

# Encountering a Friend

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            1 second  
Memory limit:         1024 mebibytes

In a local table tennis club, there are  $n$  boards (tables), numbered from 1 to  $n$ , and  $2n$  players.

Today, a tournament of  $k$  rounds is played in the club. In each round, exactly  $n$  games happen simultaneously: at each board, one game between exactly two players is played. After each round apart from the last one, players change boards as follows:

- The winner of the game at board  $i$  moves to board  $i + 1$ , unless  $i = n$ ; in that case, the player stays at the current board.
- The loser of the game at board  $i$  moves to board  $i - 1$ , unless  $i = 1$ ; in that case, the player stays at the current board.

Alice and Bob are friends, and both of them participate in the tournament, playing their first games at boards  $a$  and  $b$ , respectively. Over the course of  $k$  games, they may meet and play against each other multiple times.

As they like playing against each other, they asked you: “In this tournament, what can be the maximum possible number of games in which we encounter each other at the same board?” Please help them!

## Input

The first line contains one integer  $t$  ( $1 \leq t \leq 10^4$ ), denoting the number of test cases.

Each of the next  $t$  lines contains four integers  $n, k, a, b$  ( $1 \leq a, b \leq n \leq 10^9, 1 \leq k \leq 10^9$ ), denoting that there are  $n$  boards and  $k$  rounds in the tournament, that Alice starts at board  $a$ , and that Bob starts at board  $b$ .

## Output

For each test case, print a single integer: the maximum number of games that can occur between Alice and Bob over  $k$  rounds.

## Example

standard input	standard output
3	1
7 4 2 6	2
7 5 2 6	1
4 3 1 4	