Problem D – Dueling Digits

In the land of Numeria, two friends, Alice and Bob, are fascinated by numbers. Recently, they discovered a curious property about certain pairs of numbers and decided to explore it further. They are interested in finding pairs of numbers with the following properties:

1. Both numbers have N digits.
2. The sum of the digits of Alice's number is equal to the sum of the digits of Bob's number.
3. For any digit position i, the i-th digit of Alice's number is different from the i-th digit of Bob's number.
4. Both numbers cannot start with the digit zero.

You have Q queries, and for each query, you need to determine how many pairs of numbers exist that satisfy these conditions for a given number length N.

Input

The first line contains an integer Q ($1 \leq Q \leq 800$), the number of queries.

Each of the next Q lines contains a single integer N ($1 \leq N \leq 800$), representing the length of the numbers.

Output

For each query, print a single integer representing the number of valid pairs of numbers that satisfy the conditions for the given length N, because this number can be very large print it modulo $10^9 + 7$.

Sample input 1	**Sample output 1**
1 2	480

Sample input 2	**Sample output 2**
2 3 4	30612 2437704