Birthday Cake

Lea and Bea are best friends, but they do not see each other often since Bea moved to another city far away from Lea's home. They still call each other often and meet from time to time. They also send gifts for birthdays and christmas regularly. Bea's birthday is next week and this year Lea wants to bake a birthday cake for her. The cake should be sent to Bea, so Lea needs to finish the cake today to bring it to the post office tomorrow morning.

Unfortunately, Lea's favourite TV show is also on today: the famous Baking Tray World Championships! In this show some C-list celebrities and old professional athletes who need money slide down an ice track on baking trays. The event is moderated by a famous guy who was a baker when he was young and switched to TV shows later on. He always does the craziest TV shows and most people are never sure whether he is sober. All in all, it is a great show!

Lea prepared the dough for the cake and wants to bake it, but she does not know how much time it will need to bake. On the other hand, she wants to leave the TV in her living room as rarely as possible to check whether the cake is ready. If she leaves to check the cake there are three possibilities: The cake is not ready yet (Lea will leave it in the oven), the cake is perfect (Lea will switch off everything and go back to the TV show), or the cake is burned (Lea will throw the cake away). Since Lea wants to make the perfect cake and expects that for some tries the cake will be in the oven for too long, she prepared dough for several cakes.

Lea needs a strategy for checking the cake satisfying her constraints. She knows that all cakes are the same and will always look the same after the same time in the oven. The temperature in the oven is constant and cannot be changed. The perfect baking time will be an integer number of minutes. Lea does not care how many of the cakes she prepared she has to throw away, she just needs one perfect cake. Also, she does not care how long it will take to bake the cakes, the TV show is quite long. Her strategy may change after she checks the cake depending on what she sees. Lea wants to minimize the number of times she has to go to the kitchen in the worst case. What number can she achieve?

Input

The first line of the input contains an integer t. t test cases follow.

Each test case consists of a line containing two integers n and m where n is the number of cakes Lea prepared and m is the maximum baking time in minutes.

Output

For each test case, output one line containing "Case #i: x" where i is its number, starting at 1, and x is the number of times Lea has to go to the kitchen in the worst case for her best strategy. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 500$
- $1 \leq n \leq 1000$
- $1 \leq m \leq 1000$

Sample Input 1	Sample Output 1
3 3 5 1 5 5 2	Case #1: 3 Case #2: 5 Case #3: 2