Problem 4

num1   3 5 | 8 9   len1 = m
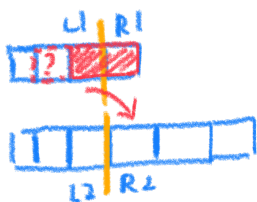   L1 R1

num2   1 2 7 | 10 11 12   len2 = n
           L2 R2
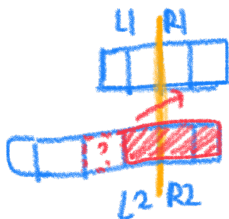
L1 ≤ R2
L2 ≤ R1

If

L1 > R2, then L1 belongs to
                    right side

it

L2 > R1, the L2 belongs to
                   right side

We do binary search in the
shorter array, hence

$$O(\log(\min(m, n)))$$