Problem E. Thermostat

Time limit 1000 ms
Mem limit 262144 kB

Vlad came home and found out that someone had reconfigured the old thermostat to the temperature of a.

The thermostat can only be set to a temperature from l to r inclusive, the temperature cannot change by less than x. Formally, in one operation you can reconfigure the thermostat from temperature a to temperature b if $|a - b| \geq x$ and $l \leq b \leq r$.

You are given l, r, x, a and b. Find the minimum number of operations required to get temperature b from temperature a, or say that it is impossible.

Input

The first line of input data contains the single integer t ($1 \leq t \leq 10^4$) — the number of test cases in the test.

The descriptions of the test cases follow.

The first line of each case contains three integers l, r and x ($-10^9 \leq l \leq r \leq 10^9$, $1 \leq x \leq 10^9$) — range of temperature and minimum temperature change.

The second line of each case contains two integers a and b ($l \leq a, b \leq r$) — the initial and final temperatures.

Output

Output t numbers, each of which is the answer to the corresponding test case. If it is impossible to achieve the temperature b, output `-1`, otherwise output the minimum number of operations.

Examples

Input	Output
10 3 5 6 3 3 0 15 5 4 5 0 10 5 3 7 3 5 6 3 4 -10 10 11 -5 6 -3 3 4 1 0 -5 10 8 9 2 1 5 1 2 5 -1 4 3 0 2 -6 3 6 -1 -4	0 2 3 -1 1 -1 3 1 3 -1

Note

In the first example, the thermostat is already set up correctly.

In the second example, you can achieve the desired temperature as follows: $4 \to 10 \to 5$.

In the third example, you can achieve the desired temperature as follows: $3 \to 8 \to 2 \to 7$.

In the fourth test, it is impossible to make any operation.