# Problem M. Sekiro

*Sekiro: Shadows Die Twice* is an action-adventure video game developed by FromSoftware and published by Activision. In the game, the players act as a Sengoku period shinobi known as Wolf as he attempts to take revenge on a samurai clan who attacked him and kidnapped his lord.

As a game directed by Hidetaka Miyazaki, Sekiro (unsurprisingly) features a very harsh death punishment. If the player dies when carrying $g$ amount of money, the amount of money will be reduced to $\lceil \frac{g}{2} \rceil$, where $\lceil \frac{g}{2} \rceil$ indicates the smallest integer $g'$ that $2g' \geq g$.

As a noobie of the game, BaoBao has died $k$ times in the game continuously. Given that BaoBao carried $n$ amount of money before his first death, and that BaoBao didn't collect or spend any money during these $k$ deaths, what's the amount of money left after his $k$ deaths?

## Input

There are multiple test cases. The first line of the input contains an integer $T$ (about $10^3$), indicating the number of test cases. For each test case:

The first and only line contains two integers $n$ and $k$ ($0 \leq n \leq 10^9$, $1 \leq k \leq 10^9$), indicating the initial amount of money BaoBao carries and the number of times BaoBao dies in the game.

## Output

For each test case output one line containing one integer, indicating the amount of money left after $k$ deaths.

## Example

| standard input | standard output |
|---|---|
| 4<br>10 1<br>7 1<br>10 2<br>7 2 | 5<br>4<br>3<br>2 |

## Note

For the third sample test case, when BaoBao dies for the first time, the money he carries will be reduced from 10 to 5; When he dies for the second time, the money he carries will be reduced from 5 to 3.