Sum of GCD

Given "n" positive integers, you have to find the summation of GCD (greatest common divisor) of every possible pair of these integers.

Input

The first line of the input contains an integer **T** denoting the number of test cases. The description of **T** test cases follows. Each test case, described in a single line, contains "n+1" space-separated integers: The first one is the number "n" ($1 < n < 100$) indicating the number of input integers, the remaining ones includes "n" positive integers. Note that each input integer do not exceed 10^6.

Output

For each test case, output the sum of the GCDs of every possible pair.

Example

Input:
3
4 10 20 30 40
3 7 5 12
3 125 15 25

Output:
70
3
35