

CodeVita Sample Questions

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Square Free Numbers

In the theory of numbers, square free numbers have a special place. A square free number is one that is not divisible by a perfect square (other than 1).

+ Problem Description

In the theory of numbers, square free numbers have a special place. A square free number is one that is not divisible by a perfect square (other than 1). Thus 72 is divisible by 36 (a perfect square), and is not a square free number, but 70 has factors 1, 2, 5, 7, 10, 14, 35 and 70. As none of these are perfect squares (other than 1), 70 is a square free number.

For some algorithms, it is important to find out the square free numbers that divide a number. Note that 1 is not considered a square free number.

In this problem, you are asked to write a program to find the number of square free numbers that divide a given number.

+ Input

The only line of the input is a single integer N which is divisible by no prime number larger than 19

+ Output

One line containing an integer that gives the number of square free numbers (not including 1)

+ Constraints

$N < 10^9$

+ Complexity

Simple

+ Time Limit

1

+ Examples

Example 1

Input

20

Output

3

Explanation

N=20

If we list the numbers that divide 20, they are

1, 2, 4, 5, 10, 20

1 is not a square free number, 4 is a perfect square, and 20 is divisible by 4, a perfect square. 2 and 5, being prime, are square free, and 10 is divisible by 2, 5 and 10, none of which are perfect squares. Hence the square free numbers that divide 20 are 2, 5, 10. Hence the result is 3.

Example 2

Input

72

Output

3

Explanation

N=72. The numbers that divide 72 are

1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

1 is not considered square free. 4, 9 and 36 are perfect squares, and 8, 12, 18, 24 and 72 are divisible by one of the. Hence only 2, 3 and 6 are square free. (It is easily seen that none of them are divisible by a perfect square). The result is 3

Test Cases

20
3
72
3
29729700

63

62290800

31

691891200

63

523908000

31

340540200

63

290990700

255

449141836

31

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