

Polynomial Convolution

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

Given two arrays $a_0, a_1, \dots, a_{n-1}$ and $b_0, b_1, \dots, b_{m-1}$, and an integer k , where $k < n + m - 1$. Find the coefficient of x^k in the expansion of

$$(a_0 + a_1x + a_2x^2 + \dots + a_{n-1}x^{n-1})(b_0 + b_1x + b_2x^2 + \dots + b_{m-1}x^{m-1})$$

Input

The first line of input contains an integer t ($1 \leq t \leq 10^4$), the number of test cases.

The first line of each test case contains three integers n, m, k , ($1 \leq n, m \leq 10^5$, $0 \leq k < n + m - 1$)

The second line of each test case contains n integers $a_0, a_1, \dots, a_{n-1}$ ($1 \leq a_i \leq 100$).

The third line of each test case contains m integers $b_0, b_1, \dots, b_{m-1}$ ($1 \leq b_i \leq 100$).

The sum of $n + m$ over all test cases doesn't exceed 10^6 .

Output

For each test case output one line containing one integer, the coefficient of x^k , as described in the problem.

Scoring

Group 1: (30 points)

$1 \leq n, m \leq 1000$, the sum of $n + m$ over all test cases doesn't exceed 2000.

Group 2: (70 points)

No additional constraints.

Example

standard input	standard output
3	2
2 2 1	43
1 1	31
1 1	
3 4 2	
2 5 7	
3 4 1 3	
5 5 5	
2 1 3 4 2	
3 2 4 2 5	

Note

In the first test case, we note that the two given arrays correspond to the multiplication

$$(1 + x)(1 + x) = (1 + x)^2 = 1 + 2x + x^2$$

and since $k = 1$, the coefficient of x^k is the coefficient of x which is 2.

In the second test case, the two given arrays correspond to the multiplication

$$(2 + 5x + 7x^2)(3 + 4x + x^2 + 3x^3) = 6 + 23x + 43x^2 + 39x^3 + 22x^4 + 21x^5$$

and the coefficient of x^2 is 43.