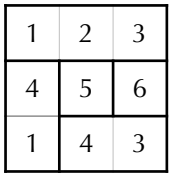
# 2021 WHAT A CARVE UP

The spring equinox in *The Endians* marks the start of the village fête season. Bright colours. The air filled with music loud and long. The constant tantalising scent of cake. A steady stream of villagers seek sustenance and the fêtes conspire to keep them fed but never fully satisfied.

The traditional honey-dew cake is rectangular and made up of individual squares. When carving a cake, a slice is always a complete edge (top, bottom, left or right) of the cake with a thickness of one square. Each square of the cake contains a known number of calories and the fêtes forbid slices containing too many calories.

Nobody likes to see cake go to waste — only to waist — so for a cake to be sold at a fête it must be possible to divide it *fully* into slices (with a thickness of one square). The piece left after the final carve *must* be a valid slice.




For example, in the illustration to the left:

- This corresponds to a cake being successively carved from the top → left → bottom → right;
- This was a valid carving of the cake if slices were permitted to contain up to 7 calories;
- If 9 calories had been permitted the cake could have been carved into 4 slices (top → right → bottom). The carving shown in the illustration is still valid but produces more slices.
- The cake cannot be fully carved into slices if only 6 calories are permitted.

For a given cake and calorie limit calculate the *minimum* number of potential slices.

## SAMPLE INPUT

```
9
3 3
1 2 3
4 5 6
1 4 3
```

The first line of input will consist of a single integer $m$, ($1 \leq m \leq 2^{20}$), indicating the maximum number of calories permitted in a slice. The next line will consist of two integers $r$ then $c$, ($1 \leq r, c \leq 2^{11}$), indicating the number of rows and columns respectively in the cake. The $i^{th}$ of the next $r$ lines will contain $c$ values, containing the calorie counts in order for the $i^{th}$ row; each square's calorie count is between 1 and $2^{10}$ inclusive.

## SAMPLE OUTPUT

```
4
```

You should output a single integer, the minimum number of potential slices. You will always be given input that can be fully sliced.