L. Largest Prime Factor

Problem ID: lpf

This is Mango's dark history.

One day, he learned about the linear sieve, an algorithm capable of computing multiplicative functions, such as $\phi(n)$ and $\mu(n)$, in linear time. However, when explaining this algorithm to his teammates, he made a silly mistake. He confused the abbreviation LPF with Largest Prime Factor, as it is quite natural for a non-native English speaker to mistake least for largest.

To ensure he never forgets this embarrassing moment, he brings this problem to you. Given an integer r, calculate

$$\sum_{i=1}^{r} G(i)$$

where $G(i)$ denotes the largest prime factor of i. He uses the letter G because it is more common to call it Greatest Prime Factor.

For convenience, define $G(1) = 0$.

Input

The only line of input contains a single integer r.

- $1 \leq r \leq 10^{10}$

Output

Output a single integer representing the value of $\sum_{i=1}^{r} G(i)$.

It is guaranteed that the answer fits within a standard signed 64-bit integer.

Sample Input 1	Sample Output 1
5	12

Sample Input 2	Sample Output 2
11	43

Sample Input 3	Sample Output 3
10000000000	3755757137823525252

Notes

In the first sample, $\sum_{i=1}^{5} = G(1) + G(2) + G(3) + G(4) + G(5) = 0 + 2 + 3 + 2 + 5 = 12$.

In the second sample, $\sum_{i=1}^{11} = 0 + 2 + 3 + 2 + 5 + 3 + 7 + 2 + 3 + 5 + 11 = 43$.