Dashboard › **Algorithms** › **Implementation** › **Kangaroo**   **Badge Progress** (Details)   **Points: 458.19 Rank: 93347**

Kangaroo 🔖

by **wanbo**

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There are 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. Given the starting locations and movement rates for each kangaroo, can you determine if they'll ever land *at the same location at the same time*?

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

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

Output Format

Print `YES` if they can land on the same location at the same time; otherwise, print `NO`.

Note: The two kangaroos must land at the same location *after making the same number of jumps.*

Sample Input 0

```
0 3 4 2
```

Sample Output 0

```
YES
```

Explanation 0

The two kangaroos jump through the following sequence of locations:

1. $0 \to 3 \to 6 \to 9 \to 12$
2. $4 \to 6 \to 8 \to 10 \to 12$

Thus, the kangaroos meet after 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*.

Submissions: 120033

Max Score: 10
Difficulty: Easy

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Current Buffer (saved locally, editable)   Python 3 ⌄

```python
#!/bin/python3

import sys

def kangaroo(x1, v1, x2, v2):
    # Complete this function

x1, v1, x2, v2 = input().strip().split(' ')
x1, v1, x2, v2 = [int(x1), int(v1), int(x2), int(v2)]
result = kangaroo(x1, v1, x2, v2)
print(result)

```

Line: 1 Col: 1

⬆ Upload Code as File   ☐ Test against custom input   Run Code   Submit Code

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