

2024 ICPC Asia Tehran Regional Contest

### Problem G: Double Radars

Ali recently found a treasure and has arranged the coins from the treasure around a circle. There are  $k$  houses around the circle with equal distances. Houses are numbered 1 through  $k$  consecutively in the clockwise direction. The treasure contains  $n$  coins, where the  $i^{\text{th}}$  coin (for  $1 \leq i \leq n$ ) has the value  $w_i$  and is located at the house  $x_i$ .

To protect the treasure, Ali has installed two radars stationed at the center of the circle, monitoring its circumference. Radar  $i$  (for  $i \in \{1, 2\}$ ) starts by monitoring house  $r_i$  and moves  $\frac{1}{v_i}$  houses per minute. More intuitively, every  $v_i$  minutes, the Radar  $i$  goes one house forward. Initially, the first radar moves clockwise, and the second radar moves counterclockwise. Whenever the two radars meet, they both reverse their directions. Note that this can happen in the area between two adjacent houses.

Gholi, who wants to steal as many coins as possible, plans to start at an arbitrary house on the circle and move at most  $\frac{1}{v}$  houses per minute in either direction (clockwise or counterclockwise). He starts moving at the time zero. He can reverse his direction anytime or stay still for a while. If Gholi crosses paths with one of the radars at any moment, he will be immediately caught and sent to jail. He cannot steal a coin if this happens at a house.

Help Gholi to maximize the total value of the coins he can steal before being detected by the radars.

#### Input

The first line contains three integers,  $n$  ( $1 \leq n \leq 10^5$ ) number of coins,  $k$  ( $1 \leq k \leq 10^9$ ) number of houses around the circle, and  $v$  ( $1 \leq v \leq 10^4$ ) speed of Gholi.

The second line contains the starting monitoring house  $r_1$  and speed  $v_1$  of the first radar ( $1 \leq r_1 \leq k, 1 \leq v_1 \leq 10^4$ ).

The third line contains the starting monitoring house  $r_2$  and speed  $v_2$  of the second radar ( $1 \leq r_2 \leq k, 1 \leq v_2 \leq 10^4$ ). It is guaranteed that  $r_1 \neq r_2$ .

The fourth line contains  $n$  distinct integers,  $x_1, x_2, \dots, x_n$ , representing the houses where the coins are located ( $1 \leq x_i \leq k$ ).

The fifth line contains  $n$  integers,  $w_1, w_2, \dots, w_n$ , representing the value of each coin ( $1 \leq w_i \leq 10^9$ ).

#### Output

Output the maximum total value of coins Gholi can steal before being detected by the radars.

#### Example

Standard Input	Standard Output
3 5 1 1 2 2 3 1 2 4 1 2 4	6