his friends don't know which coins have Ivan already got in his collection. They don't want to spend money so they want to buy minimum quantity of coins, that satisfy all terms, irrespective of the Ivan's collection. Help them to find this minimum number of coins or define it's not possible to meet all the terms.

Input

The only line of input contains 4 integers N, M, K, L ($1 \leq K \leq N \leq 10^{18}$; $1 \leq M, L \leq 10^{18}$) — quantity of different coins, number of Ivan's friends, size of Ivan's collection and quantity of coins, that must be new in Ivan's collection.

Output

Print one number — minimal number of coins one friend can gift to satisfy all the conditions. If it is impossible to satisfy all three conditions print `"-1"` (without quotes).

Examples

input	Copy
20 15 2 3	
output	Copy
1	

input	Copy
10 11 2 4	
output	Copy
-1	

Note

In the first test, one coin from each friend is enough, as he will be presented with 15 different coins and 13 of them will definitely be new.

In the second test, Ivan has 11 friends, but there are only 10 different coins. So all friends can't present him different coins.

Codeforces Round #518 (Div. 2)
[Thanks, Mail.Ru!]

Contest is running

01:55:40

Virtual Participation



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Language: GNU G++11 5.1.0 ▼

Choose file: [选择文件](#) [未选择任何文件](#)

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

[Submit](#)

