G Grinding Gravel

Time limit: 4s

Perfectly ground gravel in a perfect grid.
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During the renovation of your garden, you decide that you want a gravel path running from the street to your front door. Being a member of the Boulders And Pebbles Community, you want this path to look perfect. You already have a regular grid to put the gravel in, as well as a large container of gravel containing exactly as much as the total capacity of the grid.

There is one problem: the gravel does not yet fit perfectly into the grid. Each grid cell has the same (fixed) capacity and every piece of gravel has a certain weight. You have a grindstone that can be used to split the stones into multiple pieces, but doing so takes time, so you want to do a minimal number of splits such that the gravel can be exactly distributed over the grid.

As an example, consider the first sample case. There are three grid cells of size 8, which can be filled as follows. Put the stones of weight 2 and 6 in the first cell. Now grind the stone of weight 7 into two pieces of weight 3 and 4. Then the other two grid cells get filled by weights $3, 5$ and $4, 4$ respectively.

Input

The input consists of:

- One line with two integers n and k ($1 \leq n \leq 100$, $1 \leq k \leq 8$), the number of pieces of gravel and the capacity per grid cell.
- One line with n integers $w_1, \ldots, w_n$ ($1 \leq w_i \leq 10^6$ for all i), the weight of each piece of gravel.

It is guaranteed that $w_1 + w_2 + \cdots + w_n$ is a multiple of k.

Output

Output the minimal number of times a stone needs to be split into two, such that all the pieces of gravel can be used to fill all the grid cells perfectly.

Sample Input 1	Sample Output 1
5 8 2 4 5 6 7	1

Sample Input 2	Sample Output 2
2 5 12 13	4