



Uva 10276

Hanoi Tower Troubles Again

Time: 3 seconds

Problem Description(1)

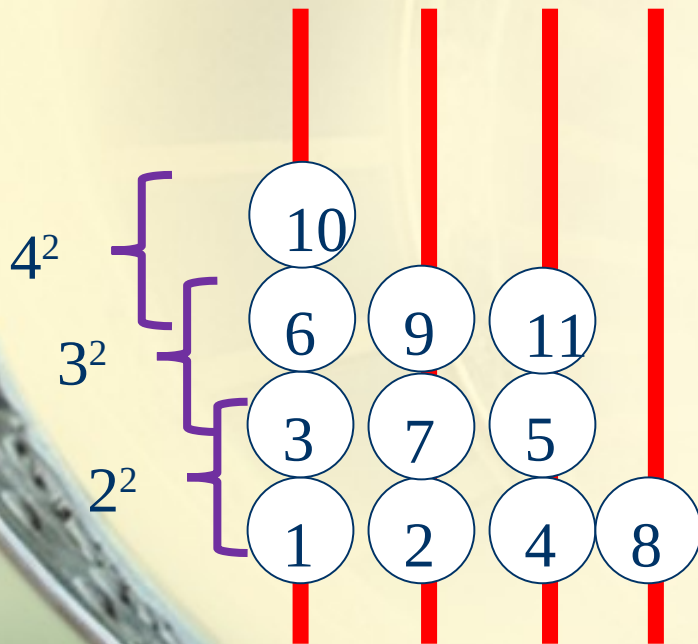
- ◆ People stopped moving discs from peg to peg after they know the number of steps needed to complete the entire task. But on the other hand, they didn't not stopped thinking about similar puzzles with the Hanoi Tower. Mr.S invented a little game on it. The game consists of N pegs and a LOT of balls.

Problem Description(2)

- ❖ The balls are **numbered 1,2,3...** The balls look ordinary, but they are actually magic. If the **sum of the numbers on two balls is NOT a square number**, they will push each other with a great force when they're too closed, so they can NEVER be put together touching each other.
- ❖ The player should place one ball **on the top of a peg at a time**. He should first try ball 1, then ball 2, then ball 3... If he fails to do so, the game ends.

Problem Description(3)

- Help the player to place as many balls as possible. You may take a look at the picture above, since it shows us a best result for 4 pegs.



Input

- ❖ The first line of the input contains a single integer T , indicating the number of test cases ($1 \leq T \leq 50$).
- ❖ Each test case contains a single integer N ($1 \leq N \leq 50$), indicating the number of pegs available.

Output

- ❖ For each test case in the input print a line **containing an integer** indicating the **maximal number of balls that can be placed**.
- ❖ **Print '-1'** if an **infinite number of balls** can be placed.

Sample Input / Output

Number of cases

2

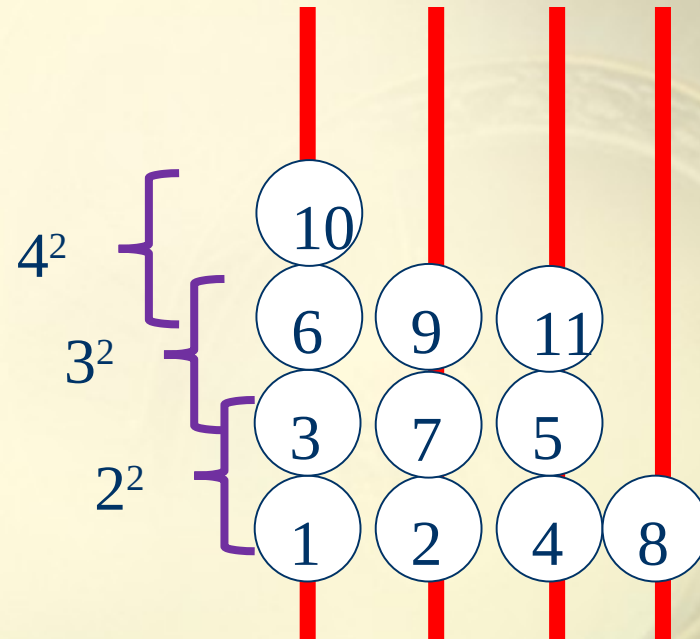
Number of pegs

4

25

11

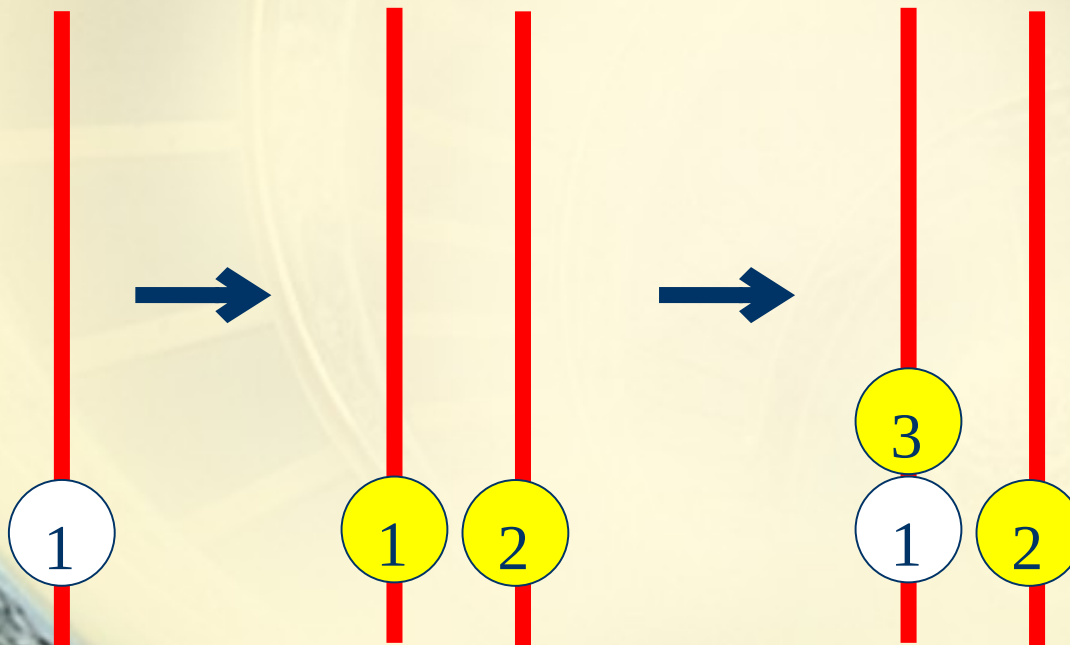
337



Complete Search

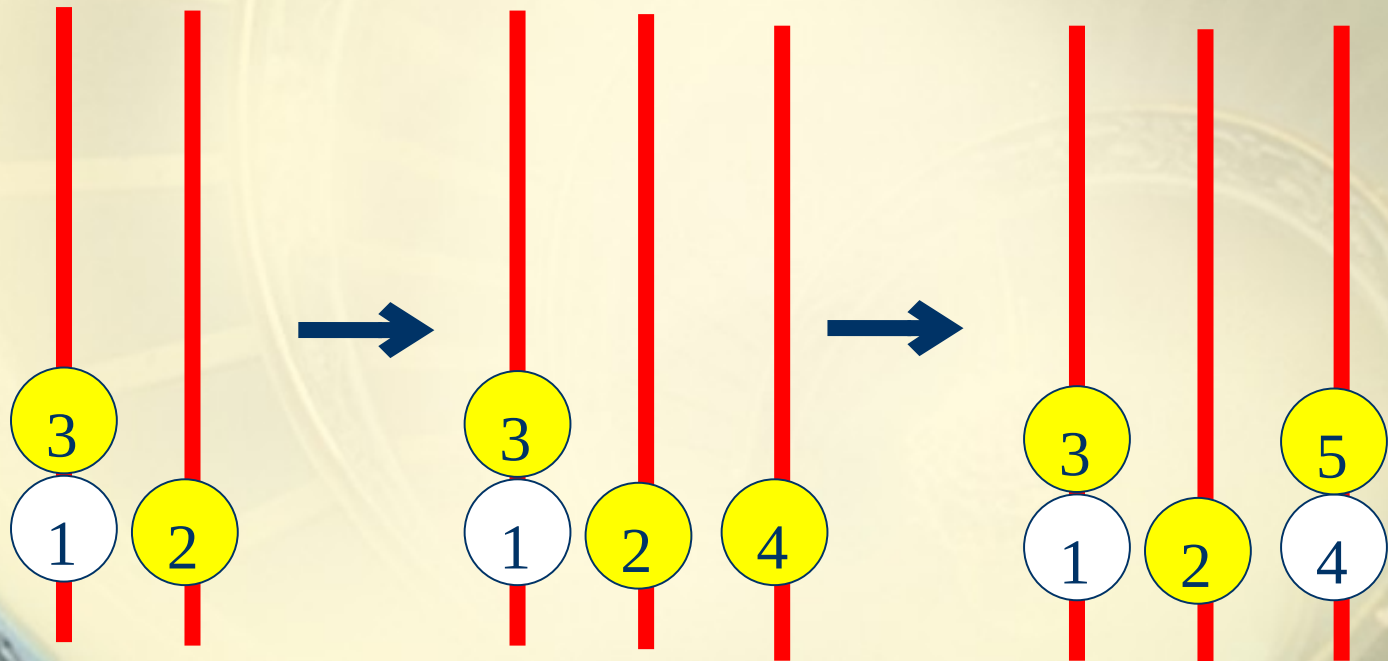
1. From 1 peg to N pegs

2. Place the following ball on the top of the current peg.

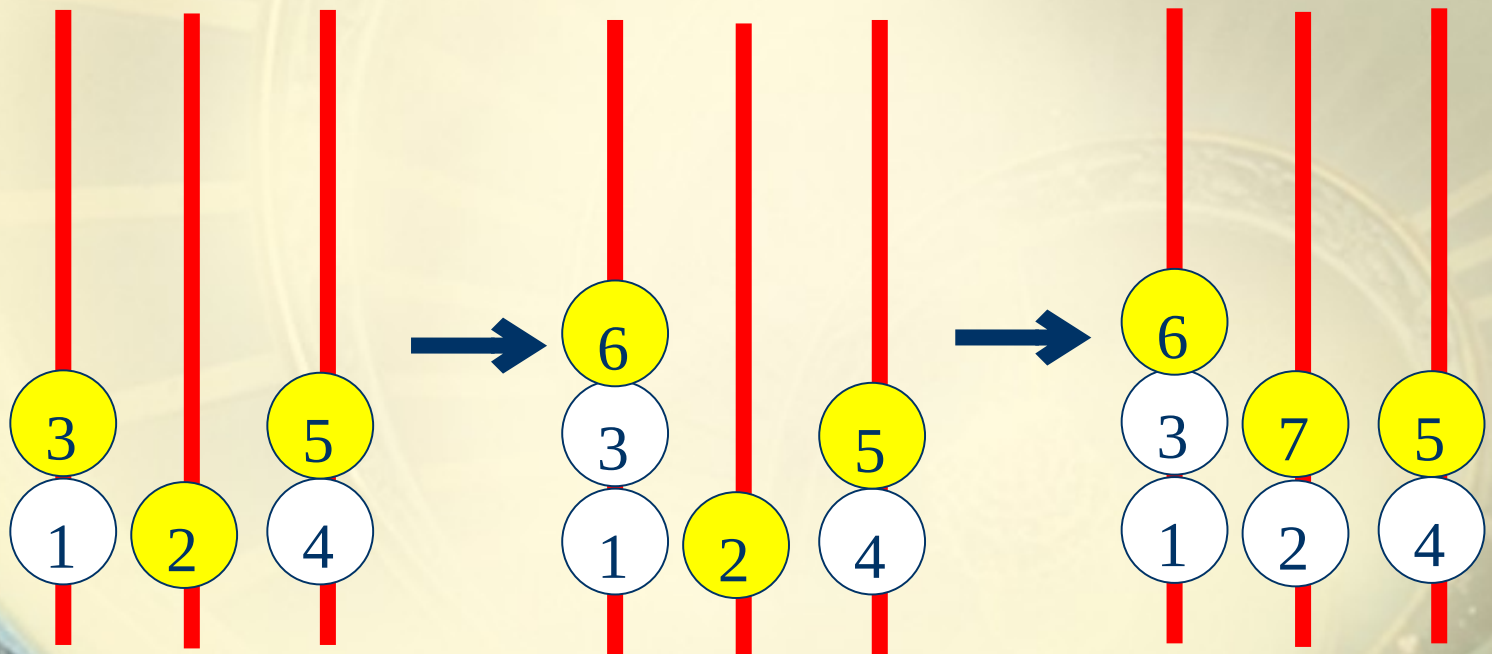


Complete Search

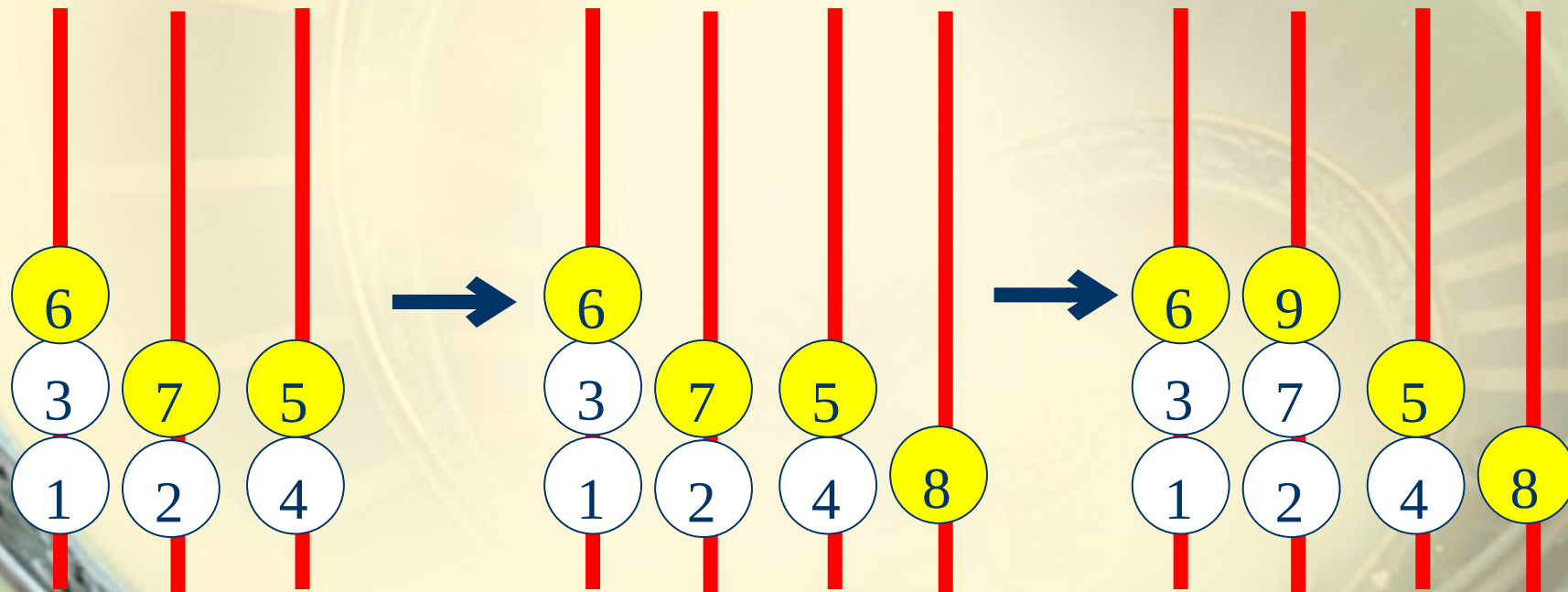
1. From 1 peg to N pegs.
2. Place the following ball on the top of the current peg.
3. If you cannot place another ball, then add the peg.
4. Until N.



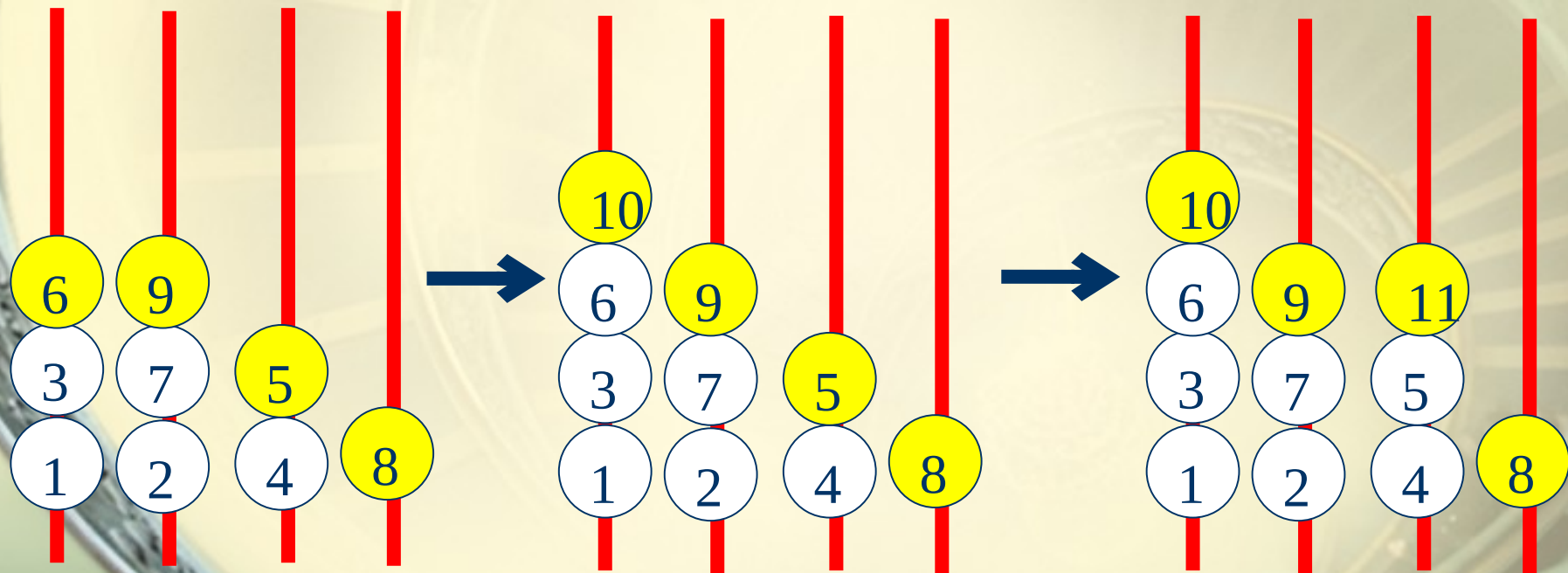
Complete Search



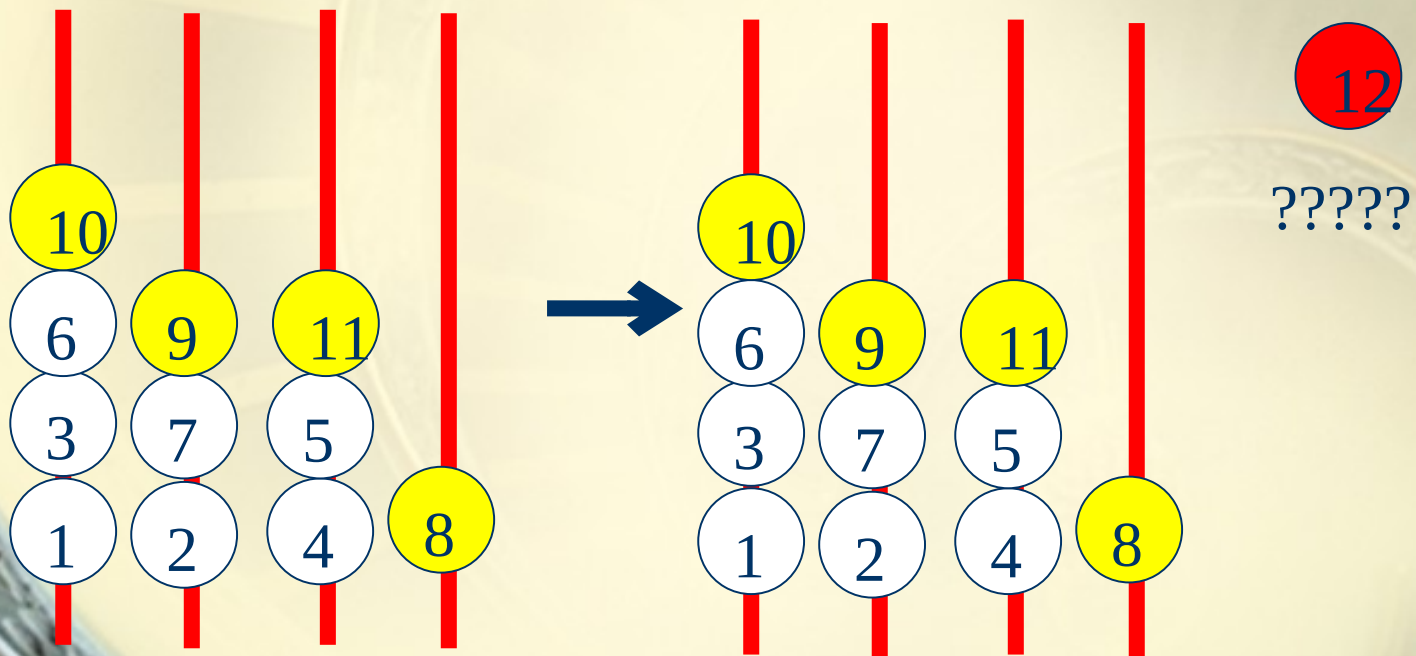
Complete Search



Complete Search



Complete Search



Calculation

 Find the rule.

Number of pegs	1	2	3	4	5	6	7	8	9	10
Number of balls	1	3	7	11	17	23	31	39	49	59

diff	2	4	4	6	6	8	8	10	10	12
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Number of pegs	11	12	13	14	15	16	17	18	19	20
Number of balls	71	83	97	111	127	143	161	179	199	219

diff	12	14	14	16	16	18	18	20	20	22
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Another Solution

 Find the rule.

Number of pegs	21	22	23	24	25	26	27	28	29	30
Number of balls	241	263	287	311	337	363	391	419	449	479

diff	22	24	24	26	26	28	28	30	30	32
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