1. Jackson, a math research student, is developing an application on triangles in mensuration. For the two triangles on the application's display, with base and height given, the user must identify the triangle with the largest area. Jackson must now write an algorithm to find the area of the larger triangle.

To find the area of a triangle with base and height given, the following formula is used: Area of a triangle = (base*height)/2. Write an algorithm to find the area of the largest triangle.

Input

The first line of the input consists of two space-separated positive integers – base1, height1, representing the base and height of the first triangle. The second line consists of two space-separated positive integers- base2, height2, representing the base and height of the second triangle.

Output

Print a real number representing the area of the largest triangle rounded up to 2 decimal places.

Constraints

0 ≤ base1, height1, base2, height2 ≤109

Example

Input:

5 8

4 11

Output:22.00

2. The manager of a supermarket wants to organize an event in which he will distribute gift hampers to the winners of the event. The manager has planned in such a way that each customer has to pick the product in a pair and each pair has different types of products. Any two customers can't pick the same type of product pair but the price may be same. There are N types of products and each product has a price. He will offer the gift hampers to those customers for whom the difference of the price of the products pickedby them is equal to the given integer value K. Write an algorithm to help the Manager find the total numbers of lucky customers who will get the gift hampers.
Input
ProductTypes : an integer representing the types of products(N).
numK, an integer representing the given value K.
prices, a list of integers representing the price of the products.
Output
return a integer representing the total number of lucky customers who will get the gift hamper.
Constraints
NA
Example
Input:
6
13
10 15 23 14 2 15
Output:
3

3. An e –commerce company is planning to give a special discount on all its product to its customers for the Christmas holiday. The company possesses data on its stock of N product types. The data for each product type represents the count of customers who have ordered the given product. If the data K is positive then it shows that the product has been ordered by K customers and is in stock. If the data K is negative then it shows that it has been ordered by K customers but is not in stock. The company will fulfill the order directly if the ordered product is in stock. If it is not in stock, then the company will fulfill the order after they replenish the stock from the warehouse. They are planning to offer a discount amount A for each product. The discount value will be distributed to the customers who have purchased that selected product. The discount will be distributed only if the decided amount A con be divided by the number of orders for a particular product. Write an algorithm for the sales team to find the number of products out of N for which the discount will be distributed.

Input

The first line of the input consists of two space-separated integers – numOfProducts and disAmount, representing the number of different types of products (N) and the discount amount that will be distributed among the customers. Order N representing the current status of the stock for the orders of the respective product types.

Output

Print an integer representing the number of products out of N for which the discount will be distributed.

Constraints

$0 \leq$ numOfProducts, disAmount ≤ 105

$-106 \leq$ order i ≤ 106

$0 \leq i \leq$ numOfProducts

Example

Input:

7 18

9 -3 8 -7 -8 18 10

Output:

2

4. In a company, an employee's rating point (ERP) is calculated as the sum of the rating points given by the employee's manager and HR. The employee rating grade (ERG) is calculated according to the ERP ranges given below.

ERP	ERG
30-50	D
51-60	C
61-80	B
81-100	A

Write an algorithm to find the ERG character for a given employee's ERP.

Input

The input consists of an integer eRP, representing the calculated employee rating point.

Output

Print a character representing the ERG for a given employee's ERP.

Constraints

$30 <$ eRP < 100

Example

Input:

64

Output:

B

5. Charlie has a magic mirror. The mirror shows right rotated versions of given word.To generate different right-rotations of a word. Write the word in a circle in clockwise order, then start reading from any given character in clockwise order till you have covered all the characters. In the word “sample”, if we start with ‘P’, we get the right rotated word as “plesam”. There are six such right rotations of “sample” including itself

Input

The inputs to the function isSameReflection consists of two string, word1 and word2

Output

function returns 1 if word1 and word2 are right rotations of the same word and -1 if they are not. Both word1 and word2 will strictly contain characters between ‘a’-‘z’ (lower case letters

Constraints

NA

Example

Input:

plesam

Output:

1

6. A company wishes to modify the technique by which tasks in the processing queue are executed. There are N processes with unique IDs from 0 to N-1. Each of these tasks has its own execution time. The company wishes to implement a new algorithm for processing tasks. For this purpose they have identified a value K By the new algorithm, the processor will first process the task that has the Kth shortest execution time. Write an algorithm to find the Kth shortest execution time.

Input

The first line of the input consists of two space-separated integers – numTasks and valueK representing the number of tasks (N) and the value K, which is used as reference, respectively. The second line consists of N space-separated integers – exectuionTimep exectuionTime2, exectuion7imeN representing the execution times of the tasks.

Output

Print an integer representing the Kth shortest execution time.

Constraints

0 < value K < numTasks < 106

0 < execution time < 106

0 < I < numTasks

Example

Input:

7 5

9 -3 8 -6 -7 18 10

Output:

9