

Assess your performance by solving these problems on your own!

Chef has made a list for his monthly expenses. The list has N expenses with index 1 to N . The money spent on each expense depends upon the monthly income of Chef.

- Chef spends 50% of his total income on the expense with index 1.
- The money spent on the i^{th} expense ($i > 1$) is equal to 50% of the amount **remaining**, after paying for all expenses with indices **less than i** .

Given that Chef earns 2^X rupees in a month, find the amount he saves after paying for all N expenses.

Input Format

- The first line of input will contain a single integer T , denoting the number of test cases.
- Each test case consists of two space-separated integers N and X — where N denotes the number of expenses and 2^X denotes the monthly income of Chef.

Output Format

For each test case, output on a new line, the amount saved by Chef after paying for all N expenses.

Constraints

- $1 \leq T \leq 1000$
- $1 \leq N < X \leq 20$

Sample 1:

Input	Output
4	2
1 2	4
1 3	2
2 3	2
3 4	

Explanation:

Test case 1: The number of expenses are 1 and Chef's monthly income is $2^2 = 4$.
Chef spends 50% of his monthly income, that is, 2 on first expense and saves the remaining amount $4 - 2 = 2$.

Test case 2: The number of expenses are 1 and Chef's monthly income is $2^3 = 8$.
Chef spends 50% of his monthly income, that is, 4 on first expense and saves the remaining amount $8 - 4 = 4$.

Test case 3: The number of expenses are 2 and Chef's monthly income is $2^3 = 8$.

- Chef spends 50% of his monthly income, that is, 4 on first expense. The remaining amount is $8 - 4 = 4$.
- Chef spends 50% of the remaining amount, that is, 2 on his second expense. The remaining amount is $4 - 2 = 2$ which goes into his savings.

Test case 4: The number of expenses are 3 and Chef's monthly income is $2^4 = 16$.

- Chef spends 50% of his monthly income, that is, 8 on first expense. The remaining amount is $16 - 8 = 8$.
- Chef spends 50% of the remaining amount, that is, 4 on second expense. The remaining amount is $8 - 4 = 4$.
- Chef spends 50% of the remaining amount, that is, 2 on his third expense. The remaining amount is $4 - 2 = 2$ which goes into his savings.