# Problem E. Sheep Eat Wolves

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 512 megabytes |

Farmer John has $x$ sheep and one day, $y$ wolves came to the river where he was herding the sheep.

For safety reasons, Farmer John wants to immediately transport all $x$ sheep back to his house on the other side of the river. There is a boat on the riverbank that Farmer John can use to transport up to $p$ animals with him at a time. Farmer John can only use this boat to transport animals back and forth between the two riverbanks.

However, if there is a group of animals that are not under Farmer John's supervision, and this group includes both wolves and sheep, and the number of wolves is strictly greater than the number of sheep plus $q$, the wolves will eat the sheep. A group of animals can be under Farmer John's supervision if and only if they are on the boat or on the same side of the river as Farmer John.

Now Farmer John wants to know the minimum number of trips required to safely transport all the sheep back to his house on the other side of the river, or determine if it is impossible.

## Input

The only line contains four integers, $x$ ($1 \le x \le 100$) denoting the number of sheep, $y$ ($1 \le y \le 100$) denoting the number of wolves, $p$ ($1 \le p \le 100$) denoting the maximum number of animals that can be transported in one trip with Farmer John, and $q$ ($0 \le q \le 100$) denoting the threshold at which the wolves will eat the sheep when the number of wolves in a group not under Farmer John's supervision is strictly greater than the number of sheep plus $q$.

## Output

Output a line containing a single integer, indicating the minimum number of trips required to safely transport all $x$ sheep back to Farmer John's house on the other side of the river. If it is impossible to safely transport all $x$ sheep back home, output $-1$ in one line.

## Examples

| standard input | standard output |
|---|---|
| 4 4 3 1 | 3 |
| 3 5 2 0 | 5 |
| 2 5 1 1 | -1 |

## Note

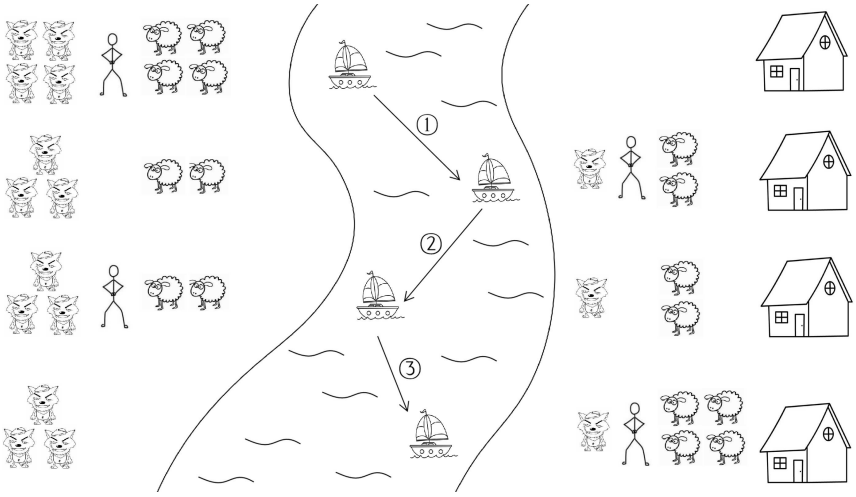



Figure: One possible solution for the first sample case