



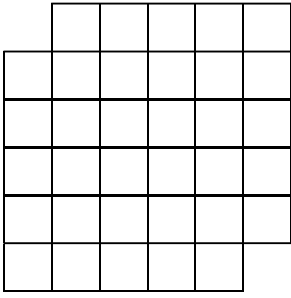
# MEI Conference 2010

## Polyominoes: a Year 6/7 masterclass

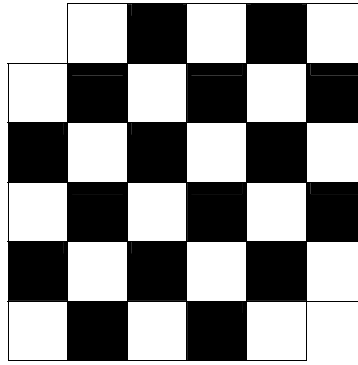
Presenter: Bernard Murphy  
[bernard.murphy@mei.org.uk](mailto:bernard.murphy@mei.org.uk)

Workshop B9

Cover this grid of 34 squares with 17 dominoes.

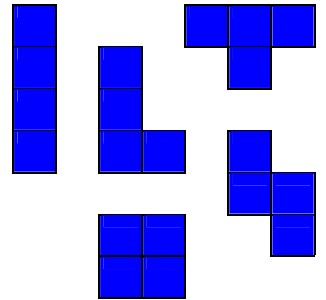
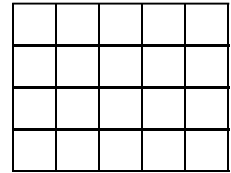


A domino covers two squares. All dominoes must be horizontal or vertical.

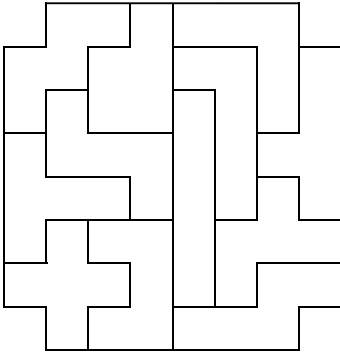


18 white 16 black

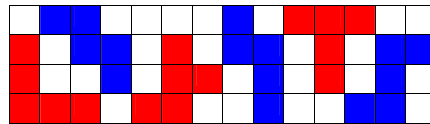
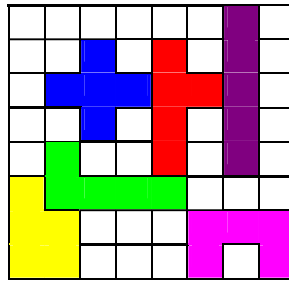
Tetromino Jigsaw?



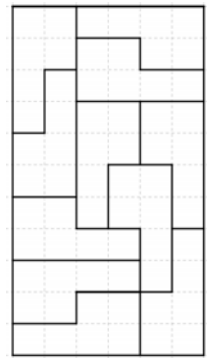
Pentominos



The pentomino game  
The first player unable to place a pentomino loses.



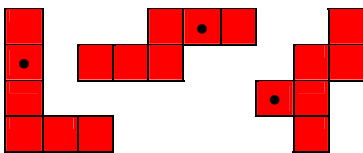
An unsolved problem



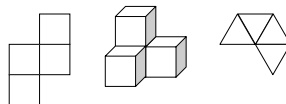
11 copies to tile a rectangle.

Is this the smallest odd number possible for any non-rectangular polyomino and any rectangle?

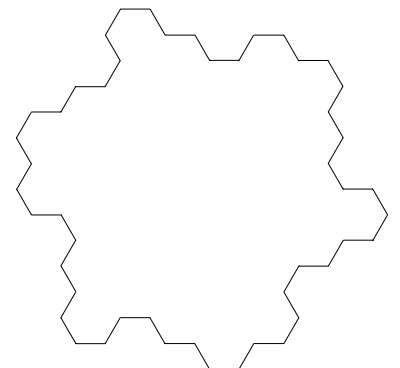
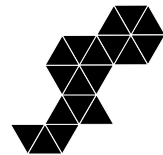
Some hexominoes are nets of cubes, some aren't...



Number of 'units'	Number of polyominoes	Number of polycubes	Number of polyiamonds
1	1	1	1
2	1	1	1
3	2	2	1
4	5	8	3
5	12	29	4
6	35	166	12
7	108	1023	24
8	369	6922	66
9	1285	48311	160
10	4655	346543	448
11	17073	2522572	1186
12	63600	18598427	3334

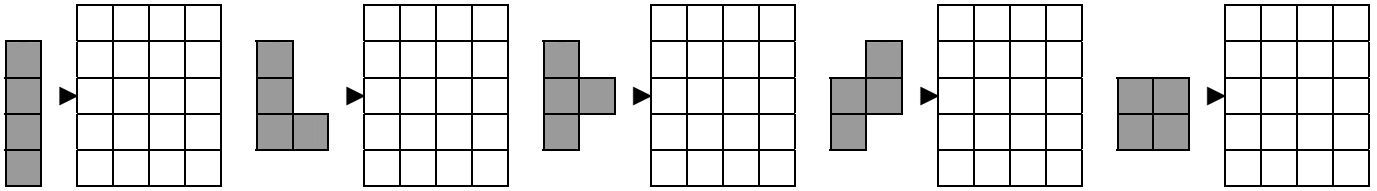


Penrose Wheelbarrow



## Blocking Tetrominoes and Pentominoes

Two tetrominoes require four blocking squares, one needs five and the other two need six.



On the first chessboard below it is impossible to place the X pentomino without it overlapping one of the ten squares. The minimum numbers of squares for all the pentominoes are given below.  
Can you find any other solutions?

