H - The Multiplier Kendi

DESCRIPTION

During his journey in Yogyakarta, Mr. Blangkon bought N magical Kendi. If we put any object to Kendi, it will multiple some fixed number of times of this object. Blengki, Mr. Blangkon's son, knows about this information, and he was curious about the power of those Kendi. Thus, while his father is in outside, he brings several candies. He put the candies on the first Kendi, waits for the number of candies to multiply, then takes some portion of these candies from the first Kendi and put them on the second Kendi, waits for the number of candies to multiply again, and takes some from the second Kendi and put them on the third Kendi, and so on. When he put the candies on the last Kendi, he realized that all the Kendi now have the same number of candies! Given how much each Kendi multiplies the number of candies by, determine the smallest number of candies Blengki should prepare, so that the number of candies in all the Kendi are the same.

INPUT FORMAT

The first line of input contains an integer T ($1 \leq T \leq 10$) denoting the number of testcases. The first input of each case is an integer N ($1 \leq N \leq 10$) denoting the number of Kendi, and it is followed by N integer M ($1 \leq M \leq 10$), the number candies would multiply by in each of the Kendi, separated by space.

OUTPUT FORMAT

For each case, output "Case #X: Y" where X is the case number starts from 1, and Y is the minimal number of candies Blengki should prepare (at least 1), such that all Kendi will have similar number of candies at the end.

INPUT EXAMPLE

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2
2 2 3
3 1 2 3
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OUTPUT EXAMPLE

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Case #1: 2
Case #2: 5
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EXPLANATION

The first testcase: starting with 2 candies, the first Kendi turns them into 4. Blengki takes 1 (3 are left in the Kendi) and put them on the second Kendi. The second Kendi turns that 1 into 3. At this point, the first and second Kendi have the same number of candies, i.e. 3 candies.

The second testcase: starting with 5 candies, the first Kendi turns them into 5. Blengki takes 2 (3 are left in the first Kendi). The second Kendi turns those 2 into 4. Blengki takes 1 (3 are left in the second Kendi). The third Kendi turns those 1 into 3. At this point, the first, second, and third Kendi have the same number of candies, i.e. 3 candies.