A Fair Rock Game (fairgame)

Alice and Bob are playing a game: they have a pile of N rocks, and in every turn the current player takes at least 1 rock and at most K rocks. Alice makes the first move, then Bob does the second, and so on as they alternate turns.

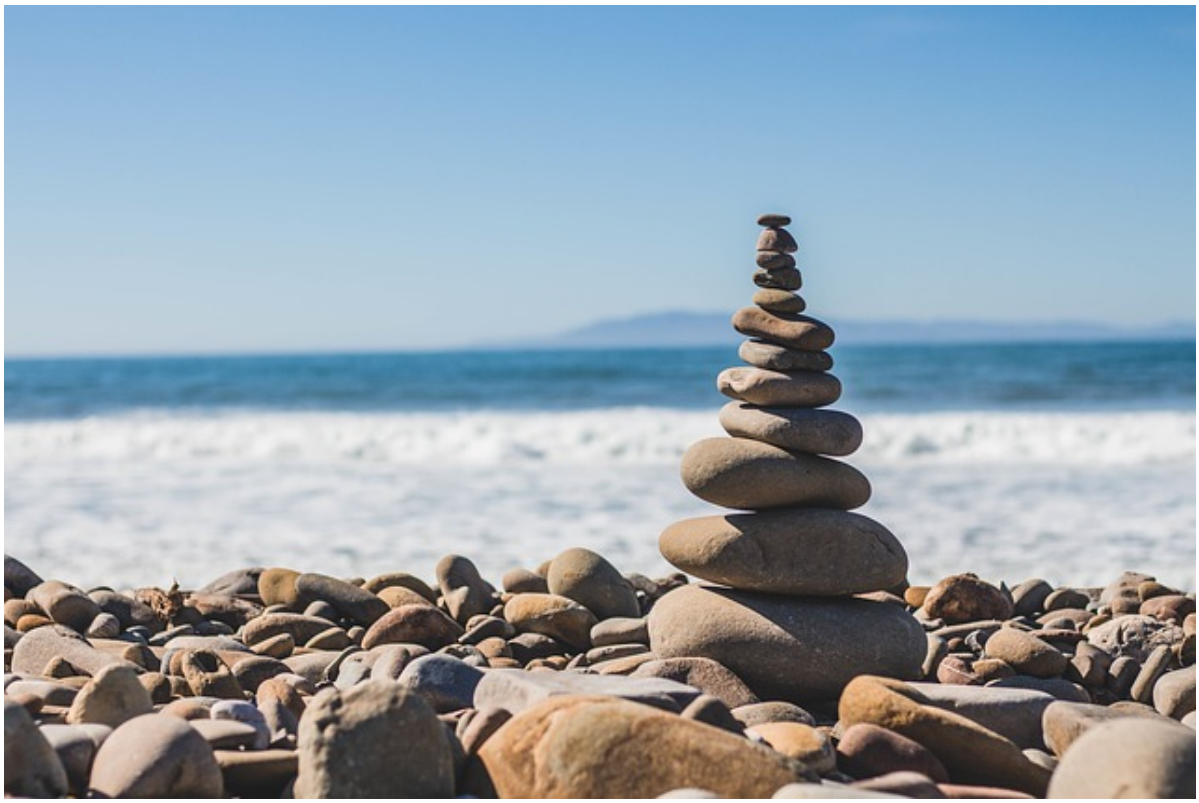

Figure 1: Playing with rocks.

If one player takes an odd number of rocks, he has to pay M euros. When the pile is empty, the player who made the last move gets P euros and the other one gets Q euros. After the game ends, Alice will end up with an amount of euros, let's call it X, and Bob will end up with another amount of euros, let's call it Y.

They both play optimally, which means Alice wants to maximize the value $X - Y$ and Bob wants to minimize it. Find out the value of $X - Y$.

☞ Among the attachments of this task you may find a template file `fairgame.*` with a sample incomplete implementation.

Input

The first line contains the integers N, K, M, P, Q which describe the game.

Output

You need to write a single line with an integer: the final difference in euros $X - Y$.

Constraints

- $1 \leq K \leq N \leq 5\,000\,000$.
- $1 \leq M, P, Q \leq 5\,000\,000$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) $K = 1$.

– **Subtask 3** (15 points) $N \leq 5$.

– **Subtask 4** (25 points) $N \leq 1000$.

– **Subtask 5** (10 points) $N \leq 100\,000$, $K \leq 900$.

– **Subtask 6** (20 points) $N \leq 100\,000$.

– **Subtask 7** (20 points) No additional limitations.

Examples

input	output
6 3 5 4 2	2

In the **first sample case** one possible optimal strategy is:

- Alice removes two rocks, paying nothing. Four rocks are left on the stack.
- Bob removes three rocks, paying five euros. One rock is left on the stack.
- Alice must remove the last rock, paying five euros. She gets four euros, Bob gets two.

In the end, Alice ends up with -1 euros (she lost 1 euro), while Bob finishes with -3 euros (he lost 3 euros). In total, the difference between what Alice and Bob ended up with is 2 euros.