

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 $0 \leq i_1 \leq n_1 - 1$, $0 \leq i_2 \leq n_2 - 1$, $0 \leq i_3 \leq n_3 - 1$, $0 \leq i_4 \leq n_4 - 1$ and $0 \leq i_5 \leq n_5 - 1$ is given by:

$$A[j_1][j_2][j_3][j_4][j_5] = \sum_{i_1=0}^{n_1-1} \cdots \sum_{i_5=0}^{n_5-1} a[i_1][i_2][i_3][i_4][i_5] e^{-2\pi\sqrt{-1}(i_1j_1/n_1 + \cdots + i_5j_5/n_5)}$$

for $0 \leq j_1 \leq n_1 - 1, \dots, 0 \leq j_5 \leq n_5 - 1$.

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

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

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 ($1 \leq T \leq 200$) 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 $1 \leq n_1, n_2, n_3, n_4, n_5 \leq 10$, and a float number α ($-100000 \leq \alpha \leq 100000$) with at most 10 significance digits.

Output

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

Sample

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