

PROBLEME DISTRACTIVE clasele 5-8

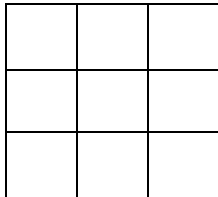
1. Se considera urmatoarea impartire a unui patrat, pe linii si coloane:



Cate patrate vor exista in total?

SOLUTIE: Vom obtine: 4 patrate mai mici si un patrat mare, deci in total: $1^2 + 2^2 = 5$ patrate.

2. Se considera urmatoarea retea de patrate:



Cate patrate vor exista in total?

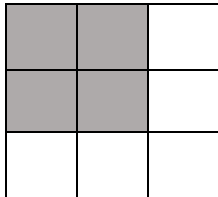
SOLUTIE: In acest caz, le vom numara astfel:

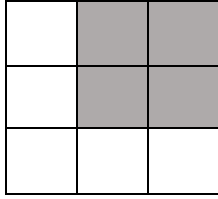
1 patrat mare (le contine pe toate):



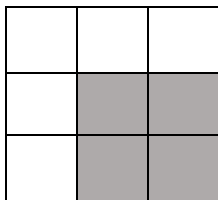
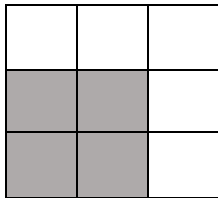
Cate patrate de dimensiune 2 vom avea?

Luand in considerare primele 2 linii: 2 solutii...





...apoi ultimele 2 linii: inca 2 solutii.

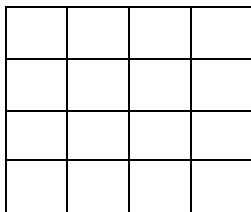


La final, 3x3 patrate de dimensiune 1:



Deci numarul total de patrate: $1^2 + 2^2 + 3^2 = 14$ patrate.

3. Se considera urmatoarea retea de patrate:



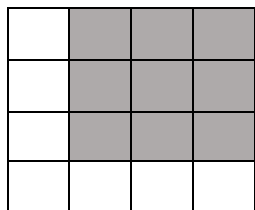
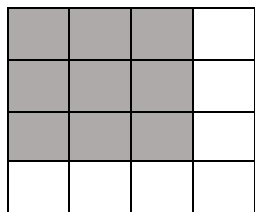
Cate patrate vor exista in total?

SOLUTIE: In acest caz, le vom numara astfel:

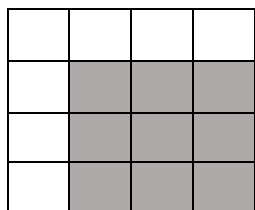
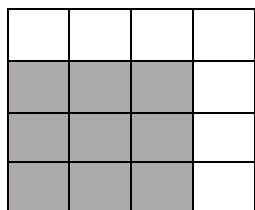
1 patrat mare (le contine pe toate).

Cate patrate de dimensiune 2 vom avea? **9! Numarati-le dvs!**

Cate patrate de dimensiune 3 vom avea? Pentru primele 3 linii:



Apoi liniile 2, 3 si 4:



Deci 4 patrate de dimensiune 3.

La final, 16 patrate de dimensiune 1:



TOTAL: $1^2 + 2^2 + 3^2 + 4^2 = 30$ patrate.

PUTETI GENERALIZA?

DEMONSTRATI CA, IN CAZUL UNUI CUB IMPARTIT IN MAI MULTE CUBURI , AVEM FORMULA:

$1^3 + 2^3 + 3^3 + \dots + n^3 =$ numarul total de cuburi!

(unde n= numarul de "taieturi", in cazul de mai jos n=3)

DAR IN 4 DIMENSIUNI?

