



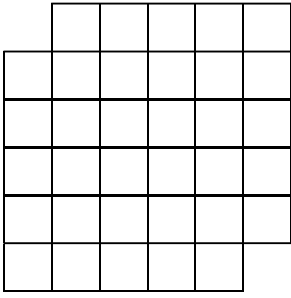
MEI Conference 2010

Polyominoes: a Year 6/7 masterclass

Presenter: Bernard Murphy
bernard.murphy@mei.org.uk

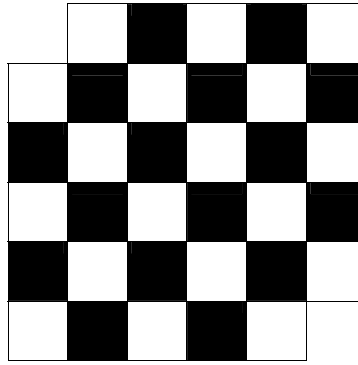
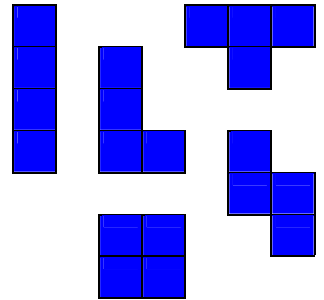
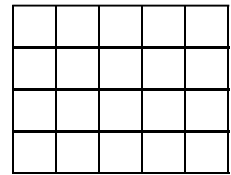
Workshop B9

Cover this grid of 34 squares with 17 dominoes.



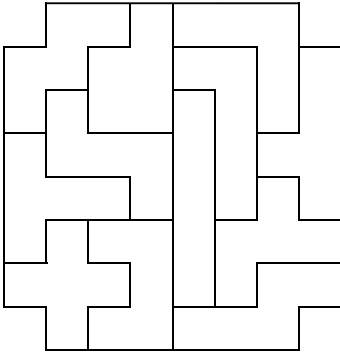
A domino covers two squares. All dominoes must be horizontal or vertical.

Tetromino Jigsaw?

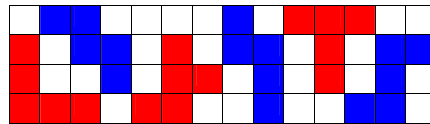
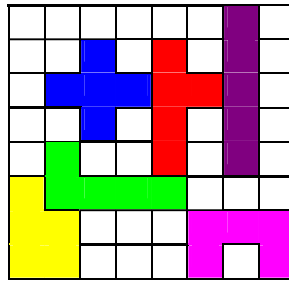


18 white 16 black

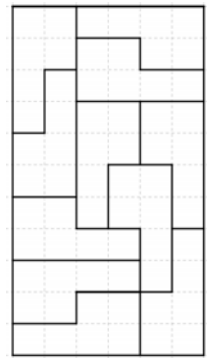
Pentominos



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



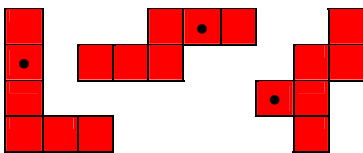
An unsolved problem



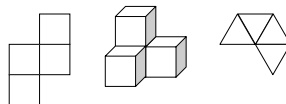
11 copies to tile a rectangle.

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

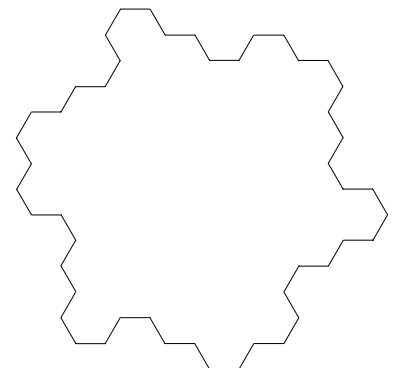
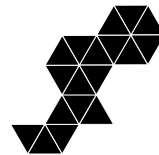
Some hexominoes are nets of cubes, some aren't...



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

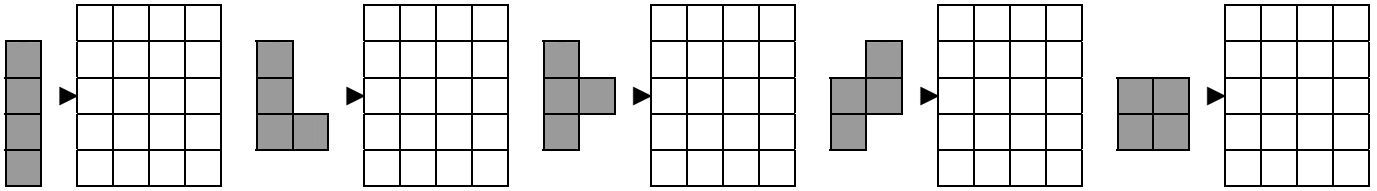


Penrose Wheelbarrow



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?

