# 1220 – Mysterious Bacteria

Dr. Mob has just discovered a Deathly Bacteria. He named it RC-01. RC-01 has a very strange reproduction system. RC-01 lives exactly **x** days. Now RC-01 produces exactly **p** new deadly Bacteria where $x = b^p$ (where **b, p** are integers). More generally, **x** is a perfect $p^{th}$ power. Given the lifetime **x** of a mother RC-01 you are to determine the maximum number of new RC-01 which can be produced by the mother RC-01.

## Input

Input starts with an integer **T (≤ 50)**, denoting the number of test cases.

Each case starts with a line containing an integer **x**. You can assume that **x** will have magnitude at least 2 and be within the range of a 32 bit signed integer.

## Output

For each case, print the case number and the largest integer **p** such that **x** is a perfect $p^{th}$ power.

| Sample Input | Output for Sample Input |
|---|---|
| 3<br>17<br>1073741824<br>25 | Case 1: 1<br>Case 2: 30<br>Case 3: 2 |