Today is your best friend SJ's birthday. You want to buy a birthday present for her. You want to buy such a present that she likes the most. You are very superstitious. You think that, SJ will love your gift, if the price of the present you buy is an **interesting number** (pretty weird isn't it :P ).

An **interesting number** is such a number that can be expressed as a product of **Fibonacci numbers** (not necessarily distinct). For example, 16 (2*2*2*2), 40 (8*5) are interesting numbers but 7 is not.

## Input

The first line of the input is an integer $t$ ($t \leq 1000$) denoting the number of test cases. Then $t$ line follows. Each line has two integers $a$ and $b$ ($1 \leq a \leq b \leq 10^{18}$).

## Output

For each case you have to print an integer in a line denoting the maximum **interesting number** between $a$ and $b$ (inclusive). Print '-1' in case there is no solution.

## Sample Input

```
3
1 7
1 10
1 1000000000000000000
```

## Sample Output

```
6
10
1000000000000000000
```