John and GCD list

John is new to Mathematics and does not know how to calculate GCD of numbers. So he wants you to help him in a few GCD calculations. John has a list *A* of numbers, indexed *1* to *N*. He wants to create another list B having *N+1* numbers, indexed from *1* to *N+1*, and having the following property:

GCD(B[i], B[i+1]) = A[i], ∀ 1 ≤ i ≤ N

As there can be many such lists, John wants to know the list *B* in which sum of all elements is minimum. It is guaranteed that such a list will always exist.

Input Format
The first line contains an integer *T*, i.e., the number of the test cases. *T* testcases follow.
The first line of each test case contains an integer *N*, i.e., the number of elements in the array.
The second line of each test case contains *N* space separated integers that denote the elements of the list *A*.

Output Format
For each test case, print in a new line the list *B* such that each element is separated by a single space.

Constraints
$1 \leq T \leq 10$
$2 \leq N \leq 10^3$
$1 \leq A[i] \leq 10^4$
$1 \leq B[i]$

Sample Input

```
2
3
1 2 3
3
5 10 5
```

Sample Output

```
1 2 6 3
5 10 10 5
```

Explanation

For the first testcase,

```
GCD(1,2) = 1
GCD(2,6) = 2
GCD(6,3) = 3
sum = 1+2+6+3 = 12 which is minimum among all possible list B
```

For the second testcase,

```
GCD(5, 10) = 5
GCD(10, 10) = 10
GCD(10, 5) = 5
sum = 5 + 10 + 10 + 5 = 30 which is the minimum among all possible list B
```