

4554 Balls

The classic *Two Glass Balls* brain-teaser is often posed as:

“Given two identical glass spheres, you would like to determine the lowest floor in a 100-story building from which they will break when dropped. Assume the spheres are undamaged when dropped below this point. What is the strategy that will minimize the worst-case scenario for number of drops?”

Suppose that we had only one ball. We’d have to drop from each floor from 1 to 100 in sequence, requiring 100 drops in the worst case.

Now consider the case where we have two balls. Suppose we drop the first ball from floor n . If it breaks we’re in the case where we have one ball remaining and we need to drop from floors 1 to $n - 1$ in sequence, yielding n drops in the worst case (the first ball is dropped once, the second at most $n - 1$ times). However, if it does not break when dropped from floor n , we have reduced the problem to dropping from floors $n + 1$ to 100. In either case we must keep in mind that we’ve already used one drop. So the minimum number of drops, in the worst case, is the minimum over all n .

You will write a program to determine the minimum number of drops required, in the worst case, given B balls and an M -story building.

Input

The first line of input contains a single integer P , ($1 \leq P \leq 1000$), which is the number of data sets that follow. Each data set consists of a single line containing three (3) decimal integer values: the problem number, followed by a space, followed by the number of balls B , ($1 \leq B \leq 50$), followed by a space and the number of floors in the building M , ($1 \leq M \leq 1000$).

Output

For each data set, generate one line of output with the following values: The data set number as a decimal integer, a space, and the minimum number of drops needed for the corresponding values of B and M .

Sample Input

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4
1 2 10
2 2 100
3 2 300
4 25 900
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Sample Output

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1 4
2 14
3 24
4 10
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