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 $\mathbf{x = b^p}$ (where **b, p** are integers). More generally, **x** is a perfect $\mathbf{p^{th}}$ 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 $\mathbf{p^{th}}$ power.

Sample Input	Output for Sample Input
3 17 1073741824 25	Case 1: 1 Case 2: 30 Case 3: 2