Number Line Jumps

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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 $x1$ and moves at a rate of $v1$ meters per jump.
- The second kangaroo starts at location $x2$ and moves at a rate of $v2$ 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

$x1 = 2$

$v1 = 1$

$x2 = 1$

$v2 = 2$

After one jump, they are both at $x = 3$, ($x1 + v1 = 2 + 1$, $x2 + v2 = 1 + 2$), so the answer is YES.

Function Description

Complete the function kangaroo in the editor below.

kangaroo has the following parameter(s):

- int x1, int v1: starting position and jump distance for kangaroo 1
- int x2, int v2: 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 $x1$, $v1$, $x2$, and $v2$.

Constraints

- $0 \leq x1 < x2 \leq 10000$
- $1 \leq v1 \leq 10000$
- $1 \leq v2 \leq 10000$

Sample Input 0

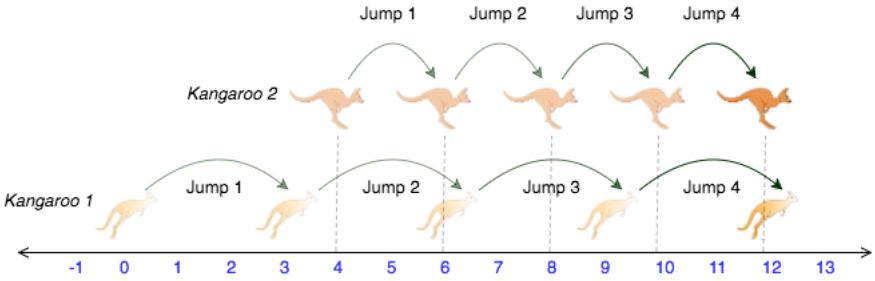
```
0 3 4 2
```

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.

Change Theme Language Python 3

```python
#!/bin/python3

import math
import os
import random
import re
import sys

#
# Complete the 'kangaroo' function below.
#
# The function is expected to return a STRING.
# The function accepts following parameters:
#  1. INTEGER x1
#  2. INTEGER v1
#  3. INTEGER x2
#  4. INTEGER v2
#

def kangaroo(x1, v1, x2, v2):
    # Write your code here
    if v1 > v2 and (x2 - x1) % (v1 - v2) == 0:
        return "YES"
    else:
        return "NO"

if __name__ == '__main__':
    fptr = open(os.environ['OUTPUT_PATH'], 'w')
```

```
29
30      first_multiple_input = input().rstrip().split()
31
32      x1 = int(first_multiple_input[0])
33
34      v1 = int(first_multiple_input[1])
```

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Upload Code as File | Test against custom input | Run Code | Submit Code

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You solved this challenge. Would you like to challenge your friends?

Next Challenge

- Test case 0
- Test case 1
- Test case 2
- Test case 3
- Test case 4
- Test case 5
- Test case 6

Compiler Message

Success

Input (stdin) Download

```
0 3 4 2
```

Expected Output Download

```
YES
```