Circles on a Plane

Time Limit: 1.0s **Memory Limit:** 256M

n circles are placed in a $2D$ plane, with radii $r_1, r_2, \ldots, r_n$ and centers $O_1, O_2, \ldots, O_n$ such that these circles all intersect at a common point P, no arrangement of the set (O_j, O_i, P) is linear and $r_i \neq r_j$, for all i, j satisfying $0 \leq i \leq n$, $0 \leq j \leq n$ and $i \neq j$. Given the integers $m_3, m_4, m_5, \ldots, m_{n-1}$, where m_k is the number of points in the plane where k circles intersect, find the number of sections these circles divide the whole plane into.

Example: If $n = 9$ and $m_3 = 0, m_4 = 2, m_5 = 0, m_6 = 1, m_7 = 0, m_8 = 0$, this means there are 9 circles all sharing a common point P and there are 2 distinct point such that 4 circles intersect and 1 point such that 6 circles intersect. At the other intersections, only 2 circles intersect.

Input

The first line contains the number n and the subsequent lines contain $m_3, m_4, m_5, \ldots, m_{n-1}$.

- $5 \leq n \leq 10^7$
- $0 \leq m_j \leq 10^5$

Output

Print the total number of distinct sections formed by these circles on the plane.

Example 1

Input:

```
5
1
0
```

Output:

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15
```

Example 2

Input:

```
10
0
2
0
1
0
0
0
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Output:

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40
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Explanation

Input 1: Here's a way to construct 5 circles that all intersect at the point P, and a point B where 3 circles intersect. If we count the number of sections in the entire plane, we can see there are 15 sections.

Input 2: Here's a way to construct 10 circles that all intersect at the point P, a point B, C where 4 circles intersect and a point D where 6 circles intersect. If we count the number of sections in the entire plane, we can see there are 40 sections.