Abir loves to eat. Every time he visits a restaurant he wants to eat a chicken item. But chicken item may not be always available. In each day he visits m restaurants consecutively. Each restaurant ($i = 1, \ldots, m$) can make n_i different items (Number of Chicken item is exactly 1). But in a single day each restaurant prepares exactly k_i items (chosen randomly from n_i items).

Find expected number of chicken items Abir can eat in a single day.

Input

Input starts with an integer T (≤ 125), denoting the number of test cases. Each case starts with a line containing an integer m ($1 \leq m \leq 10000$) which denotes number of visiting restaurants. Then in the following line there will be m pair of numbers n_i and k_i ($1 \leq i \leq m$, $1 \leq n_i \leq 20$, $1 \leq k_i \leq n_i$).

Output

For each case, print expected number of chicken items Abir can eat in a single line in the format P/Q, where P and Q are relatively prime (i.e. no common factor > 1, between P and Q).

Explanation for Sample Case

In the first case, total no of item is one (one chicken item) and probability of getting 1 chicken item is one. So expected number of chicken item is 1.

In the second case, probability of getting 1 chicken item is $1/2$ and probability of getting 2 chicken items is $1/4$. So expected no of chicken item is $1 \times 1/2 + 2 \times 1/4 = 2/2 = 1/1$.

Sample Input

```
3
1
1 1
2
2 1 2 1
1
3 2
```

Sample Output

```
Case 1: 1/1
Case 2: 1/1
Case 3: 2/3
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