**106. The equation**

time limit per test: 0.25 sec.  
memory limit per test: 4096 KB

There is an equation ax + by + c = 0. Given a,b,c,x1,x2,y1,y2 you must determine, how many integer roots of this equation are satisfy to the following conditions : x1<=x<=x2,   y1<=y<=y2. Integer root of this equation is a pair of integer numbers (x,y).

Input

Input contains integer numbers a,b,c,x1,x2,y1,y2 delimited by spaces and line breaks. All numbers are not greater than 108 by absolute value.

Output

Write answer to the output.

Sample Input

1 1 -3

0 4

0 4

Sample Output

4

CODE:

#include<bits/stdc++.h>

#define pb push\_back

#define int long long int

#define vec vector<int>

#define REP(i,a,b) for(i=a;i<b;i++)

using namespace std;

int gcd(int a, int b, int& x, int& y) {

if (b == 0) {

x = 1;

y = 0;

return a;

}

int x1, y1;

int d = gcd(b, a % b, x1, y1);

x = y1;

y = x1 - y1 \* (a / b);

return d;

}

bool find\_any\_solution(int a, int b, int c, int &x0, int &y0, int &g) {

g = gcd(abs(a), abs(b), x0, y0);

if (c % g) {

return false;

}

x0 \*= c / g;

y0 \*= c / g;

if (a < 0) x0 = -x0;

if (b < 0) y0 = -y0;

return true;

}

void shift\_solution(int & x, int & y, int a, int b, int cnt) {

x += cnt \* b;

y -= cnt \* a;

}

int find\_all\_solutions(int a, int b, int c, int minx, int maxx, int miny, int maxy) {

int x, y, g;

if (!find\_any\_solution(a, b, c, x, y, g))

return 0;

a /= g;

b /= g;

int sign\_a = a > 0 ? +1 : -1;

int sign\_b = b > 0 ? +1 : -1;

shift\_solution(x, y, a, b, (minx - x) / b);

if (x < minx)

shift\_solution(x, y, a, b, sign\_b);

if (x > maxx)

return 0;

int lx1 = x;

shift\_solution(x, y, a, b, (maxx - x) / b);

if (x > maxx)

shift\_solution(x, y, a, b, -sign\_b);

int rx1 = x;

shift\_solution(x, y, a, b, -(miny - y) / a);

if (y < miny)

shift\_solution(x, y, a, b, -sign\_a);

if (y > maxy)

return 0;

int lx2 = x;

shift\_solution(x, y, a, b, -(maxy - y) / a);

if (y > maxy)

shift\_solution(x, y, a, b, sign\_a);

int rx2 = x;

if (lx2 > rx2)

swap(lx2, rx2);

int lx = max(lx1, lx2);

int rx = min(rx1, rx2);

if (lx > rx)

return 0;

return (rx - lx) / abs(b) + 1;

}

int32\_t main()

{

int t;

cin>>t;

int x=1;

while(t--)

{

int a,b,c,x1,x2,y1,y2;

cin>>a>>b>>c>>x1>>x2>>y1>>y2;

if(a==0 && b==0)

{

if(c!=0)

cout<<"Case "<<x<<": "<<"0\n";

else

cout<<"Case "<<x<<": "<<(x2-x1+1)\*(y2-y1+1);

x++;

continue;

}

if(b==0)

{

if(c%a==0 && c/a>=x1 && c/a<=x2)

cout<<"Case "<<x<<": "<<(y2-y1+1)<<"\n";

else

cout<<"Case "<<x<<": "<<"0\n";

x++;

continue;

}

if(a==0)

{

if(c%b==0 && c/b>=x1 && c/b<=x2)

cout<<"Case "<<x<<": "<<(x2-x1+1)<<"\n";

else

cout<<"Case "<<x<<": "<<"0\n";

x++;

continue;

}

c\*=-1;

cout<<"Case "<<x<<": "<<find\_all\_solutions(a,b,c,x1,x2,y1,y2)<<"\n";

x++;

}

}