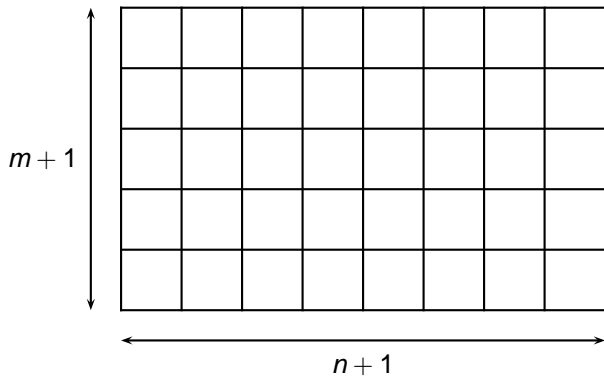


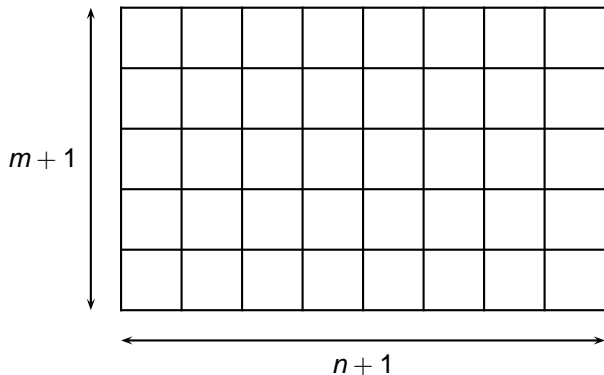
# Episode 19 – How to cut a square grid ?

European section – Season 3

# The problem



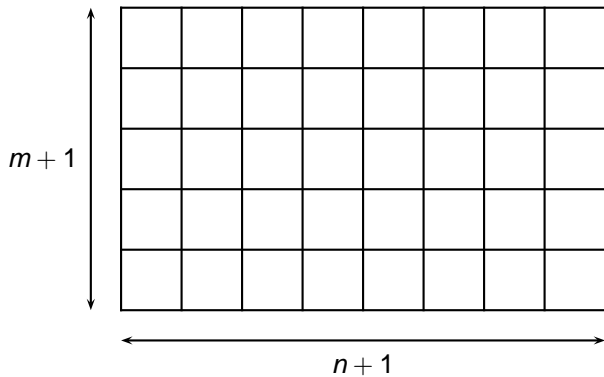
# The problem



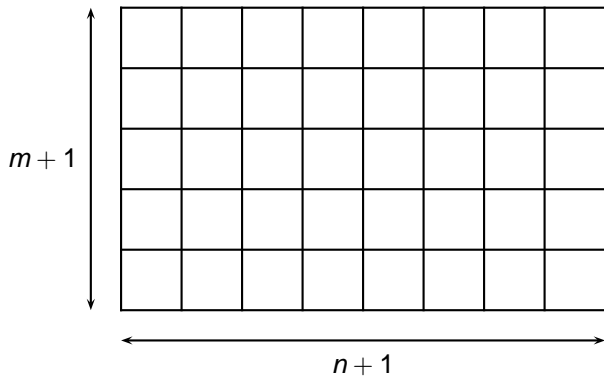
What is the best way to cut a rectangular grid ?

How should you cut the grid so that the total *length* cut is minimal ?

# Problem #1

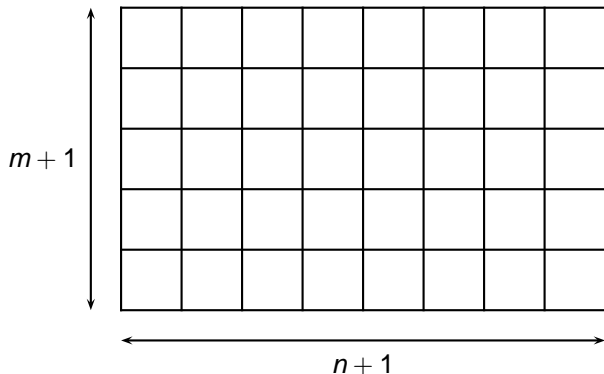


# Problem #1



**Solution :**

# Problem #1

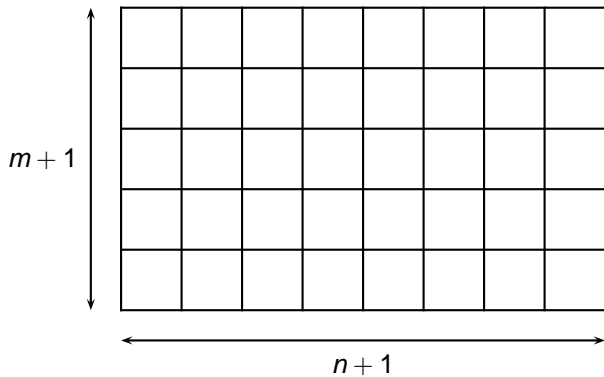


**Solution :** The total cut length is always  $2mn + m + n$ .

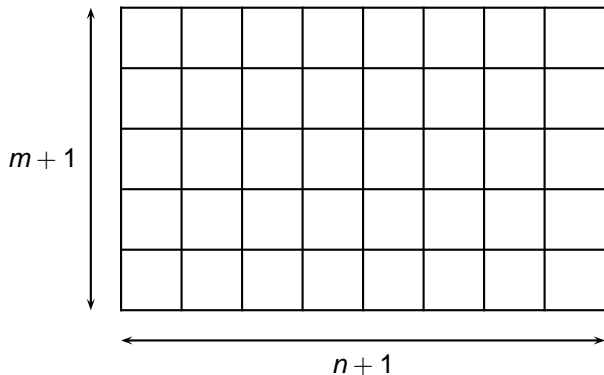
How should you cut the grid so that the  
*number of cuts* is minimal ?



# Problem #2

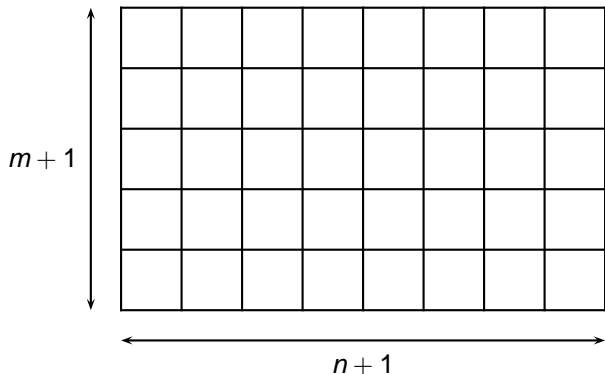


# Problem #2



**Solution :**

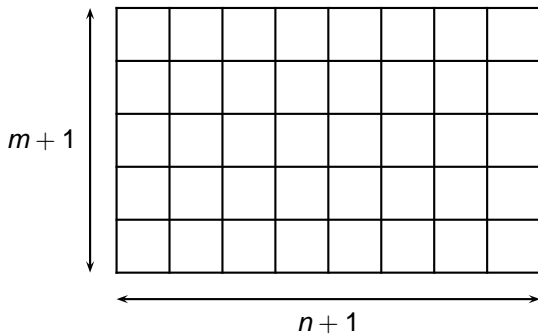
## Problem #2



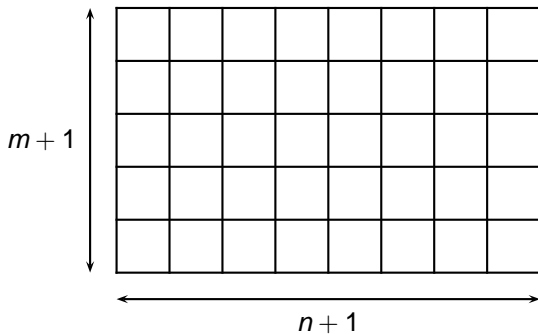
**Solution :** The total number of cuts is always  $mn + m + n$ .

How should you cut the grid so that the *time* needed to cut it is minimal ?

# Problem #3

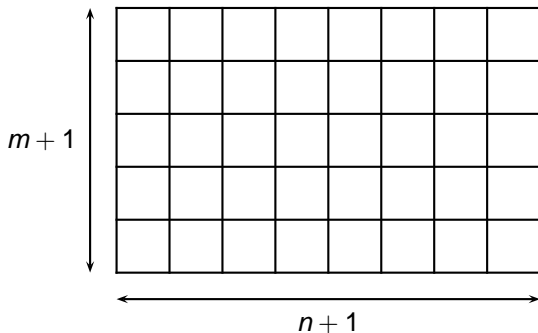


# Problem #3



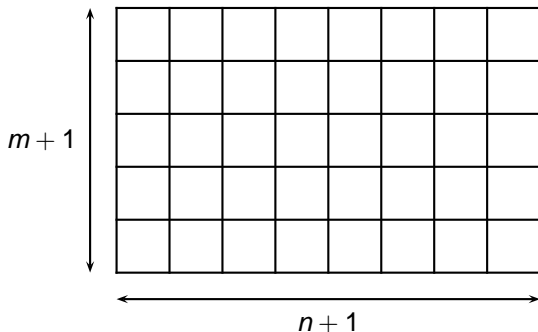
**Solution :**

# Problem #3



**Solution :** The minimal cutting time is  $mn + 2m + n + 1$ .

# Problem #3



**Solution :** The minimal cutting time is  $mn + 2m + n + 1$ .  
The solution is to start with a vertical grid  
and cut into into strips.