

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 ($1 \leq t \leq 1000$) 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 ($1 \leq p, q, n \leq 10^9$).

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	P
3 2 1	P
2 3 1	E
3 4 5	R
2 4 3	

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.