

Buying Milk

„Buy milk! But make it exactly 3141592 microliters!“ Jožko’s parents left him a note with this message.

With nothing else to do, Jožko went to the store and precisely (and inconspicuously!) measured the volume of each container of milk he found. Now he sadly contemplates which ones to buy.

Task

You are given at most 40 integers representing volumes of containers in microliters.

Determine if you can choose several of them with the given sum. If not, find the closest larger sum that can be achieved.

Input

The first line of the input contains the desired amount of milk z and the number of purchasable containers n .

Followed by n lines. The i -th line contains one number v_i : the volume of milk in the i -th container.

All volumes are in microliters and are integers. It holds $1 \leq z \leq 10^{15}$, $1 \leq n \leq 40$, and $\forall i : 0 \leq v_i \leq 10^{15}$.

Additionally, you can assume that there is enough milk, i.e., $\sum_i v_i \geq z$.

Output

Print one line with one integer d : the smallest volume of milk that is greater than or equal to z and can be bought.

Examples

input

```
5859870 3
3141592
2718281
1000000
```

output

```
5859873
```

(Buy the first two containers.)