

Problem E

Coprime Integers

Given intervals $[a, b]$ and $[c, d]$, count the number of ordered pairs of co-prime integers (x, y) such that $a \leq x \leq b$ and $c \leq y \leq d$. Coprime integers have no common factor greater than 1.

Input

The input consists of a single line of four space-separated integers a, b, c , and d . These integers satisfy the bounds $(1 \leq a \leq b \leq 10^7, 1 \leq c \leq d \leq 10^7)$.

Output

Print a single integer: the number of coprime pairs (x, y) with $a \leq x \leq b, c \leq y \leq d$.

Sample Input 1

1 5 1 5

Sample Output 1

19

Sample Input 2

12 12 1 12

Sample Output 2

4

Sample Input 3

1 100 1 100

Sample Output 3

6087
