

Problem Description

Alexander The great, while roaming the stretch of Turkey, came across a wise man. He asked the wise man, "Who is the greatest conqueror of all?". The wise man replied, "A person with great strength and intelligence. Whosoever can solve my puzzle will go on to become the greatest!". The puzzle is as follows; Given two integers 'n1' and 'n2', select two integers 'a' and 'b', such as to solve the equation $(n1 * a + n2 * b = x)$. But there is a catch, 'x' is the smallest positive integer which satisfies the equation. Can you help Alexander become the greatest?

Constraints

$$1 \leq T \leq 1000$$

$$-10^7 \leq a, b \leq 10^7$$

$$0 \leq n1, n2 \leq 10^7$$

Input Format

The first line contains the number of Test cases T.

Next T lines contains two space-separated integers, n1 and n2.

Output

Print the value of x.

Test Case Explanation

Example 1

Input

1

34818 45632

Output

2

Explanation:

Given $n1 = 34818$ and $n2 = 45632$, if we choose $a = 3553$ and $b = -2711$, we get

$$\Rightarrow n_1 * a + n_2 * b = x$$

$$\Rightarrow 34818 * 3553 + 45632 * (-2711)$$

$$\Rightarrow 2$$

Note: No other value of a and b, within the range, will give smaller value than 2.

deepspiral