Maximum Girth

In graph theory, the **girth** of a graph is the length of a shortest cycle contained in the graph. Can you find the maximum girth a graph with **N**-vertices and (**N+1)** edges could possible have?

Since the answer could be large output the answer modulo 10^9+7.

Input

The first line contains single integer **T** - the number of test cases. Each of the next **T** lines contains a single integer **N**.

Output

For every test case output the maximum girth (modulo 10^9+7) in a seperate line.

Example

Input:

```
3
45
3434
5656565
```

Output:

```
30
2290
3771044
```

Constraints:

1 <= T <= 1000
1 <= N <= 10^18