

Submissions

The Repeater

10pt	Not attempted 5166/6703 users correct (77%)
13pt	Not attempted 2812/4784 users correct (59%)

New Lottery Game

8pt	Not attempted 6365/6542 users correct (97%)
24pt	Not attempted 720/2799 users correct (26%)

The Bored Traveling Salesman

15pt	Not attempted 700/1275 users correct (55%)
30pt	Not attempted 189/295 users correct (64%)

Top Scores

ACMonster	100
wata	100
vepifanov	100
VArtem	100
2rf	100
Nerevar	100
cmd	100
rng..58	100
sourspinach	100
Fdg	100

Problem B. New Lottery Game

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input  
8 points

Solve B-small

Large input  
24 points

Solve B-large

New Lottery Game

The Lottery is changing! The Lottery used to have a machine to generate a random winning number. But due to cheating problems, the Lottery has decided to add another machine. The new winning number will be the result of the bitwise-AND operation between the two random numbers generated by the two machines.

To find the bitwise-AND of X and Y, write them both in binary; then a bit in the result in binary has a 1 if the corresponding bits of X and Y were both 1, and a 0 otherwise. In most programming languages, the bitwise-AND of X and Y is written X&Y.

For example:

The old machine generates the number 7 = 0111.  
The new machine generates the number 11 = 1011.  
The winning number will be (7 AND 11) = (0111 AND 1011) = 0011 = 3.

With this measure, the Lottery expects to reduce the cases of fraudulent claims, but unfortunately an employee from the Lottery company has leaked the following information: the old machine will always generate a non-negative integer less than **A** and the new one will always generate a non-negative integer less than **B**.

Catalina wants to win this lottery and to give it a try she decided to buy all non-negative integers less than **K**.

Given **A**, **B** and **K**, Catalina would like to know in how many different ways the machines can generate a pair of numbers that will make her a winner.

Could you help her?

Input

The first line of the input gives the number of test cases, **T**. **T** lines follow, each line with three numbers **A B K**.

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the number of possible pairs that the machines can generate to make Catalina a winner.

Limits

1 ≤ **T** ≤ 100.

Small dataset

1 ≤ **A** ≤ 1000.  
1 ≤ **B** ≤ 1000.  
1 ≤ **K** ≤ 1000.

Large dataset

1 ≤ **A** ≤ 10<sup>9</sup>.  
1 ≤ **B** ≤ 10<sup>9</sup>.  
1 ≤ **K** ≤ 10<sup>9</sup>.

Sample

Input	Output
5	Case #1: 10
3 4 2	Case #2: 16
4 5 2	Case #3: 52
7 8 5	Case #4: 2411
45 56 35	Case #5: 14377
103 143 88	

In the first test case, these are the 10 possible pairs generated by the old and new machine respectively that will make her a winner:  $\langle 0,0 \rangle$ ,  $\langle 0,1 \rangle$ ,  $\langle 0,2 \rangle$ ,  $\langle 0,3 \rangle$ ,  $\langle 1,0 \rangle$ ,  $\langle 1,1 \rangle$ ,  $\langle 1,2 \rangle$ ,  $\langle 1,3 \rangle$ ,  $\langle 2,0 \rangle$  and  $\langle 2,1 \rangle$ . Notice that  $\langle 0,1 \rangle$  is not the same as  $\langle 1,0 \rangle$ . Also, although the pair  $\langle 2, 2 \rangle$  could be generated by the machines it wouldn't make Catalina win since  $(2 \text{ AND } 2) = 2$  and she only bought the numbers 0 and 1.

---

All problem statements, input data and contest analyses are licensed under the [Creative Commons Attribution License](#).

© 2008-2017 Google [Google Home](#) - [Terms and Conditions](#) - [Privacy Policies and Principles](#)

Powered by



Google Cloud Platform