Chocolate Buffet

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

It is a well known fact that Meow loves chocolate. His friends, Miau brought him many chocolates, each with different flavour and sizes. The weight of these chocolate (in grams) are $1, 2, 4, 8, 16, ...$ (Every subsequent weight of the chocolate is double to the prior weight, i.e. $n = \{2^n \mid n \in \mathbb{N}_0\}$ and there is only one chocolate for each weight)

Meow loves to eat as many chocolate as possible, and he needs to eat at least X grams of chocolate to be satisfied. However, since Meow is afraid to be a fat cat, he cannot eat more than Y grams (eating up to Y grams is fine).

Meow wishes to know what is the maximum number of chocolate he can eat.

Input

The first line contains an integer t ($1 \leq t \leq 1000$) – the number of test cases.

Each test case contains 2 integers, X and Y ($1 \leq X \leq Y \leq 2^{63} - 1$)

Output

Print a single integer – the maximum number of chocolate Meow can eat.

Example

standard input	standard output
1 16 25	4

Note

For the first example, Meow can eat maximum 4 chocolates : 1, 2, 4, 16

(there might exist more than 1 possible way to eat)