

Submissions

Checkerboard Matrix

4pt Not attempted
23/26 users correct
(88%)

9pt Not attempted
23/23 users correct
(100%)

Power Swapper

4pt Not attempted
25/25 users correct
(100%)

12pt Not attempted
19/21 users correct
(90%)

Symmetric Trees

7pt Not attempted
22/24 users correct
(92%)

18pt Not attempted
15/22 users correct
(68%)

Paradox Sort

4pt Not attempted
24/24 users correct
(100%)

28pt Not attempted
11/15 users correct
(73%)

Allergy Testing

15pt Not attempted
19/23 users correct
(83%)

35pt Not attempted
1/6 users correct
(17%)

ARAM

22pt Not attempted
3/5 users correct
(60%)

42pt Not attempted
0/3 users correct
(0%)

Top Scores

Gennady.Korotkevich	136
eatmore	123
sevenkplus	101
mystic	95
mk.al13n	89
EgorKulikov	89
kcm1700	89
vepifanov	83
dzhulgakov	83
Romka	83

Problem E. Allergy Testing

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
15 points

Solve E-small

Large input
35 points

Solve E-large

Problem

Kelly is allergic to exactly one of **N** foods, but she isn't sure which one. So she decides to undergo some experiments to find out.

In each experiment, Kelly picks several foods and eats them all. She waits **A** days to see if she gets any allergic reactions. If she doesn't, she knows she isn't allergic to any of the foods she ate. If she does get a reaction, she has to wait for it to go away: this takes a total of **B** days (measured from the moment when she ate the foods).

To simplify her experimentation, Kelly decides to wait until each experiment is finished (after **A** or **B** days) before starting the next one. At the start of each experiment, she can choose the set of foods she wants to eat based on the results of previous experiments.

Kelly chooses what foods to eat for each experiment to minimize the worst-case number of days before she knows which of the **N** foods she is allergic to. How long does it take her in the worst case?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case on a single line, containing three space-separated integers: **N**, **A** and **B**.

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 days it will take for Kelly to find out which food she is allergic to, in the worst case.

Limits

1 ≤ **T** ≤ 200.

Small dataset

1 ≤ **N** ≤ 10¹⁵.
1 ≤ **A** ≤ **B** ≤ 100.

Large dataset

1 ≤ **N** ≤ 10¹⁵.
1 ≤ **A** ≤ **B** ≤ 10¹².

Sample

Input	Output
3	Case #1: 12
4 5 7	Case #2: 3
8 1 1	Case #3: 0
1 23 32	

In the first sample case:

- First, Kelly eats foods #1 and #2.
- If she gets no reaction after 5 days, she eats food #3. 5 days after *that*, she will know whether she is allergic to food #3 or food #4.
- If she does get a reaction to the first experiment, then 7 days after the first experiment, she eats food #1. 5 days after that, she will know whether she is allergic to food #1 or food #2.

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