TSOC '16 Contest 2 #3 - Lu Han and Birthday

Time limit: 1.0s **Memory limit:** 512M

Lu Han, EXO member and K-pop idol wakes up to find that it's his birthday, April 20! Following his birthday tradition, he starts to reread his favourite book.

> ## *Problems bobhob314 Failed*
> ### Author: Scoop God, God of Scooping
>
> **Chapter 1:** ***Problems He Didn't Even Read and Just Skipped Instead***
>
> Given integers A, B, C and D, determine the sum, for all primes p such that $A \leq p \leq B$, of the sum of every multiple m of each prime, such that $C \leq m \leq D$. That is, you are taking a sum of sums, and each sum is of a prime's multiples. The only line of input will contain four space-separated integers A, B, C, D as described. Print the required sum as output. **Reason for failing:** Wasn't sure whether or not to modulo the final answer. Please do not perform as he/she did, and instead, please modulo the answer by $2\,016\,420$.

Lu Han ~~Solo~~ now continues his birthday tradition by copying code, in the spirit of **bobhob314** himself. Helpfully submit your code to him via this problem, and you will be rewarded with some points!

Constraints

$2 \leq A < B \leq 10^9$

$B - A \leq 10^5$

$2 \leq C < D \leq 10^9$

Subtask 1 [20%]

$A, B, C, D \leq 200$

Subtask 2 [80%]

No additional constraints.

Input Specification

One line with four space-separated integers A, B, C, D.

Output Specification

One integer, the required answer modulo $2\,016\,420$.

Sample Input

```
2 3 2 10
```

Sample Output

```
48
```

Explanation

2 and 3 are the only primes in the range $[2, 3]$. The multiples of 2 in the range $[2, 10]$ are 2, 4, 6, 8 and 10. Likewise, the multiples of 3 in the range $[2, 10]$ are 3, 6 and 9. The sum of these numbers is equal to 48, unless the aforementioned book needs a sequel already.