

D. Paths

time limit per test: 4 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

You are given a positive integer n . Let's build a graph on vertices $1, 2, \dots, n$ in such a way that there is an edge between vertices u and v if and only if $\gcd(u, v) = 1$. Let $d(u, v)$ be the shortest distance between u and v , or 0 if there is no path between them. Compute the sum of values $d(u, v)$ over all $1 \leq u < v \leq n$.

The *gcd* (greatest common divisor) of two positive integers is the maximum positive integer that divides both of the integers.

Input

Single integer n ($1 \leq n \leq 10^7$).

Output

Print the sum of $d(u, v)$ over all $1 \leq u < v \leq n$.

Examples

input
6
output
8

input
10
output
44

Note

All shortest paths in the first example:

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There are no paths between other pairs of vertices.

The total distance is $2 + 1 + 1 + 2 + 1 + 1 = 8$.