Quiz2-1. Water(Practice)

Description

You have two cups with capacities n and m, which currently contain x and y units of water respectively.
There are six types of operations you can do:

1. Fill up the first cup with water. ($x \leftarrow n$)
2. Fill up the second cup with water. ($y \leftarrow m$)
3. Empty the first cup. ($x \leftarrow 0$)
4. Empty the second cup. ($y \leftarrow 0$)
5. Pour water from the first cup to the second cup, until the first cup is empty or the second cup is full, whichever comes first.
   ($t \leftarrow min(x, m-y)$, $x \leftarrow x-t$, $y \leftarrow y+t$)
6. Pour water from the second cup to the first cup, until the second cup is empty or the first cup is full, whichever comes first.
   ($t \leftarrow min(y, n-x)$, $y \leftarrow y-t$, $x \leftarrow x+t$)

Given an integer z, please find the minimum number of operations required to make a cup of exactly z units of water, if it is possible.

Input Format

The first line contains an integer T, the number of test cases.

Each test case contains five integers n,m,x,y,z in one line.

- $1 \leq T \leq 100$
- $1 \leq n,m,z \leq 100$
- $0 \leq x \leq n$
- $0 \leq y \leq m$

Output Format

For each test case, ouput the minimum number of operations required to make a cup of exactly z units of water.
If it's impossible to do so, output -1 instead.

Sample Input	Sample Output
3 2 3 1 0 5 5 4 0 2 5 1 1 1 1 2	-1 1 -1
5 6 7 6 3 5 1 1 1 1 7 8 10 7 1 4 10 4 7 3 2 10 6 8 6 6	4 -1 7 3 0

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Hint