Ordering Food

Input file: standard input
Output file: standard output
Time limit: 1.32 second
Memory limit: 524 megabytes

Navdha has come to like the newly opened Kode Chef, a lot. She eats there daily and the vendor has created a special menu for her. There are a total of 12 items on the menu and the price of i^{th} is 2^{i-1}. She doesn't like to eat a lot. Given a price you need to determine the minimum number of dishes she has to order to get an amount exactly equal to that price.

Input

The first line contains an integer *'T'*, the number of test cases. (1<=T<=5)
For each test case contains an integer p. (1<=p<=10^5)

Output

For each test case print the minimum number of dishes that Navdha has to order for her bill to be equal to 'p'.

Example

standard input	standard output
4 10 256 255 4096	2 1 8 2

Explanation

In the first sample, examples of the orders whose total price is 10 are the following:
1+1+1+1+1+1+1+1+1+1 = 10 (10 dishes)
1+1+1+1+1+1+1+1+2 = 10 (9 dishes)
2+2+2+2+2 = 10 (5 dishes)
2+4+4 = 10 (3 dishes)
2+8 = 10 (2 dishes)
Here the minimum number of dishes is 2.
In the last sample, the optimal way is 2048+2048=4096 (2 dishes). Note that there is no dish whose price is 4096.