Maximum Subarray Sum

We define the following:

- A *subarray* of array a of length n is a contiguous segment from $a[i]$ through $a[j]$ where $0 \leq i \leq j < n$.

- The *sum* of an array is the sum of its elements.

Given an n element array of integers, a, and an integer, m, determine the maximum value of the sum of any of its subarrays modulo m.

Example

$a = [1, 2, 3]$

$m = 2$

The following table lists all subarrays and their moduli:

```
                sum       %2
    [1]          1         1
    [2]          2         0
    [3]          3         1
    [1,2]        3         1
    [2,3]        5         1
    [1,2,3]      6         0
```

The maximum modulus is 1.

Function Description

Complete the *maximumSum* function in the editor below.

maximumSum has the following parameter(s):

- *long a[n]:* the array to analyze

- *long m:* the modulo divisor

Returns

- *long:* the maximum (subarray sum modulo m)

Input Format

The first line contains an integer q, the number of queries to perform.

The next q pairs of lines are as follows:

- The first line contains two space-separated integers n and (long)m, the length of a and the modulo divisor.

- The second line contains n space-separated long integers $a[i]$.

Constraints

- $2 \le n \le 10^5$

- $1 \le m \le 10^{14}$

- $1 \le a[i] \le 10^{18}$

- $2 \le$ the sum of n over all test cases $\le 5 \times 10^5$

Sample Input

```
STDIN       Function
-----       --------
1           q = 1
5 7         a[] size n = 5, m = 7
3 3 9 9 5
```

Sample Output

```
6
```

Explanation

The subarrays of array $a = [3, 3, 9, 9, 5]$ and their respective sums modulo $m = 7$ are ranked in order of length and sum in the following list:

1. $[9] \Rightarrow 9 \% 7 = 2$ and $[9] \rightarrow 9 \% 7 = 2$
   $[3] \Rightarrow 3 \% 7 = 3$ and $[3] \rightarrow 3 \% 7 = 3$
   $[5] \Rightarrow 5 \% 7 = 5$

2. $[9, 5] \Rightarrow 14 \% 7 = 0$
   $[9, 9] \Rightarrow 18 \% 7 = 4$
   $[3, 9] \Rightarrow 12 \% 7 = 5$
   $[3, 3] \Rightarrow 6 \% 7 = 6$

3. $[3, 9, 9] \Rightarrow 21 \% 7 = 0$
   $[3, 3, 9] \Rightarrow 15 \% 7 = 1$
   $[9, 9, 5] \Rightarrow 23 \% 7 = 2$

4. $[3, 3, 9, 9] \Rightarrow 24 \% 7 = 3$
   $[3, 9, 9, 5] \Rightarrow 26 \% 7 = 5$

5. $[3, 3, 9, 9, 5] \Rightarrow 29 \% 7 = 1$

The maximum value for *subarray sum $\% \, 7$* for any subarray is 6.