Particular Palindromes

A palindromic decimal integer reads the same forward and backward. For example, the following numbers are palindromic.

6, 55, 282, 5005, 78187, 904409, 3160613, 11111111

Palindromic integers are plentiful. In fact, any integer not divisible by 10 has an infinite number of multiples that are palindromic. (The standard representation of a nonzero multiple of 10 cannot be palindromic since its reversal would have a leading 0.)

Write a program to determine, for a given positive integer, how many of its positive multiples are palindromes of a given length.

Input

The first line of the input will specify an integer n indicating the number of problem instances to follow, one to a line. Each of the ensuing n lines will specify a pair of positive integers m, s separated by a single space, with 1 < m < 1000, s < 20. (For m, s in this range, there are fewer than 2^32 palindromes among the s-digit multiples of m.) Each line will terminate with an end-of-line.

Output

The output should indicate for each m, s, exactly how many s-digit positive palindromes are divisible by m, with one problem instance per line.

Example

Input:
```
5
3 1
25 3
12 4
30 3
81 6
```

Output:
```
3
2
7
0
0
```

Explanation: There are three positive 1-digit multiples of 3, namely, 3, 6, and 9; all 1-digit numbers are trivially palindromes. Among the 3-digit palindromes, 525 and 575 are multiples of 25. The 4-digit multiples of 12 that are palindromes are 2112, 2772, 4224, 4884, 6336, 6996, 8448. There are no positive palindromic numbers ending in 0 (since we do not allow leading 0's). No 6-digit palindromes are divisible by 81.