

Help Feluda with mathematical equations

Feluda likes numbers very much but hates prime numbers too much. For a fixed n , you gave Feluda equation $x^2 + y^2 + n = (x + y)^2$. Now you only want positive integral solution of x and y . Feluda being an intelligent person gave you all the pairs of (x, y) but he missed the pairs which had x as a prime number.

For all the solution that Feluda gave you, we want you to just print those values in the following format: first print the number of such x 's, then the possible values x sorted in increasing order in a line separated by single space. If no such numbers exist, then print a 0 in the line.

Input

T : number of test cases ($T \leq 100$)

For next T lines each line contain n ($n \leq 10^{12}$)

Output

For every test case print as stated in the problem statement.

Example

Input:

3

4

24

100

Output:

1 1

4 1 4 6 12

4 1 10 25 50