Focus on Recovery

Time Limit: 1 seconds

Memory: 64 Megabytes

Consider N cities located on a circle, which are labeled clockwise by 0, 1, …, and N–1. For each city i in {0, 1, 2, …, N – 1}, there is a bidirectional link that connects city i and city (i + 1) mod N.

As an earthquake occurs, all the N cities have been destroyed. On each day i of the following Q days, a city Ci will send a team to recover a city. Given the first city $C1$, each Ci with $2 \leq i \leq Q$ is determined recursively as follows:

$$Ci = [(Ci-1 + 6655) \times 1551] \bmod N \ (2 \leq i \leq Q)$$

On each day i with $i = 1,2,\ldots,Q$, city Ci will send its team to the first unrecovered city (denoted by Ui) in the clockwise direction from city Ci (including Ci). The team will recover city Ui, and then use $Coni$ to denote the number of cities that are connected to city Ui. Here, we define that two cities A and B are connected, if A and B are equal, or city A can be reached from city B by passing through links that connect only recovered cities.

After Q days, it is time for the cities to investigate the status of their recovery, which is measured by $\sum_{i=1}^{Q} Coni$.

Input

In the first line, a number $\boldsymbol{T}$ ($\boldsymbol{T} \leq \mathbf{10}$) is given, indicating the number of cases. For each case, three integers $\boldsymbol{N},\boldsymbol{Q},\boldsymbol{C1}$ ($\mathbf{2} \leq \boldsymbol{N} \leq \mathbf{3000000}$; $\mathbf{1} \leq \boldsymbol{Q} < \boldsymbol{N}$; $\mathbf{0} \leq \boldsymbol{C1} < \boldsymbol{N}$) are given, indicating the number of cities, the number of days for recovery, and the index of the city which send a team on the first day.

Output

For each case, output one line of an integer that represents the value of $\sum_{i=1}^{Q} Coni$

Standard Input	Standard Output
2 6 4 0 11 8 3	6 34