5 - Triangular Sums

The n-th Triangular number, \( T(n) = 1 + \ldots + n \), is the sum of the first \( n \) integers. It is the number of points in a triangular array with \( n \) points on side. For example \( T(4) \):

\[
\begin{align*}
  &\ \ X \\
  &\ \ X \ X \\
  &\ \ X \ X \ X \\
  &\ \ X \ X \ X \ X
\end{align*}
\]

Write a program to compute the weighted sum of triangular numbers:

\[
W(n) = \sum_{k = 1}^{n} k \cdot T(k+1)
\]

Input

The first line of input contains a single integer \( N, \) (\( 1 \leq N \leq 1000 \)) which is the number of datasets that follow.

Each dataset consists of a single line of input containing a single integer \( n, \) (\( 1 \leq n \leq 300 \)), which is the number of points on a side of the triangle.

Output

For each dataset, output on a single line the dataset number, (1 through \( N \)), a blank, the value of \( n \) for the dataset, a blank, and the weighted sum \( W(n) \), of triangular numbers for \( n \).

<table>
<thead>
<tr>
<th>Sample Input</th>
<th>Sample Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1 3 45</td>
</tr>
<tr>
<td>3</td>
<td>2 4 105</td>
</tr>
<tr>
<td>4</td>
<td>3 5 210</td>
</tr>
<tr>
<td>5</td>
<td>4 10 2145</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

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