

6383 Sum of divisors

mmm is learning division, she's so proud of herself that she can figure out the sum of all the divisors of numbers no larger than 100 within one day!

But her teacher said "What if I ask you to give not only the sum but the square-sums of all the divisors of numbers within hexadecimal number 100?" mmm get stuck and she's asking for your help.

Attention, because mmm has misunderstood teacher's words, you have to solve a problem that is a little bit different.

Here's the problem, given n , you are to calculate the square sums of the digits of all the divisors of n , under the base m .

Input

Multiple test cases, each test cases is one line with two integers.

n and m . (n , m would be given in 10-based)

$1 \leq n \leq 10^9$

$2 \leq m \leq 16$

There are less than 10 test cases.

Output

Output the answer base m .

Hint: Use A, B, C ... for 10, 11, 12 ...

Test case 1: divisors are 1, 2, 5, 10 which means 1, 10, 101, 1010 under base 2, the square sum of digits is $1^2 + (1^2 + 0^2) + (1^2 + 0^2 + 1^2) + \dots = 6 = 110$ under base 2.

Sample Input

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10 2
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30 5
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Sample Output

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110
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112
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