D • Maximum Random Walk

Consider the classic random walk: at each step, you have a `1/2` chance of taking a step to the left and a `1/2` chance of taking a step to the right. Your expected position after a period of time is zero; that is, the average over many such random walks is that you end up where you started. A more interesting question is what is the expected rightmost position you will attain during the walk.

Input

The first line of input contains a single integer ***P***, (**`1 ≤ P ≤ 15`**), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input consisting of four space-separated values. The first value is an integer ***K***, which is the data set number. Next is an integer ***n***, which is the number of steps to take (`1 ≤ n ≤ 1000`). The final two are double precision floating-point values ***L*** and ***R*** which are the probabilities of taking a step left or right respectively at each step (`0 ≤ L ≤ 1, 0 ≤ R ≤ 1, 0 ≤ L+R ≤ 1`). Note: the probably of not taking a step would be **`1-L-R`**.

Output

For each data set there is a single line of output. It contains the data set number, followed by a single space which is then followed by the expected (average) rightmost position you will obtain during the walk, as a double precision floating point value to four decimal places.

Sample Input	Sample Output
4 1 1 0.5 0.5 2 4 0.5 0.5 3 10 0.5 0.4 4 1000 0.5 0.4	1 0.5000 2 1.1875 3 1.4965 4 3.9995

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