Coin Change

You are given a **set of different coin denominations** and an integer **amount** representing a total amount of money.

Return the *fewest number of coins that you need to make up that amount*. If that amount of money cannot be made up by any combination of the coins, return *-1*.

You may assume that you have an infinite number of each kind of coin.

Input

First line contains two numbers separated by spaces **m** and **n**.

m is the amount of money that we are trying to match and **n** is the number of coin types.

The second line contains the set of values separated by spaces.

Output

Print the fewest number of coins that can be used or **-1** if the amount cannot be.

Constraints

- $1 \leq$ **coins.length** ≤ 12
- $1 \leq$ **coins[i]** $\leq 2^{31}$-1
- $0 \leq$ **amount** $\leq 10^4$

Example 1

Input:

11 3
1 2 5

Output:

3

Example 2

Input:

3 1
2

Output:

-1

Example 3

Input:

0 1
2

Output:

0