Huffman Coding

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	64 megabytes

Bobo learnt Huffman coding, and he tried to add some restrictions.

Bobo had n words to encode. The i-th word had weight w_i. He wanted to encode the i-th word into sequence $S_i = (s_{i,1}, s_{i,2}, \ldots, s_{i,l_i})$ where:

1. $1 \leq l_i \leq m$.
2. Given $r_1, r_2, \ldots, r_m$, $1 \leq s_{i,j} \leq r_j$ for all $1 \leq j \leq l_i$.
3. For all $i \neq j$, S_i was not prefix of S_j.

Note that sequence $A = (a_1, a_2, \ldots, a_k)$ is prefix of sequence $B = (b_1, b_2, \ldots, b_l)$ if and only if $k \leq l$ and $a_1 = b_1, a_2 = b_2, \ldots, a_k = b_k$.

Bobo would like to find the minimum of $\sum_{1 \leq i \leq n} w_i \cdot l_i$.

Input

The first line contains 2 integers n, m $(1 \leq n, m \leq 500)$.

The second line contains n integers $w_1, w_2, \ldots, w_n$ $(1 \leq w_i \leq 500)$.

The third line contains m integers $r_1, r_2, \ldots, r_m$. $(1 \leq r_i \leq 500)$

It is guaranteed that $r_1 \cdot r_2 \ldots r_m \geq n$.

Output

An integer denotes the minimum.

Examples

standard input	standard output
2 2 4 3 2 1	7
3 2 1 2 4 2 2	10