Problem A : Naneh Sarma

There is a story about **Naneh Sarma** preparing for the long night of winter. As part of her preparations, she fills bowls with pomegranates and walnuts. Let x denote the number of pomegranates and y denote the number of walnuts in a bowl.

To make the night perfect, she follows two simple rules for each bowl:

- The values x and y must both be between 1 and N.
- The two numbers must not share any common divisor other than 1, that is, $\gcd(x, y) = 1$.

The Bowl's Score

For every bowl she prepares, Naneh Sarma calculates a *score*. She first computes the sum $x + y$ and the absolute difference $|x - y|$, and then defines the score of the bowl as:

$$\gcd(x + y,\ |x - y|)$$

Your Task

Find the **total score**, defined as the sum of the scores of all **ordered pairs** (x, y) that satisfy the rules above. Formally, you are asked to compute:

$$\sum_{\substack{1 \le x \le N \\ 1 \le y \le N \\ \gcd(x,y)=1}} \gcd(x + y,\ |x - y|)$$

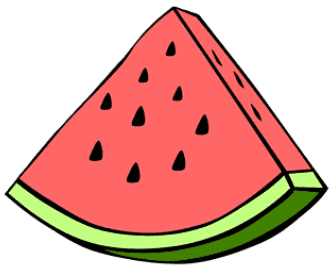
Input

The input consists of a single integer N.

$$1 \le N \le 10^7$$

Output

Print a single integer — the total sum of all scores.



Example

Standard Input	Standard Output
3	10

Note

For $N = 3$, all ordered pairs (x, y) with $1 \leq x, y \leq 3$ and $\gcd(x, y) = 1$ are listed below, together with their corresponding scores:

- $(1, 1)$: $\gcd(1 + 1,\ |1 - 1|) = \gcd(2, 0) = 2$
- $(1, 2)$: $\gcd(1 + 2,\ |1 - 2|) = \gcd(3, 1) = 1$
- $(2, 1)$: $\gcd(2 + 1,\ |2 - 1|) = \gcd(3, 1) = 1$
- $(1, 3)$: $\gcd(1 + 3,\ |1 - 3|) = \gcd(4, 2) = 2$
- $(3, 1)$: $\gcd(3 + 1,\ |3 - 1|) = \gcd(4, 2) = 2$
- $(2, 3)$: $\gcd(2 + 3,\ |2 - 3|) = \gcd(5, 1) = 1$
- $(3, 2)$: $\gcd(3 + 2,\ |3 - 2|) = \gcd(5, 1) = 1$

Adding all these values together gives:

$$2 + 1 + 1 + 2 + 2 + 1 + 1 = 10$$