

CMPUT 275 - Tangible Computing

Morning Problem: Laundry Service

Description

For the purpose of optimizing payroll a laundry service has contacted you on the basis of finding out the minimal amount of time required to do n loads of laundry given m different washing machines that all slightly differ in the amount of time it takes for them to complete one load.

To elaborate further, a washing machine will take one load of dirty laundry and after t minutes will produce a load of washed laundry. This service doesn't have access to drying machines, so all of the washed loads will be air dried taking k minutes to dry each. Once a load is dried it is to be considered complete. Note that all washing machines can run simultaneously and can be loaded instantly.

Input

The first line of input contains three space separated integers $1 \leq n \leq 1,000$, $1 \leq m \leq 1,000$ and $0 \leq k \leq 100$, the number of loads, the number of washers and the time it takes to air dry respectively.

The next line of input contains m space separated integers $1 \leq t_i \leq 1,000$ each indicating the time it takes for the i -th washer to complete a load.

Output

Output a single integer, that is the minimum amount of time required to complete all n loads of laundry. It is guaranteed that the minimum amount of time is no more than 10,000,000.

Sample Input 1

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3 2 5
3 4
```

Sample Output 1

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11
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Explanation

At 11 minutes we see that while 3 loads have been completed by the first washing machine only 2 have dried, and while 2 loads have been completed by the second washing machine, only 1 has dried. Thus, the total amount of dried loads is 3 which meets the quota given. Note that at 10 minutes 3 loads have been completed by the first washing machine, only 1 has completed drying. This brings the total down to 2 completed loads which is insufficient.

Sample Input 2

235 4 7
100 23 67 45

Sample Output 2

2617
