Let $M_N = (m_{ij})$ be an $N \times N$ matrix, with integer constants Q, K, A, B satisfying:

$$m_{ij} = A\cos((i+Qj)x) + B\sin((i+Qj)x), \text{ where } 0 \le i,j < N, \text{ with } x = K\frac{\pi}{N}.$$

Given an integer interval $[L, R]$, compute

$$\sum_{N=L}^{R} det(I + M_N)$$

where I is the identity matrix, and det is the determinant of a square matrix.

Input

A number of of inputs (≤ 1000), each line with integers Q, K, A, B, L, R. They satisfy, $0 < K, A, B, L, R \le 10^9$, $0 < L \le R \le 10^9$, $|Q| \le 1$. Additionally, if $Q = 0$ and K is odd, then $R - L \le 300$.

Output

For each input, output the answer on one line, rounded to 6 digits after the decimal.

Sample Input

```
-1 12 10 8 3 10
1 13 7 9 3 10
0 11 10 7 3 10
```

Sample Output

```
13607.000000
-12342.000000
57.083113
```