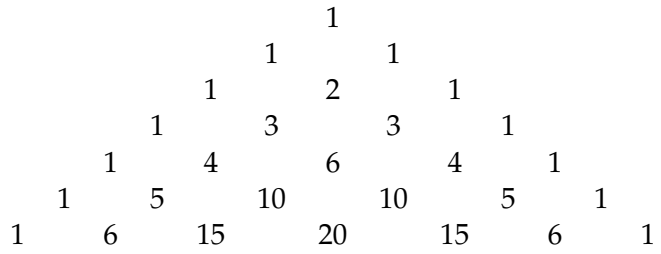
Binomial coefficients X29864_en

The *binomial coefficient* $(N\ \ k)$, $0 \leq k \leq N$, is an important concept in mathematics. Formally, $(N\ \ k)$ represents the number of ways to choose a subset of k elements from a set of N elements. For example, there are three ways to choose a subset of 2 elements from a set $\{a, b, c\}$ of three elements, namely $\{a, b\}$, $\{a, c\}$ and $\{b, c\}$. Hence $(3\ \ 2) = 3$.
To compute $(N\ \ k)$, it is convenient to use the following recursive formula:

$$(N\ \ k) = (N-1\ \ k-1) + (N-1\ \ k).$$

The base case given by $(N\ \ 0) = (N\ \ N) = 1$ for any $N \geq 0$.
The binomial coefficients can be arranged into *Pascal's triangle*:



Each row $N \geq 0$ contains the binomial coefficients $(N\ \ 0), \ldots, (N\ \ N)$, and each element is the sum of the two elements immediately above it.

Input

The input starts with an integer C, the number of cases. On each of the following C lines are two integers N and k satisfying $0 \leq k \leq N \leq 20$.

Output

For each case, output the binomial coefficient $(N\ \ k)$ on a single line.

Sample input

```
4
0 0
3 2
4 4
6 2
```

Sample output

```
1
3
1
15
```

Problem information

Author : Anders Jonsson
Generation : 2019-03-28 11:06:23

© *Jutge.org*, 2006–2019.
https://jutge.org