

Problem D

Displacing Particles

A square has its vertices at the coordinates $(0, 0)$, $(0, 2^N)$, $(2^N, 2^N)$, $(2^N, 0)$. Each vertex has an attractor. A particle is placed initially at position $(2^{N-1}, 2^{N-1})$. Each attractor can be activated individually, any number of times. When an attractor at position (i, j) is activated, if a particle is at position (p, q) , it will be moved to the midpoint between (i, j) and (p, q) .

Given N and a point (x, y) , calculate the least number of times you have to activate the attractors so that the particle ends up at position (x, y) .

Input

The input consists of a single line containing three integers N , x and y , such that $1 \leq N \leq 20$ and $0 < x, y < 2^N$.

Output

Print a single line, containing the least number of times you have to active the attractors.

Input example 1 1 1 1	Output example 1 0
Input example 2 4 12 4	Output example 2 1
Input example 3 4 3 1	Output example 3 3