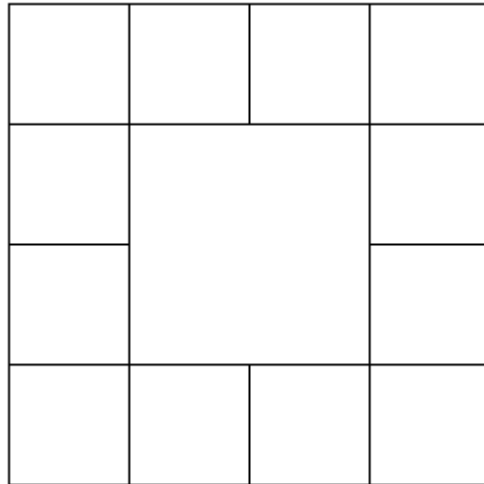


Exeat Maths Brain Teasers:

1) There are seventy eight prisoners in a square cell block of twelve cells. There is one prisoner in one of the cells, two in another cell, three in another, four in another and so on up to twelve prisoners in one of the cells.

The clever prison warden made it easy to check if the prisoners were all there by arranging them so there were twenty five along each wall of the prison block. How did he do it?



2) There are 100 prisoners in 100 separate locked cells. During the night each of 100 prison officers visits the cells. The first officer visits every cell. The second officer visits cells 2,4,6,... etc (every 2nd cell), the third officer visits cells 3,6,9,..etc (every third cell), the fourth officer visits every fourth cell, and so on until the 100th officer visits the 100th cell. On a visit each officer unlocks the door if it is locked or locks the door if it is unlocked. If the cell remains unlocked after all officers have completed their rounds, the prisoner can escape. In the morning, how many prisoners have escaped and why?