Navdha The Warrior

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Navdha aims to destroy the biggest alien base on earth along with destroying all the aliens on it. The base can be represented in an array. While multiple aliens can occupy the same location on the base, one alien cannot be found at multiple positions.
The aliens love the numbers that are a power of 2, hence the length of their base will always be of that form.
Navdha wants to use the minimum power she has to in order to destroy the aliens.
She starts with the whole base and at each step she has to perform one of the following.

1. If the length of the base is at least two, she can divide it into two equal contiguous halves and then destroy each separately.
2. Destroy the current base. If there is no alien on it she will have to use *A* amount of power, otherwise, she has to use $B.n_a.l$ amount of power where n_a is the number of aliens and *l* is the length of the base she is currently destroying.

Navdha trusts you enough to tell her how much minimum power she needs so that she can prepare herself accordingly.

Don't fail her. The Earth needs you!!

Input

The first line has four integers, *n, k, A, B* ($1<=n<=30$, $1<=k<=10^5$, $1<=A, B<=10^4$) where the length of the original base is 2^n, k is the number of aliens and A, B are constants as defined.
The second line has *k* integer $a_1, a_2, a_3, ...a_k$ ($1<=a_i<=2^n$) where a_i is the position of the i^{th} alien on the base.

Output

One integer that is the minimum power Navdha needs.

Example

standard input	standard output
2 2 1 2 1 2	5

standard input	standard output
3 2 1 2 1 7	8