## The last digit

Nestor was doing the work of his math class about three days but he is tired of make operations a lot and he should deliver his task tomorrow. His math's teacher gives him two numbers $a$ and $b$. The problem consist of finding the last digit of the potency of base a and index b. Help Nestor with his problem. You are given two integer numbers: the base $a(0<=a<=20)$ and the index $b$ ( $0<=\mathrm{b}<=2,147,483,000$ ), $a$ and $b$ both are not 0 . You have to find the last digit of $a^{b}$.

## Input

The first line of input contains an integer $t$, the number of test cases ( $t<=30$ ). $t$ test cases follow. For each test case will appear $a$ and $b$ separated by space.

## Output

For each test case output an integer per line representing the result.

## Example

Input:
2
310
62
Output:
9
6

