Problem G. Five Dimensional Discrete Fourier Transform

The five dimensional discrete fourier transform over a $n_1 \times n_2 \times n_3 \times n_4 \times n_5$ complex array $a[i_1][i_2][i_3][i_4][i_5]$ where $0 \le i_1 \le n_1 - 1$, $0 \le i_2 \le n_2 - 1$, $0 \le i_3 \le n_3 - 1$, $0 \le i_4 \le n_4 - 1$ and $0 \le i_5 \le n_5 - 1$ is given by:

$$A[j_1][j_2][j_3][j_4][j_5] = \sum_{i_1=0}^{n_1-1} \cdots \sum_{i_5=0}^{n_5-1} a[i_1][i_2][i_3][i_4][i_5] e^{-2\pi\sqrt{-1}(i_1 j_1/n_1 + \cdots + i_5 j_5/n_5)}$$

for $0 \le j_1 \le n_1 - 1, \cdots, 0 \le j_5 \le n_5 - 1$.

Now comes your turn. For a given real coefficient α, suppose

$$a[i_1][i_2][i_3][i_4][i_5] = (i_1 \ xor \ i_2 \ xor \ i_3 \ xor \ i_4 \ xor \ i_5) e^{\sqrt{-1}(i_1 - i_2 + i_3 - i_4 + i_5)\alpha}.$$

Please calculate the value of

$$\frac{1}{(n_1 n_2 n_3 n_4 n_5)^{1.5}} \sum_{i_1=0}^{n_1-1} \cdots \sum_{i_5=0}^{n_5-1} |Re(A[i_1][i_2][i_3][i_4][i_5])|,$$

where Re means the real part of a complex number and $|\cdots|$ means the absolute value of real number.

Input

The first line of the input contains an integer T ($1 \le T \le 200$) indicating the total number of test cases. For each test case, a line contains five integers n_1, n_2, n_3, n_4, n_5 where $1 \le n_1, n_2, n_3, n_4, n_5 \le 10$, and a float number α ($-100000 \le \alpha \le 100000$) with at most 10 significance digits.

Output

For each test case, output the value with the precision of 6 digits.

Sample

5 1 1 1 1 2 9.8 1 1 1 1 4 3.14 1 2 1 2 1 8.777 2 1 1 1 2 8.777 1 2 3 2 1 20.1314	0.657911 1.499989 0.398713 0.398713 0.942596

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