

Equation

Let us define $f(x) = 3x^2 + 2x + 7$.

You are given an integer P . You have to find the smallest positive integer of x such that $f(x) \geq P$.

Input

Input starts with an integer T (≤ 100), denoting the number of test cases.

Each case contains an integer P ($1 \leq P \leq 10^{10}$).

Output

For each test case, print the case number and the required answer.

Sample Input

2

92

91

Output for Sample Input

Case 1: 5

Case 2: 5

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