A. Old Peykan

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

There are n cities in the country where the Old Peykan lives. These cities are located on a straight line, we'll denote them from left to right as $c_1, c_2, ..., c_n$. The Old Peykan wants to travel from city c_1 to c_n using roads. There are $(n - 1)$ **one way** roads, the i-th road goes from city c_i to city c_{i+1} and is d_i kilometers long.

The Old Peykan travels 1 kilometer in 1 hour and consumes 1 liter of fuel during this time.

Each city c_i (except for the last city c_n) has a supply of s_i liters of fuel which immediately transfers to the Old Peykan if it passes the city or stays in it. This supply refreshes instantly k hours after it transfers. The Old Peykan can stay in a city for a while and fill its fuel tank many times.

Initially (at time zero) the Old Peykan is at city c_1 and s_1 liters of fuel is transferred to it's empty tank from c_1's supply. The Old Peykan's fuel tank capacity is unlimited. Old Peykan can not continue its travel if its tank is emptied strictly between two cities.

Find the minimum time the Old Peykan needs to reach city c_n.

Input

The first line of the input contains two space-separated integers m and k $(1 \leq m, k \leq 1000)$. The value m specifies the number of roads between cities which is equal to n - 1.

The next line contains m space-separated integers $d_1, d_2, ..., d_m$ $(1 \leq d_i \leq 1000)$ and the following line contains m space-separated integers $s_1, s_2, ..., s_m$ $(1 \leq s_i \leq 1000)$.

Output

In the only line of the output print a single integer — the minimum time required for The Old Peykan to reach city c_n from city c_1.

Examples

input
4 6 1 2 5 2 2 3 3 4
output
10

input
2 3 5 6 5 5
output
14

Note

In the second sample above, the Old Peykan stays in c_1 for 3 hours.