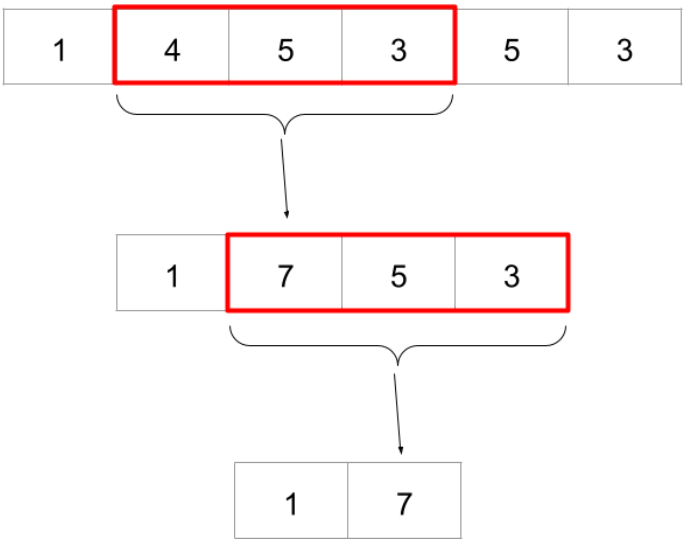
PROBLEM P **OR GAME** **100 POINTS**

With time left to spare until the end of the contest, you decided to play the card game Solitaire. Alas, you forgot to bring a card deck! So instead of playing Solitaire, you will have to settle for a number game called "OR Game".

Instead of cards, you are given an array A with n elements and a positive integer K. The rules of the game are as follows: As long as the array A has at least K elements, you have to select some K consecutive elements, remove them, and in their place insert their bitwise OR (definition below). Once the array's length is less than K, your final score is calculated as the sum of the elements. Your goal is to minimise this sum.

For example, suppose $A = [1,4,5,3,5,3]$ and $K = 3$. Suppose in the first step we choose the three consecutive elements starting from the second element, namely: 4, 5, 3. We remove them and replace them with 7, because 4 | 5 | 3 = 7 (in binary: `100 | 101 | 011 = 111`). Now the array is $[1,7,5,3]$. Suppose in the second step we again choose the three consecutive elements starting from the second one. We replace the numbers 7, 5, 3 with 7 because 7 | 5 | 3 = 7. This leaves us with only two numbers, 1 and 7. Thus our final score is 8. One can verify that this is the smallest possible score. Note that this score can also be achieved using a different sequence of moves.



Bitwise OR

The bitwise OR of two non-negative integers x and y is denoted x | y in most programming languages, and is performed as follows: Write down each number in binary, adding leading zeros if necessary to make them the same length. For example, $x=5$ in binary is `101`, and $y=9$ in binary is `1001`. Because the second binary number has more digits, we insert a `0` at the beginning of the first, so it becomes `0101`. Now write the two sequence of bits one below the other (see the illustration). In each column, if the two bits are both `0` then the resulting bit is `0`, otherwise it is `1`. So 5 | 9 is `1101` in binary, which is 13 in decimal.

```
0  1  0  1
1  0  0  1
---------
1  1  0  1
```

The notation x_1 | x_2 | x_3 | ... | x_K means $(((\ x_1 \mid x_2\ ) \mid x_3\ ) \ldots\ ) \mid x_K$.

Turn over for input and output.

Input

The first line of the input contains two integers N and K ($2 \le K \le N \le 400,000$). The next line contains N integers $a_1, a_2, a_3, ..., a_n$ ($0 \le a_i \le 1,000,000,000$).

Output

Output a single integer which denotes the smallest possible score you can obtain.

Sample Input 1

```
6 3
1 4 5 3 5 3
```

Output for Sample Input 1

```
8
```

Sample Input 2

```
7 2
1 3 5 7 9 11 13
```

Output for Sample Input 2

```
15
```