Kangaroo

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Problem Submissions Leaderboard Discussions Editorial

There are two kangaroos on an x-axis 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. $0 \rightarrow 3 \rightarrow 6 \rightarrow 9 \rightarrow 12$
2. $4 \rightarrow 6 \rightarrow 8 \rightarrow 10 \rightarrow 12$

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: 55718
Max Score: 10
Difficulty: Easy

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```
1  import java.io.*;
2  import java.util.*;
3  import java.text.*;
4  import java.math.*;
5  import java.util.regex.*;
6
7  public class Solution {
8
9      public static void main(String[] args) {
10         Scanner in = new Scanner(System.in);
11         int x1 = in.nextInt();
12         int v1 = in.nextInt();
13         int x2 = in.nextInt();
14         int v2 = in.nextInt();
15
16         if (v2 >= v1)
17             System.out.println("NO");
18         else if ((x2-x1)%(v1-v2) == 0 && (x2-x1)/(v1-v2) > 0) {
19             System.out.println("YES");
20         } else {
21             System.out.println("NO");
22         }
23     }
24 }
25
```

Line: 22 Col: 10

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Congrats, you solved this challenge!

✔ Test Case #0	✔ Test Case #1	Success 2
✔ Test Case #3	✔ Test Case #4	Download 5
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✔ Test Case #9	✔ Test Case #10	✔ Test Case #11
✔ Test Case #12	✔ Test Case #13	✔ Test Case #14
✔ Test Case #15	✔ Test Case #16	✔ Test Case #17
✔ Test Case #18	✔ Test Case #19	✔ Test Case #20
✔ Test Case #21	✔ Test Case #22	✔ Test Case #23

✔ Test Case #24	✔ Test Case #25	✔ Test Case #26
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