668. Kth Smallest Number in Multiplication Table

Nearly every one have used the Multiplication Table. But could you find out the k-th smallest number quickly from the multiplication table?

Given the height m and the length n of a m * n Multiplication Table, and a positive integer k, you need to return the k-th smallest number in this table.

Example 1:

```
Input: m = 3, n = 3, k = 5
Output:
Explanation:
The Multiplication Table:
1   2   3
2   4   6
3   6   9

The 5-th smallest number is 3 (1, 2, 2, 3, 3).
```

```
class Solution {
    public int findKthNumber(int m, int n, int k) {
        int low = 1, high = m * n + 1; // 答案上下边界

        while(low < high) {
            int mid = low + (high - low)/2;
            int c = count(mid, m, n);
            // count all numbers that less or equal to mid

            if (c >= k) {
                high = mid;
            } else {
                low = mid + 1;
            }
        }

        return high;
    }


    private int count(int mid, int row, int col) {
        int count = 0;

        // 坐标(i,j)的点的值即为i*j
        // mid/i是用来判断当前行中小于等于v的数字的数量
        // add all counts in each row

        for (int i = 1; i <= row; i++) {
            int temp = Math.min(mid/i, col);
            count += temp;
        }

        return count;
    }
}
```