Project Euler #241: Perfection Quotients

HackerRank

For a positive integer n, let $\sigma(n)$ be the sum of all divisors of n, so e.g. $\sigma(6) = 1 + 2 + 3 + 6 = 12$.

A perfect number, as you probably know, is a number with $\sigma(n) = 2 \times n$.

Let us define the perfection quotient of a positive integer as $p(n) = \frac{\sigma(n)}{n}$.

Find the sum of all positive integers $1 \le n \le N$ for which $p(n)$ has the form $k + \frac{1}{2}$, where k is an integer.

Input Format

The only line of input contains integer N.

Constraints

- $2 \le N \le 10^{23}$

Output Format

Print the only line with the answer.

Sample Input 0

```
10
```

Sample Output 0

```
2
```

Explanation 0

The only suitable number from 1 to 10 is 2.

$\sigma(2) = 1 + 2 = 3$

$p(2) = \frac{\sigma(2)}{2} = \frac{3}{2} = 1.5$.

Sample Input 1

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100
```

Sample Output 1

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26
```

Explanation 1

24 is the next suitable number after 2. There are no other suitable numbers between 1 and 100.

$\sigma(24) = 1 + 2 + 3 + 4 + 6 + 8 + 12 + 24 = 60$

$p(24) = \frac{\sigma(24)}{24} = \frac{60}{24} = 2.5$