Welcome to a low budget DYHTG. T-shirts are only given to participants according to the following rules.

All participants who ranked A^{th} or higher get a T-shirt. Additionally, from the participants who ranked between $(A+1)^{th}$ and B^{th} (inclusive), C participants chosen uniformly at random get a T-shirt.
There were 1000 participants in this contest, and all of them got different ranks. DominicJina, who participated in this contest, ranked X^{th}. Find the probability that they get a T-shirt.

Input Format

A B C X

Constraints

All values in input are integers.

- 1<=A<B<=1000
- 1<=C<=B-A
- 1<=X<=1000

Output Format

Print the answer as a float. Your output will be considered correct if the absolute or relative error from the given answer is at most 10^{-12}.

Sample Input 0

```
30 500 20 103
```

Sample Output 0

```
0.042553191489
```

Explanation 0

- DominicJina ranked 103^{rd}.
- They will get a T-shirt if they are among the 20 participants chosen uniformly at random from the 470 participants who ranked between 31^{st} and 500^{th}.
- Which happens with probability 20/470 = 0.04255319….

Sample Input 1

```
50 500 100 1
```

Sample Output 1

```
1.000000000000
```

Explanation 1

- DominicJina 1st. This time, they are guaranteed to get a T-shirt.

Sample Input 2

```
1 2 1 1000
```

Sample Output 2

```
0.000000000000
```

Explanation 2

- DominicJina 1000th will never get a T Shirt. :(