大叫 (Shout)

問題敘述

下表是時間複雜度與對應 1 秒內可穩穩通過的數據範圍對照表。

時間複雜度	n 的最大可能值
$O(n)$	10^7
$O(nlogn)$	10^6
$O(nlog^2n)$	10^5
$O(n^2)$	5000
$O(n^3)$	500

在 C / C++ 中，1 秒大約可以執行 10^9 次運算。

表格中右列的數字會隨著系統及編譯器而改變，若程式中的數字與右列的數字差不到 10 倍，實際運行時間仍可能在可接受範圍內，因此即便計算出的總運算量超過 10^9 次，程式仍有可能通過測資。

這邊有個時間複雜度的例子。

輸入一個整數 n，請輸出 $\sum_{i=1}^{n} \sum_{j=1}^{n} i * j$ 的結果。

輸入範圍：$n \le 5000$，時間限制：1 秒

```c
#include <stdio.h>
int main() {
    int n;
    scanf("%d", &n);
    long long sum = 0;
    for (int i = 1; i <= n; i++)
        for (int j = 1; j <= n; j++)
            sum += 1ll * i * j;
    printf("%lld", sum);
}
```

上面這段程式是個時間複雜度為 $O(n^2)$ 的作法。因為 $5000 * 5000 = 2.5 * 10^7 < 10^9$，

透過計算可以發現 n 到 5000 都可以在 1 秒內做完，能夠通過此範例。

這個範例想必對修過程設的各位來說簡簡單單，相信你們也能完成接下來的挑戰。

以下為真正的題目敘述：

成大資訊營是個優質的高中生營隊。白天的課程充滿了程式挑戰與腦力激盪，晚上則有各式各樣的活動，讓大家在學習之餘也能認識彼此。在這段短暫卻熱烈的時光裡，他們寫下了屬於青春的故事，也收穫了珍貴的友情。

營隊最後一天是團隊比賽 (大叫之聲)，小高遇到了麻煩，想請聰明的你幫忙解決。

大叫之聲的比賽中，每個參賽隊伍都要輪流上台大叫，由小高為大家評分。但要贏，可不是誰聲音最大就行。因為「大叫」不是單純用喉嚨喊出來的聲音，而是一種靈魂的釋放，一種情感的奔放。真正的吼叫，得穿透肺腑、震動心弦，甚至讓空氣都跟著顫抖。

很多人以為大叫就是「啊──」就好，但錯了！那只是單純的分貝而已。真正的大叫，必須帶著故事。你得有情緒！要把壓抑已久的怨念、對蚊子的厭惡、對火鍋裡放芋頭的憤怒，還有對選不到課的絕望，全都化成一聲驚天動地的怒吼！

大叫，不只是比聲音，而是比誰的人生比較慘，比誰的怨念比較重，誰能吼到觀眾心坎裡，誰就是真正的大叫之王！

為公平起見，$\boxed{\text{參賽隊伍人數必須相同}}$。

已知營隊共有 N 個小隊，第 i 個小隊有 a_i 位小隊員。

這些小隊會再分成多個參賽隊伍，且每個參賽隊伍必須全部由同一小隊的小隊員組成，但可能會有部分小隊員因人數不足而無法組成參賽隊伍參加比賽。

由於小高擔心流程過長，他希望參賽隊伍人數至少要有 K 人，也就是說每個參賽隊伍人數相同且都大於等於 K。

請聰明的你幫他決定參賽隊伍的人數，使能參加大叫之聲的小隊員總數最大，並告訴他最多能有多少人參加大叫之聲。

若對題意不清楚，請參考範例測資。

輸入說明

第一行有兩個正整數 N, K

第二行有 N 個非負整數 a_i

意義如題目敘述所述。

輸出說明

請輸出一個整數，代表最多能有多少人參加大叫之聲。

測資限制

- $1 \leq N, K \leq 10^6$
- $0 \leq a_i \leq 10^6$

範例測資

範例輸入 1

```
5 1
1 2 3 4 5
```

範例輸出 1

```
15
```

範例說明 1

每個參賽隊伍應有 1 個人。每個小隊分別會有 $1, 2, 3, 4, 5$ 個小隊員參加大叫之聲。

範例輸入 2

```
4 2
3 6 10 15
```

範例輸出 2

```
33
```

範例說明 2

每個參賽隊伍應有 3 個人。每個小隊分別會有 $3, 6, 9, 15$ 個小隊員參加大叫之聲。

範例輸入 3

```
4 4
3 6 10 15
```

範例輸出 3

```
30
```

範例說明 3

每個參賽隊伍應有 5 個人。每個小隊分別會有 $0, 5, 10, 15$ 個小隊員參加大叫之聲。

Shout

Problem Description

The table below shows the correspondence between time complexities and the ranges of input sizes that can reliably be processed within one second.

time complexity	the maximum number of n
$O(n)$	10^7
$O(nlogn)$	10^6
$O(nlog^2n)$	10^5
$O(n^2)$	5000
$O(n^3)$	500

In C/C++, approximately 10^9 operations can be performed in 1 second.

The number of operations in the right column of the table may vary depending on the system and compiler. If the number of operations in the program differs from the value in the right column by less than a factor of 10, the actual running time may still be within an acceptable range. Therefore, even if the calculated total number of operations exceeds 10^9, the program may still pass the test cases.

Here is an example of time complexity.

Given an integer n, output the value of $\displaystyle\sum_{i=1}^{n}\sum_{j=1}^{n} i * j$

Input constraints: $n \leq 5000$, time limit: 1 second

```c
#include <stdio.h>
int main() {
    int n;
    scanf("%d", &n);
    long long sum = 0;
    for (int i = 1; i <= n; i++)
        for (int j = 1; j <= n; j++)
            sum += 1ll * i * j;
    printf("%lld", sum);
}
```

The above code has a time complexity of $O(n^2)$. Since $5000 \times 5000 = 2.5 \times 10^7 < 10^9$, by calculation, we can see that for n up to 5000, the program can finish within 1 second and pass this case.

This example is surely simple for those who have taken programming design, and I believe you can also complete the upcoming challenge.

The following is the actual problem statement:

The NCKU CSIE Camp is a great high-school camp. Daytime is packed with programming challenges and brain-teasing classes, and in the evenings there are various activities so everyone can get to know each other. During this short but intense time they wrote stories of youth and made lasting friendships.

On the last day of camp, there will be a team competition called The Voice of Shout. Xiao Gao has run into a problem and hopes that you, with your cleverness, can help solve it.

In The Voice of Shout, each participating team takes turns going on stage to shout, and Xiao Gao will score them. But winning isn't as simple as being the loudest. Shouting is not just about using your throat to make noise—it's a release of the soul, a surge of emotion. A true roar must pierce through the chest, shake the heartstrings, and make even the air tremble.

Many people think shouting is just going "Ahhh—", but that's wrong! That's nothing more than decibels. A real shout must carry a story. You need emotion! You must transform long-suppressed resentment, hatred for mosquitoes, fury at people who put taro in hotpot, and the despair of failing to get into the classes you want—all into one earth-shattering roar!

Shouting is not only about volume. It's about whose life is harsher, whose grievances are heavier, and who can roar straight into the audience's hearts. That person will be the true King of Shouting!

To be fair, **all participating teams must have the same number of members**.

There are N squads in the camp; the i-th squad has a_i members.

Each squad may be split into several participating teams, and every participating team must consist of members from the same squad. Some squad members may be left out if there are not enough people to form another participating team.

Because Xiao Gao is worried the event will take too long, each participating team must have at least K members, i.e. every participating team must have the same size and that size must be $\geq K$.

Please decide the size of the participating teams so that the total number of

squad members who can participate in The Voice of the Shout is maximized, and report that maximum number of participants.

If the statement is unclear, refer to the sample tests.

Input Format

The first line contains two positive integers N, K.

The second line contains N non-negative integers a_i.

Their meanings are as described in the problem statement.

Output Format

Output an integer representing the maximum number of participants in The Voice of the Shout.

Constraints

- $1 \leq N, K \leq 10^6$
- $0 \leq a_i \leq 10^6$

Example Test Case

Sample Input 1

```
5 1
1 2 3 4 5
```

Sample Output 1

```
15
```

Explanation of Sample 1

Each participating team should have 1 person. Each squad will have 1, 2, 3, 4, and 5 members joining The Voice of the Shout, respectively.

Sample Input 2

```
4 2
3 6 10 15
```

Sample Output 2

```
33
```

Explanation of Sample 2

Each participating team should have 3 members. Each squad will have 3, 6, 9, and 15

members members joining The Voice of the Shout, respectively.

Sample Input 3

```
4 4
3 6 10 15
```

Sample Output 3

```
30
```

Explanation of Sample 3

Each participating team should have 5 members. The squads will have 0, 5, 10, and 15 members members joining The Voice of the Shout, respectively.