

# Number Line Jumps ★

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Problem

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You are choreographing a circus show with various animals. For one act, you are given two kangaroos on a number line ready to jump in the positive direction (i.e, toward positive infinity).

- The first kangaroo starts at location  $x_1$  and moves at a rate of  $v_1$  meters per jump.
- The second kangaroo starts at location  $x_2$  and moves at a rate of  $v_2$  meters per jump.

You have to figure out a way to get both kangaroos at the same location at the same time as part of the show. If it is possible, return YES, otherwise return NO.

## Example

$x_1 = 2$

$v_1 = 1$

$x_2 = 1$

$v_2 = 2$

After one jump, they are both at  $x = 3$ , ( $x_1 + v_1 = 2 + 1$ ,  $x_2 + v_2 = 1 + 2$ ), so the answer is YES.

## Function Description

Complete the function kangaroo in the editor below.

kangaroo has the following parameter(s):

- int  $x_1$ , int  $v_1$ : starting position and jump distance for kangaroo 1
- int  $x_2$ , int  $v_2$ : starting position and jump distance for kangaroo 2

## Returns

- string: either YES or NO

## Input Format

A single line of four space-separated integers denoting the respective values of  $x_1$ ,  $v_1$ ,  $x_2$ , and  $v_2$ .

## Constraints

- $0 \leq x_1 < x_2 \leq 10000$
- $1 \leq v_1 \leq 10000$
- $1 \leq v_2 \leq 10000$



### Sample Input 0

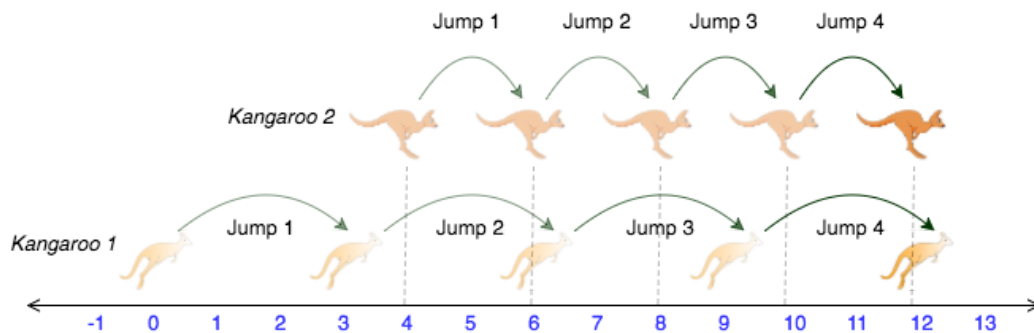
0 3 4 2

### Sample Output 0

YES

### Explanation 0

The two kangaroos jump through the following sequence of locations:



From the image, it is clear that the kangaroos meet at the same location (number **12** on the number line) after same number of jumps (**4** jumps), and we print YES.

### Sample Input 1

0 2 5 3

### Sample Output 1

NO

### Explanation 1

The second kangaroo has a starting location that is ahead (further to the right) of the first kangaroo's starting location (i.e.,  $x_2 > x_1$ ). Because the second kangaroo moves at a faster rate (meaning  $v_2 > v_1$ ) and is already ahead of the first kangaroo, the first kangaroo will never be able to catch up. Thus, we print NO.

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Language

Python 3



```
17 # 4. INTEGER v2
18 #
19
20 def kangaroo(x1, v1, x2, v2):
21     # Write your code here
22     res = ''
23     if (v1 > v2):
24         res = 'NO'
25         if (x2+v2 == x1+v1) or (v2 < v1) or (x2 - x1) * (v2 - v1) < 0 and (x2 - x1) %
```



```

    (v2 - v1) == 0:
26         res = 'YES'
27
28     else:
29         res='NO'
30     return res
31
32 if __name__ == '__main__':
33     fptr = open(os.environ['OUTPUT_PATH'], 'w')
34
35     first_multiple_input = input().rstrip().split()
36
37     x1 = int(first_multiple_input[0])
38
39     v1 = int(first_multiple_input[1])
40
41     x2 = int(first_multiple_input[2])
42
43     v2 = int(first_multiple_input[3])
44
45     result = kangaroo(x1, v1, x2, v2)
46
47     fptr.write(result + '\n')
48
49     fptr.close()
50

```

Line: 50 Col: 1

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Wrong Answer

 Hidden Test Case

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