Problem D: Divide and Candies

Time limit: 3s; Memory limit: 512 MB

Anh is a fourth-grade student who dreams of competing in the ICPC World Finals. Today, he is studying division operations, and to make the study more challenging, Anh wants to convert all numbers into different numerical bases before doing the division operations.

Anh has *n* candies arranged in a circle, each with a positive integer flavor value *a[i]*, and a positive integer base *m*. To have more fun while eating candies, Anh will play a game. He intends to convert each flavor number *a[i]* into base *m*, resulting in the base-m representation *b[i]*. The game process is as follows:

- Anh selects and eats one candy *i* from the circle.
- After eating the chosen candy, he identifies the two candies adjacent to it. Let these adjacent candies *j* and *k*, which have base-m representation *b[j]* and *b[k]*.
- Anh computes the sum of fractions: $\frac{b_j}{b_k} + \frac{b_k}{b_j}$

He then writes this sum as a decimal number in base 10 and counts the number of digits in the fractional part (both non-repeating and repeating digits). Example: $\frac{5}{14} + \frac{14}{5} = 3.1(571428)$. He writes down 1 non-repeating digit and 6 repeating digits, totaling 7 digits after the decimal point. Similarly, $\frac{3}{2} = 1.5$ has 1 non-repeating digit and 0 repeating digits, and $\frac{5}{1} = 5$ has 0 non-repeating digits and 0 repeating digits.

- After performing the computation and eating the candy *i*, Anh arranges the two candies *j* and *k* that are adjacent to *i* to be adjacent to each other again, maintaining the circular arrangement. This reduces the number of candies by one after each step.
- Anh repeats the candy-eating process until only two candies remain.
- For the final two candies, Anh performs the fractional operation as described above and counts the digits in the fractional part for those two candies. He then eats the last two candies and finishes the game.

Although the game is fun at first, Anh becomes tired of writing so many digits, so he wants to eat all the candies while writing the smallest number of digits. Help Anh determine the

minimum total number of digits he needs to write down throughout the entire process of eating all *n* candies.

Input

- The first line contains two integers *n* ($2 \leq n \leq 80$) and *m* ($2 \leq m \leq 10^6$)
- The next line contains *n* integers a_i ($1 \leq a_i \leq 10^6$)

Output

- One line contains an integer that represents the minimum total number of digits Anh needs to write down.

Sample

Input	Output
4 10 1 5 7 3	4
2 10 14 5	7
5 2 4 7 5 11 6	17
5 104 654074 236092 654237 254045 253310	4605392

Explanation

Explanation for example 1:

- Anh can eat the 3rd candy with value 7 first, then he needs to write down 2 digits, since $\frac{5}{3} + \frac{3}{5} = 3.2(6)$.
- Then with candies 1 5 3 left, he can eat 3rd candy with value 3, then he writes down 1 digit, since $\frac{5}{1} + \frac{1}{5} = 5.2$
- Then with candies 1 5 left, he eats 2 candies and writes down 1 digit, since $\frac{5}{1} + \frac{1}{5} = 5.2$
- Anh writes down a totally of 4 digits, and this is the minimum value he can achieve.

Explanation for example 3:

- Anh first converts each number to base 2: 4 is 100, 7 is 111, 5 is 101, 11 is 1011, and 6 is 110. The array b now is 100, 111, 101, 1011, 110
- Anh eats 2nd candy with value 111 and writes down 6 digits, since $\frac{100}{101} + \frac{101}{100} = 2.00(0099)$. The remaining candies are 100, 101, 1011, 110.
- Anh then eats 3rd candy with value 1011 and writes down 5 digits. The remaining candies are 100, 101, 110.
- Anh then eats 2nd candy with value 101 and writes down 3 digits. The remaining candies are 100, 110.
- Anh eats two remaining candies and writes down 3 digits.
- Anh writes down a total of 6 + 5 + 3 + 3 = 17 digits.