

I. Breaking Strings

Time limit: 2s

Memory limit: 64 MB

A certain string-processing language allows the programmer to break a string into two pieces. Since this involves copying the old string, it costs n units of time to break a string of n characters into two pieces. Suppose a programmer wants to break a string into many pieces. The order in which the breaks are made can affect the total amount of time used. For example, suppose we wish to break a 20 character string after characters 3, 8, and 10 (numbering the characters in ascending order from the left-hand end, starting from 1). If the breaks are made in left-to-right order, then the first break cost 20 units of time, the second break costs 17 units of time, and the third breaks costs 12 units of time, a total of 49 units of time (see the sample below). If the breaks are made in right-to-left order, then the first break costs 20 units of time, the second break costs 10 units of time, and the third break costs 8 units of time, a total of 38 units of time.

The cost of making the breaks in left-to-right order:

```
thisisastringofchars (original)
thi sisastringofchars (cost:20 units)
thi sisas tringofchars (cost:17 units)
thi sisas tr ingofchars (cost:12 units)
Total: 49 units.
```

The cost of making the breaks in right-to-left order:

```
thisisastringofchars (original)
thisisastr ingofchars (cost:20 units)
thisisas tr ingofchars (cost:10 units)
thi sisas tr ingofchars (cost: 8 units)
Total: 38 units.
```

Input:

There are several test cases! In each test case, the first line contains 2 integers N ($2 \leq N \leq 10000000$) and M ($1 \leq M \leq 1000$, $M < N$). N is the original length of the string, and M is the number of the breaks. The following lines contain M integers M_i ($1 \leq M_i < N$) in ascending order that represent the breaking positions from the string's left-hand end.

Output:

For each test case, output in one line the least cost to make all the breakings.

Sample Input:

```
20 3  
3 8 10
```

Sample Output:

```
37
```

Source: ZOJ Monthly, June 2007 (Wei, Qizheng)