Problem E. Euclidean Nim

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

Euclid and Pythagoras are pseudonyms of two Byteotians for their love of mathematical puzzles. Lately, they spend evenings playing the following game. There is a stack of n stones on the table. Friends perform alternating moves. Euclid's move consists of taking any positive multiple of p stones from the stack (providing the stack contains at least p stones) or adding exactly p stones to the stack—adding the stones is possible, however, only in case the stack contains less than p stones. Pythagoras' move is analogical, except that either he takes a multiple of q stones, or adds exactly q stones. The winner is the player who empties the stack. Euclid begins the game.

Friends wonder whether they have worked out this game perfectly. Help them and write a program that will state what should be the result of the game, providing both players are making optimal moves.

Input

The first line of input contains one integer t ($1 \le t \le 1000$) denoting the number of test cases described in the following part of the input. Description of one test case consists of one line containing three integers p, q and n ($1 \le p, q, n \le 10^9$).

Output

Output should include exactly t lines containing answers to the subsequent test cases from input. The answer should be one letter '`E`' (if Euclid could bring about his victory, regardless of the Pythagoras' movements), '`P`' (if Pythagoras could bring about his victory, regardless of Euclid's moves) or '`R`' (for *remis*, i.e. *draw* in Polish, if the game will be played infinitely).

Examples

standard input	standard output
4 3 2 1 2 3 1 3 4 5 2 4 3	P P E R

Note

In the game from the first test case Euclid must add three stones to the stack in his move. Thanks to that Pythagoras can collect all 4 stones in his move and thus win.