Statement problem 23

Bugland has a mixed population: bugs with 2 antennas and bugs with 3 antennas.

Clearly, the bugs with 2 antennas count in base 2 (they also consider that there are 10 types of bugs in Bugland), and the bugs with 3 antennas count in base 3.

A number is considered improper if the sum of the digits is different in the eyes of the two species of bugs. In other words, a number is considered improper if the sum of the digits of the number written in base 2 is not the same as the sum of the digits of the number written in base 3.

In order to promote the equality of the two species of bugs, improper numbers are forbidden.

Considering that the bugs know how to count only from 1 to N, how many allowed numbers exist?

Input

From *stdin* you will read on the first line the number T of scenarios.

The next line contains T numbers, each representing N, the highest number the bugs know to count to. Please note that the bugs only know positive integer numbers.

Output

In *stdout* you will write T numbers on one single line, separated by spaces, the ith number representing the answer to the ith scenario.

Restrictions

- $1 \le T \le 1000$

- $1 \le N_i \le 10^7$

- For tests worth 20 points: $1 \le \sum_{i=0}^{T} N_i \le 10^6$

- For other tests worth 30 points: $1 \le N_i \le 10^6$

Example

stdin	stdout
10 1 2 3 4 5 6 7 8 9 10	1 1 1 1 1 2 3 3 3 4

Explanation

The numbers from 1 to 10 are written in base 2 and base 3 like so:

base 10	base 2	base 3	the sum in base 2	the sum in base 3
1	1	1	1	1
2	10	2	1	2
3	11	10	2	1
4	100	11	1	2
5	101	12	2	3
6	110	20	2	2
7	111	21	3	3
8	1000	22	1	4
9	1001	100	2	1
10	1010	101	2	2

Therefore, the only allowed numbers are: $1, 6, 7, 10$.