Binary numbers and their pattern of bits are always very interesting to computer programmers. In this problem you need to count the number of positive binary numbers that have the following properties:

- The numbers are exactly N bits wide and they have no leading zeros.

- The frequency of zeros and ones are equal.

- The numbers are multiples of K.

Input

The input file contains several test cases. The first line of the input gives you the number of test cases, T ($1 \leq T \leq 100$). Then T test cases will follow, each in one line. The input for each test case consists of two integers, N ($1 \leq N \leq 64$) and K ($0 \leq K \leq 100$).

Output

For each set of input print the test case number first. Then print the number of binary numbers that have the property that we mentioned.

Illustration: Here's a table showing the possible numbers for some of the sample test cases:

6 3	6 4	6 2
101010	111000	111000
	110100	110100
	101100	101100
		110010
		101010
		100110

Sample Input

```
5
6 3
6 4
6 2
26 3
64 2
```

Sample Output

```
Case 1: 1
Case 2: 3
Case 3: 6
Case 4: 1662453
Case 5: 465428353255261088
```