

You have to cut a wood stick into several pieces. The most affordable company, Analog Cutting Machinery (ACM), charges money according to the length of the stick being cut. Their cutting saw allows them to make only one cut at a time.

It is easy to see that different cutting orders can lead to different prices. For example, consider a stick of length  $10m$  that has to be cut at  $2$ ,  $4$ , and  $7m$  from one end. There are several choices. One can cut first at  $2$ , then at  $4$ , then at  $7$ . This leads to a price of  $10 + 8 + 6 = 24$  because the first stick was of  $10m$ , the resulting stick of  $8m$ , and the last one of  $6m$ . Another choice could cut at  $4$ , then at  $2$ , then at  $7$ . This would lead to a price of  $10 + 4 + 6 = 20$ , which is better for us.

Your boss demands that you write a program to find the minimum possible cutting cost for any given stick.

## Input

The first line of each test case will contain a positive number  $l$  that represents the length of the stick to be cut. You can assume  $l \leq 100$ . The next line will contain the number  $n$  ( $n \leq 10$ ) of cuts to be made.

The next line consists of  $n$  positive numbers  $c_i$  ( $0 < c_i < l$ ) representing the places where the cuts must be made, given in strictly increasing order.

## Output

Print the cost of the minimum cost solution to cut each stick.

## Sample Input

100  
3  
25 50 75

## Sample Output

200