**Problem E. Rational Numbers**

It is well known that *rational number* is any number expressed as a fraction of the type , where and are integers and . If we convert the fraction into a decimal fraction, it will have finite or infinite number of decimal digits after the decimal comma (it is the decimal mark here). When the number of digits is:

* ***finite***, we can consider that the digits of the decimal fraction are followed by infinite number of zeros – for example: 4/2= 2= 2,000... , 9/8= 1,125= 1,1250000... , 3/120= 0,025= 0,025000...;
* ***infinite***, a certain finite sequence of digits called a ***period***, is repeated infinitely – for example: 2/3= 0,666… , 7/12= 0,583333… , 8/11= 0,727272… , 22/7= 3,14285714285714…, 1383/11000= 0,125727272… and so on.

Write a program **RatNum** that works as follows: for given integers and it computes the length of the period of the decimal fraction, corresponding to and also the -th digit of this fraction after the decimal comma. If the decimal fraction is a finite one, we consider that the length of its period is equal to 0. The program should perform several tests.

**Input.** The number of the test examples is obtained from the first row of the standard input. Each of the next rows contains 3 numbers: and , separated by space. They are the input data for the consecutive test.

**Output.** On the standard output, the program should write two numbers for each test. The first one should be the computed length of the period and the second one – the -th digit of the decimal fraction, both separated by space. The output data should be written in a new row for each example.

**Restrictions:** , .

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| ***Sample Input*** | ***Sample Output*** |
| 4  1 4 2  6 3 5  8 15 100  22 7 11 | 0 5  0 0  1 3  6 5 |