C - 数式復元 / Ancient Formula

Time limit : 2sec / Memory limit : 256MB

Problem Statement

For some reason, you have to restore an unreadable formula in an ancient book on mathematics. After hard work, you have some information about the formula:

- The formula consists of N integers and $N - 1$ binary operators.
- The N integers in the formula are $A_1, A_2, \ldots, A_N$, but the order in which they appear in the formula is unknown.
- Each binary operator in the formula is either $+$ or $\times$.

As another clue of the original formula, you know that the evaluation value of the formula is close to K. Here, ancient formulas are evaluated in a different way from today: they are always evaluated from left to right. For example, $2 + 3 \times 4$ is evaluated to $2 + 3 \times 4 = 5 \times 4 = 20$. Here are some other examples:

- $1 + 2 \times 3 = 3 \times 3 = 9$.
- $2 \times 2 + 2 \times 2 = 4 + 2 \times 2 = 6 \times 2 = 12$.

You want to find the smallest absolute value of the difference between K and the evaluation value of a possible original formula. Write a program that finds this smallest absolute difference.

Input

Input is given from Standard Input in the following format:

```
N   K
A_1   A_2   ..   A_N
```

- The first line contains two space-separated integers $N(1 \leq N \leq 6)$ and $K(1 \leq K \leq 10^6)$, denoting the number of integers in the formula, and the value known to be close to the evaluation value of the original formula.
- The second line contains N space separated integers $A_1, A_2, \ldots, A_N(1 \leq A_i \leq 10)$, denoting the integers in the formula.

Output

Print the smallest absolute difference between K and the evaluation value of a possible original formula.

Write to Standard Output. Be sure to print a newline at the end of the output.

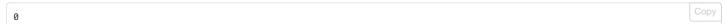## Sample Input 1

```
3 9
1 2 3
```

Sample Output 1

```
0
```

One possible original formula is $1 + 2 \times 3$. It evaluates to 9 (remember that ancient formulas are evaluated from left to right), whose absolute difference from K is 0, which is obviously the smallest.

Sample Input 2

```
3 9
3 2 1
```

Sample Output 2

```
0
```

Also remember that the order in which the integers appear in the formula is unknown. Thus, the formula $1 + 2 \times 3$ is a valid candidate of the original formula for this input, too.

Sample Input 3

```
6 417
1 2 3 4 5 6
```

Sample Output 3

```
3
```