POCKET ENIGMA

This problem is based on the POCKET ENIGMA, a toy that is functionally equivalent to primitive military ciphering machines. The Pocket Enigma consists of a fixed outer circular disk, marked with the alphabet in clockwise order, and a replaceable inner rotor with 13 wires that pair up the letters for encryption/decryption.

The outer disk and two examples of inner rotors are shown on the reverse. The device is shown here with Rotor I in successive positions (see arrow) D, E.

The disk moves one notch clockwise before encrypting each letter of plaintext. Thus, with Rotor I starting in position D, “CIS” is encrypted to “APO”.

In this problem, you are given a ciphertext (encrypted message) that used an unknown rotor but are in possession of a “crib” (a segment of the source plaintext). Your job is to determine where the crib appeared in the plaintext.

The first line of the input specifies the number \( n \) of ciphertexts to follow. Each of the following \( n \) lines consists of two strings of capital letters, of maximum lengths 50 and 10, respectively, separated by a single space:

**CIPHERTEXT CRIB**

The \( n \) ciphertexts would all have been created with different inner rotors, and *not those shown on the reverse*. For each input, output the number \( m \) if the crib starts at the \( m \)th character, There will be always be just one feasible position.

*(Sample I/O on reverse)*
The outer disk and two possible rotors for the Pocket Enigma