

Art of Multiplication

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 mebibytes

Let x be an integer represented by n identical digits a in base r . Also, let y be an integer whose representation consists of m digits b in base r .

Find the sum of the digits of the number $z = x \cdot y$ represented in base r , and also output this sum of digits in base r .

Input

The first line contains a single integer t ($1 \leq t \leq 10\,000$): the number of test cases. The description of the test cases follows.

Each test case consists of a single line containing five integers n, m, a, b, r ($n, m \geq 1, n + m \leq 10^{18}, 1 \leq a, b < r \leq 10$).

Output

For each test case, output a single integer on a separate line: the answer to the problem in base r .

Example

standard input	standard output
5	27
2 3 6 6 10	84
6 11 7 7 10	204
20 25 2 6 10	100101
13 37 1 1 2	71
57 1 4 2 8	

Note

In the first test case, we have $x = 66_{10}, y = 666_{10}, z = 43\,956_{10}$. The sum of the digits of z is 27_{10} .

In the fourth test case, the sum of the digits of z in binary representation is $37_{10} = 100101_2$.