

World Finals 2010

[A. Letter Stamper](#)[B. City Tour](#)**C. Candy Store**[D. Travel Plan](#)[E. Ninjutsu](#)[F. The Paths of Yin Yang](#)[Contest Analysis](#)[Questions asked](#)

Submissions

Letter Stamper

8pt Not attempted
20/22 users correct
(91%)19pt Not attempted
5/10 users correct
(50%)

City Tour

4pt Not attempted
21/21 users correct
(100%)23pt Not attempted
19/21 users correct
(90%)

Candy Store

7pt Not attempted
21/21 users correct
(100%)20pt Not attempted
12/13 users correct
(92%)

Travel Plan

3pt Not attempted
22/23 users correct
(96%)30pt Not attempted
17/18 users correct
(94%)

Ninjutsu

11pt Not attempted
6/8 users correct
(75%)23pt Not attempted
0/2 users correct
(0%)

The Paths of Yin Yang

17pt Not attempted
1/2 users correct
(50%)

35pt Not attempted

Top Scores

Egor	125
krijgertje	114
Burunduk1	112
ACRush	106
marek.cygan	95
meret	95
rng..58	95
pashka	95
iwi	95
eatmore	94

Problem C. Candy Store

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
7 points

Solve C-small

Large input
20 points

Solve C-large

Problem

Owning a candy store is tough! You have to optimize all kinds of things. Lately you've been selling a very popular kind of candy called Whizboppers. These candies become rotten very quickly, which gives them the following properties:

- You must buy new Whizboppers from your supplier every morning.
- You must sell Whizboppers in the boxes you bought from your supplier that morning.

You can order Whizboppers from your supplier in boxes that contain any integer number of grams.

Every day up to k people visit your store, and, starting from the first person, they will choose an integer number of cents to spend on Whizboppers: between 1 and C cents inclusive. You're going to sell Whizboppers for 1 cent per gram; so if a person wants to spend 4 cents, you will give that person exactly 4 grams of candy. You might do this by giving the person a 4-gram box, or perhaps a 2-gram box and two 1-gram boxes.

What is the minimum number of boxes you need to order so that, no matter what amount each person orders, you can always give all of the people the mass of Whizboppers they want?

Note: When a person chooses how much candy to buy, you know what other people have already bought, but you don't know what future people will buy.

For example, if up to 2 people visit your store every day, and they spend up to 2 cents each ($k=2$, $C=2$), you could buy four 1-gram boxes from your supplier. But you can do better: if you buy two 1-gram boxes and one 2-gram box, you can satisfy your customers. Here's how:

First Person	Boxes given	Second Person	Boxes given
2 cents	1 x 2-gram	2 cents	2 x 1-gram
		1 cent	1 x 1-gram
1 cent	1 x 1-gram	2 cents	1 x 2-gram
		1 cent	1 x 1-gram

Regardless of what the first person orders, you can give out boxes so that the second person can still get the right amount of candy. So for $k=2$, $C=2$, you can serve any sequence of orders with 3 boxes.

Input

The first line of the input gives the number of test cases, T . T lines follow, each of which contains two integers: k and C , the maximum number of people and the maximum number of cents each person may spend.

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1) and y is the minimum number of boxes you need to order every day.

Limits

 $1 \leq T \leq 100$.

Small dataset

 $1 \leq k \leq 20$.
 $1 \leq C \leq 3$.

Large dataset

 $1 \leq k \leq 1000$.
 $1 \leq C \leq 10^{12}$.

Sample

Input	Output
4	Case #1: 3
1 5	Case #2: 3
2 2	Case #3: 19
10 3	Case #4: 11
2 50	

Explanation

In the first case, you can buy one 1-gram box and two 2-gram boxes. In the second case, you can buy two 1-gram boxes and one 2-gram box.

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