Power Calculation

Help Shashank in calculating the value of S, which is given as follows. Since the value of S can be very large, he only wants the last 2 digits of S.

$$S = 1^N + 2^N + 3^N + \cdots + K^N$$

Input Format

The first line contains an integer T i.e. number of the test cases.
The next T lines will each contain a pair of integers, i.e. K and N.

Output Format

Print the last two digits of S for each test case in separate lines.

Constraints

$1 \leq T \leq 10^4$
$2 \leq K \leq 10^{16}$
$2 \leq N \leq 10^{16}$

Sample Input#00

```
3
2 2
2 3
3 3
```

Sample Output#00

```
05
09
36
```

Sample Input#01

```
3
5 2
3 4
3 3
```

Sample Output#01

```
55
98
36
```

Explanation

For the first test case, $1^2 + 2^2 + 3^2 + 4^2 + 5^2 = 55$