H • Maximum in the Cycle of 1

If $P$ is a permutation of the integers $1, \ldots, n$, the maximum in the cycle of 1 is the maximum of the values $P(1), P(P(1)), P(P(P(1))),$ etc. For example, if $P$ is the permutation:

$$
\begin{align*}
|1 & 2 & 3 & 4 & 5 & 6 & 7 & 8| \\
|3 & 2 & 5 & 4 & 1 & 7 & 8 & 6|
\end{align*}
$$

we have:

$$
P(1) = 3 \\
P(P(1)) = P(3) = 5
$$

and

$$
P(P(P(1))) = P(5) = 1
$$

so the maximum in the cycle of 1 is 5.

For this problem, you will write a program which takes as input integers $n$, $(n > 0)$ and $k\ (1 \leq k \leq n)$, and returns the number of permutations of the integers $1, \ldots, n$, for which the maximum in the cycle of 1 is $k$.

**Input**

The first line of input contains a single integer $P$, $(1 \leq P \leq 1000)$, which is the number of data sets that follow. Each data set is a single line that contains the three space separated decimal integer values. The first value is the data set number, $N$. The second value is the size of the permutation, $n$ where $(1 \leq n \leq 20)$, and the third value is the desired maximum in the cycle of 1, $k$ where $(1 \leq k \leq n)$.

**Output**

For each data set there is one line of output. It contains the data set number ($N$) followed by a single space, followed by a double precision floating point whole value which is the number of permutations of the integers $1, \ldots, n$, for which the maximum in the cycle of 1 is $k$. 

Greater New York Regional          H • Maximum in the Cycle of 1
<table>
<thead>
<tr>
<th>Sample Input</th>
<th>Sample Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1 6</td>
</tr>
<tr>
<td>1 4 1</td>
<td>2 168</td>
</tr>
<tr>
<td>2 7 3</td>
<td>3 86400</td>
</tr>
<tr>
<td>3 10 5</td>
<td>4 1158524765798400</td>
</tr>
<tr>
<td>4 20 7</td>
<td></td>
</tr>
</tbody>
</table>