Problem A

Testing 1 2 3

Problem ID: testing

Time Limit: 1 second

"Testing, testing... 1, 2, 3. Is this thing on?"

Input

Input consists of a single integer $1 \leq a \leq 9$.

Output

Output a single line containing the text `Testing` followed by a count up to a. See the sample input and output for clarification. There should be exactly one space before each number. Do not print a space after the last number.

Sample Input	Sample Output
5	Testing 1 2 3 4 5

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Problem B
Factor This!
Problem ID: factor
Time Limit: 3 seconds

People say factoring numbers is hard, and that is why we can trust that certain encryption schemes like RSA and Diffie-Hellman are secure.

I don't know about that. I think factoring is pretty easy. It even made it into the warmup contest!

Input

The first line of input contains a single positive integer $T \leq 100$, denoting the number of test cases. Then, each test case is given on a single line and contains a single integer n. You may be sure that $2 \leq n \leq 100$.

Output

For each test case, output the prime factorization of n on a line. That is, list all primes that divide n and list each one as many times as it divides n. They should be listed in increasing order and consecutive primes should be separated by a space. Do not print a space after the last prime.

Sample Input	Sample Output
3 54 70 7	2 3 3 3 2 5 7 7

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Problem C
Coughing
Problem ID: coughing
Time Limit: 3 seconds

A terrible cold is going around. It is so bad that you are concerned about bronchitis, pneumonia, croup, or some other nasty condition. Like many others, you go to see a doctor.

The sudden rush creates a long lineup at the triage station. Some people in the lineup are there for other reasons and do not want to get sick. So the nurse tells everyone to stand further apart to help ensure the cough does not spread. Everyone should stand at least d cm apart.

The people in the lineup can be viewed as points on the real line. Each person needs to move to some location (or, perhaps, stay still) so that there are at least d cm between people/points.

This should be done as quickly as possible. So, what is the minimum x such that there is a way for each person to move at most x cm to ensure there are at least d cm between any two people? People can move forward or backward to do this, but (of course) nobody can move past the triage station at location 0 on the real line. There should also be d cm between the first person in the line and the triage station (the nurses want to minimize their exposure time).

Input

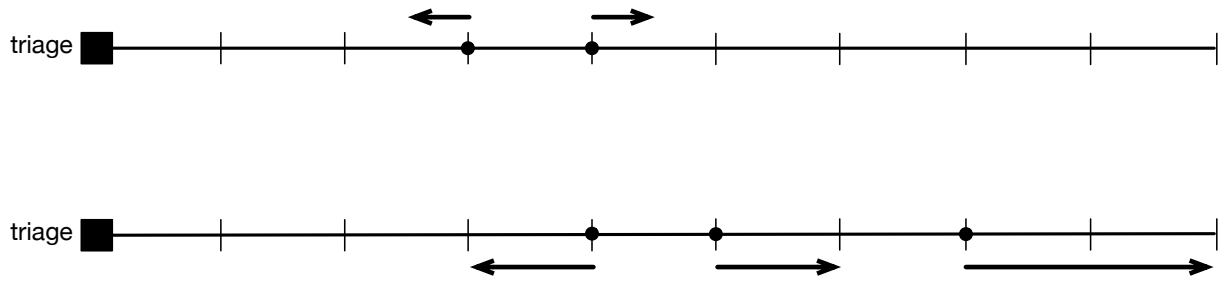
The input consists of two lines. The first line contains two integers n, d where $2 \leq n \leq 100$ and $0 \leq d \leq 1000$. The second line contains n integers $0 < p_1 < p_2 < \ldots < p_n \leq 10^6$.

Output

Output consists of a single value rounded to precisely 1 decimal place. This should be the minimum $x \geq 0$ such that it is possible to move each point p_i at most x cm so there are at least d cm between any two points, and also at least d cm between the triage station and any person.

Illustration of Some Sample Inputs

Sample cases #2 and #3 below are illustrated in the figure. The arrow depicts how the points can move in a way to minimize the maximum distanced travelled by some point.



Sample Input	Sample Output
4 5 1 3 4 7	13.0

Sample Input	Sample Output
2 2 3 4	0.5

Sample Input	Sample Output
3 3 4 5 7	2.0

Sample Input	Sample Output
5 0 1 2 3 4 5	0.0