# Little Gaurav and Sequence

Little Gaurav is very fond of numbers and sequences. One day his teacher tells him to find a strange sequence.

$$S = \sum_{i=0, 2^i \leq n}^{\infty} \sum_{j=0}^{n} 2^{2^i + 2j}$$

Since this sequence looks a bit difficult, the teacher tells him to find the last digit of $S$.

Little Gaurav is confused because he cannot solve the problem and leaves this problem to the worthy programmers of the world. Help little Gaurav in finding the solution.

### Input Format
The first line contains $T$, the number of test cases.
$T$ lines follow, each line containing an integer, $N$.

### Output Format
For each testcase, print the last digit of $S$ in one line.

### Constraints
$1 \leq T \leq 1000$
$1 \leq N \leq 10^{15}$

### Sample Input

```
3
1
2
3
```

### Sample Output

```
0
6
0
```

### Explanation

For n=1, only i=0 is valid. So S is $2^{2^0 + 0} + 2^{2^0 + 2} = 10$. Hence last digit of S is 0.
For n=2, only i=0 and 1 are valid. So S is
S1(for i=0) is $2^{2^0 + 0} + 2^{2^0 + 2} + 2^{2^0 + 4} = 42$.
S2(for i=1) is $2^{2^1 + 0} + 2^{2^1 + 2} + 2^{2^1 + 4} = 84$.
So last digit of S is 6.