**Get AC in one go**Problem Code: **COPR16G**

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The easiest problem of the lot !  
  
You are provided with coins of denominations **"a"** and **"b"**. You are required to find the least value of **n**, such that all currency values **greater than or equal to n** can be made using any number of coins of denomination "a" and "b" and in any order. If no such number exists, print "-1" in that case.

**Input Constraints:**

* 1 <= t <= 106
* 1 <= a <= 109
* 1 <= b <= 109

**Input Format:**

The first line contains **t**, the number of test cases.  
  
Each of the next **t** lines contains 2 integers **a & b**, as specified in the question.

**Output Format:**

For each test case, print the required answer

**Example**

**Input:**

1

4 7

6 1

2 4

**Output:**

18

0

-1

**NOTE:**Prefer fast input/output methods

All submissions for this problem are available.

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Editorial:<https://discuss.codechef.com/problems/COPR16G>

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Time Limit:1 secs

Source Limit:50000 Bytes

Languages:CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY, PYP3, TEXT, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, kotlin, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D, R, CAML, rust, ASM, FORT, FS, LISP clisp, swift, SCM guile, PERL6, CLPS, WSPC, ERL, ICK, NICE, PRLG, ICON, PIKE, COB, SCM chicken, SCM qobi, ST, NEM

/\*\*\*\*\*\*SHOW US THE BEST YOU CAN DO\*\*\*\*\*\*/

#include<bits/stdc++.h>

using namespace std;

#define ll long long int

ll gcd(ll a, ll b){return b?gcd(b,a%b):a;}

ll lcm(ll a, ll b){return a \* b / gcd(a, b);}

int main(){

//freopen("output.in","r",stdin);

//freopen("output.txt","w",stdout);

int tc;

scanf("%d", &tc);

while(tc--){

ll a, b;

scanf("%lld%lld", &a, &b);

ll g = gcd(a, b);

if(g != 1)printf("%d\n", -1);

else

printf("%lld\n", a \* b - a - b + 1);

}

return 0;

}

EDITORIAL:

### PREREQUISITES:

Diophantine Equations, GCD

### PROBLEM:

You are provided with coins of denominations **a** and **b**.

You are required to find the least value of n, such that all currency values greater than or equal to n can be made using any number of coins of denomination **a** and **b** and in any order. If no such number exists, print **-1** in that case.

### EXPLANATION:

Let us first write the statement as mathematical equations and then procede furthur.

ax + by = n, where x and y are integers.

and au + bv = n+1, where u and v are integers.

The above equations hold **for all integers >= n, if solution exists**. Let us subtract the 2 equations. We get,

ar + bs = 1, where r and s are integers.

Hence we can easily see that solutions exists **iff gcd(a, b)==1**. (Using the condition for solvability of linear Diophantine equation).

Now we need to find the value of least possible **n**. We can also see the above problem as finding the largest interger which can be expressed as **ax + by** for some integers, x and y. A simple google search could have helped you, hence the name “GET AC IN ONE GO”. The answer is simply **(a.b - a - b)**. You can see a detailed proof [here 372](http://www.artofproblemsolving.com/wiki/index.php/Chicken_McNugget_Theorem).

Hence, the solution is **(a.b - a - b + 1)**, when **gcd(a, b) = 1** else **-1**.

### COMPLEXITY

O(log(max(a, b))) per test case