507 Perfect Number

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We define the Perfect Number is a **positive** integer that is equal to the sum of all its **positive** divisors except itself.

Now, given an **integer** n, write a function that returns true when it is a perfect number and false when it is not.

Example:

Input: 28

Output: True

Explanation: 28 = 1 + 2 + 4 + 7 + 14

Note: The input number **n** will not exceed 100,000,000. (1e8)

来自 <https://leetcode.com/problems/perfect-number/description/>

对于一个 **正整数**，如果它和除了它自身以外的所有正因子之和相等，我们称它为“完美数”。

给定一个 **正整数** n， 如果他是完美数，返回 True，否则返回 False

示例:

输入: 28

输出: True

解释: 28 = 1 + 2 + 4 + 7 + 14

注意:

输入的数字 **n** 不会超过 100,000,000. (1e8)

Solution for Python3:

```python
class Solution:
    def checkPerfectNumber(self, num):
        """
        :type num: int
        :rtype: bool
        """
        if num <= 1:
            return False
        import math
        s, h, p = [1, num], int(math.sqrt(num)), 2
        while p <= h:
            if num % p == 0:
                s += [p, num // p]
            p += 1
```

```
15            print(s)
16            return sum(s) == 2 * num
```

Solution for C++:

```
1  class Solution {
2  public:
3      bool checkPerfectNumber(int num) {
4          if (num <= 1)
5              return false;
6          int sum = 1;
7          for (int i = 2; i <= int(sqrt(num)); i++)
8  {
9              if (num % i == 0) {
10                 sum += i + num / i;
11             }
12         }
13         return sum == num;
14     }
   };
```