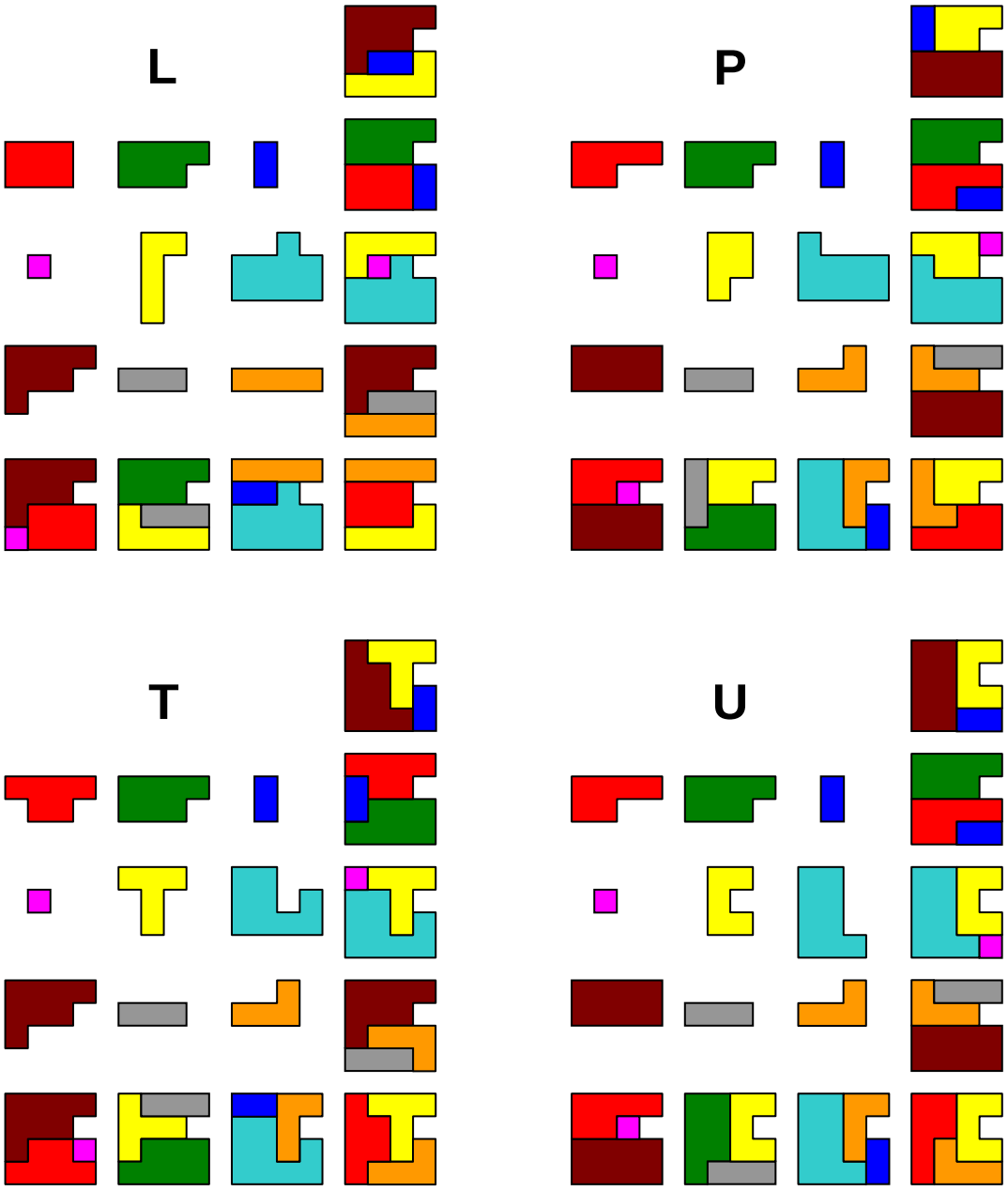
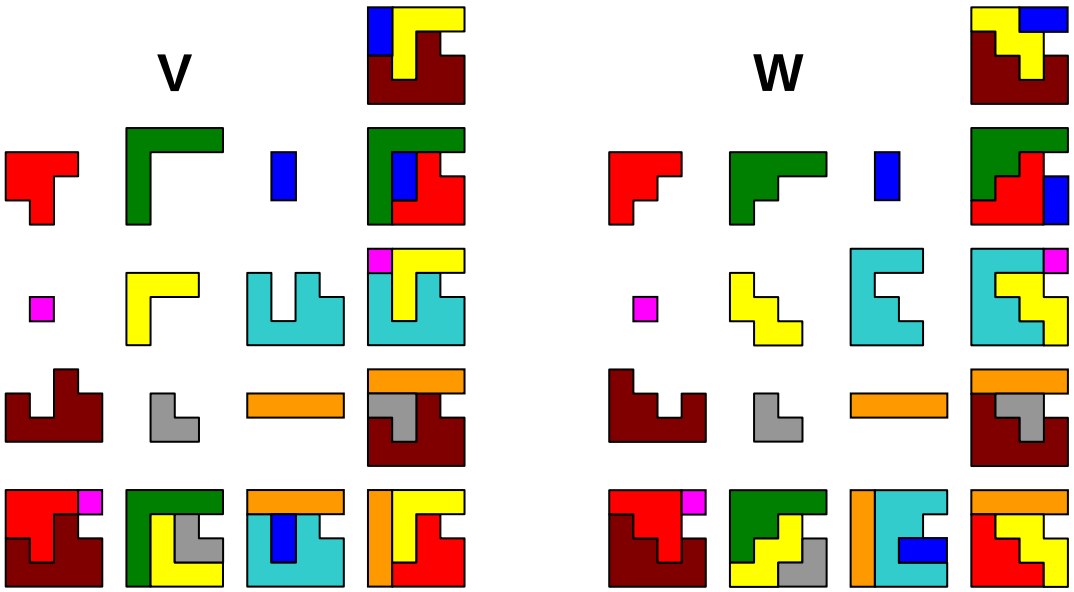
Easter flowers:

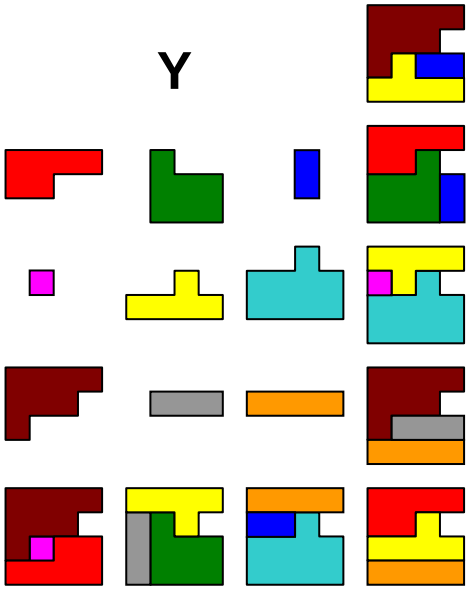
Problem 2: This is possible for L, P, T, U, V, W, Y, and it is impossible for F, N, X, Z.

Problem 3: This is possible for L, P, T, U, V, Y, and it is impossible for F, N, W, X, Z.

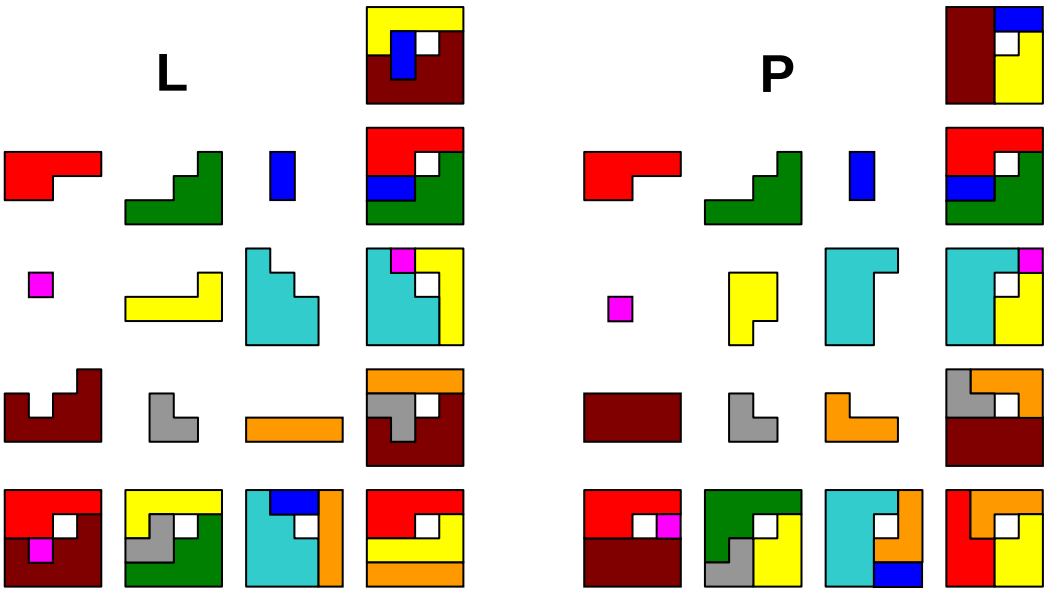
Here are solutions for problem 2:

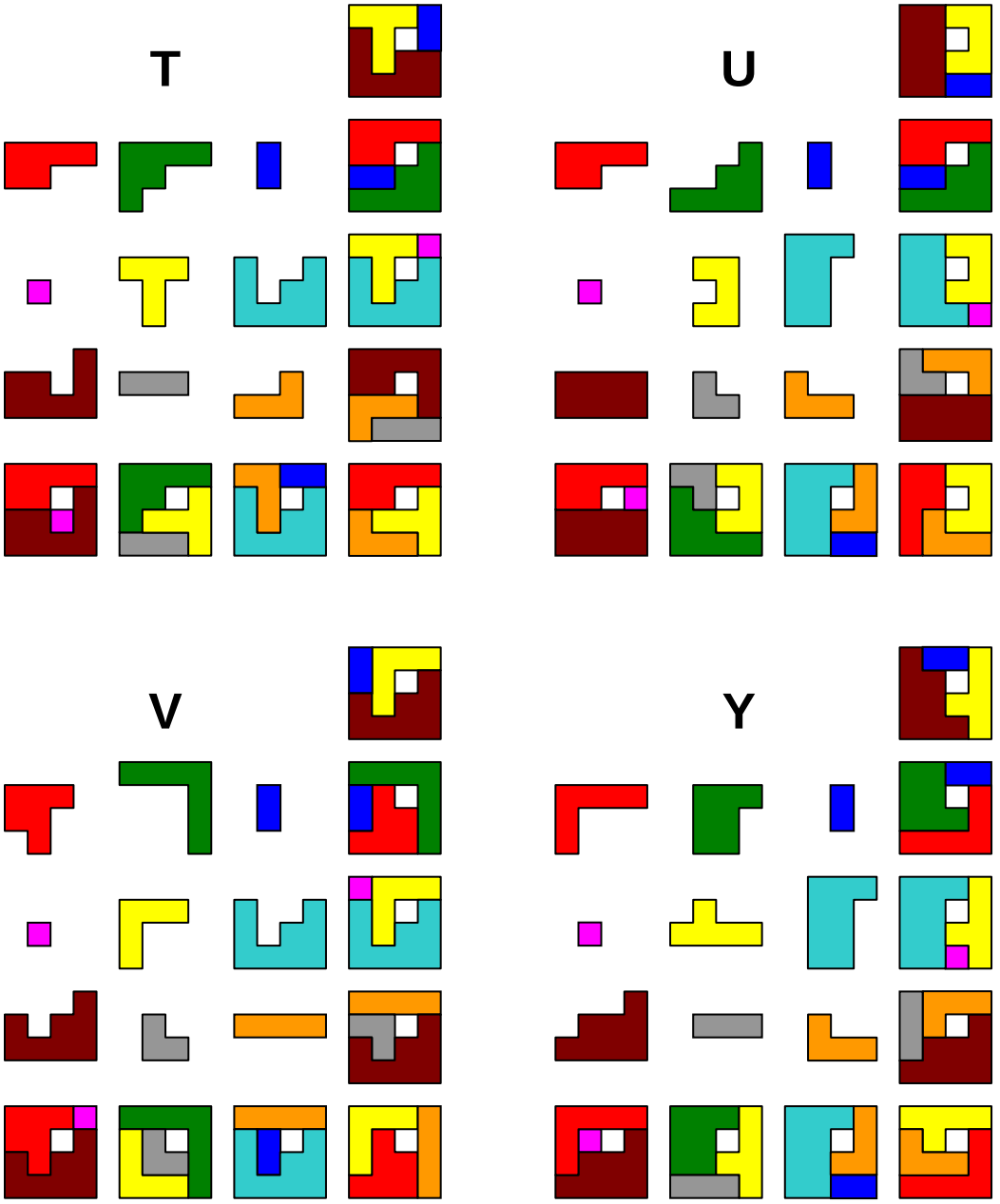






Here are solutions for problem 3:





Impossibility proofs:

The method is always the same; with individual minor changes.

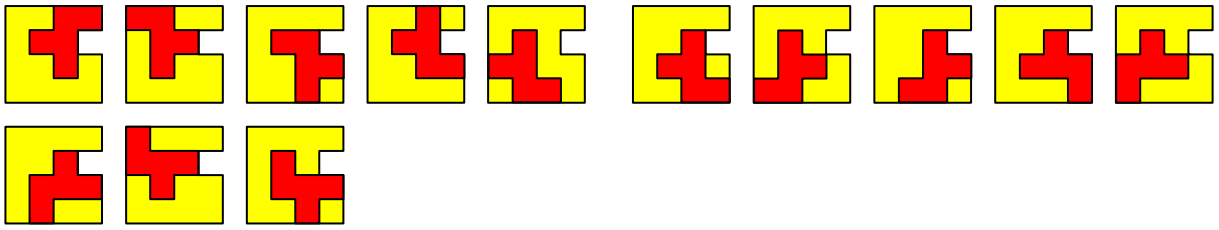
Step 1: Look how the pentomino (red) fits into the pattern so to leave an area (yellow) which can be covered by two other valid pieces (areas 9+1, 8+2, 7+3 or 6+4). Disregard mirror positions, if any.

Step 2: Pick out special cases like 7+3 and 6+4 or 8+2 and determine all possible shapes of the involved pieces (green and blue).

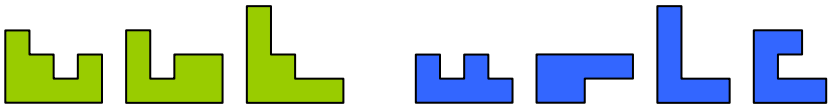
Step 3: Show that a combination like 7+6 or 8+6 (which must appear in the lines 7+6+2 resp. 8+6+1) is not possible with the resulting pieces.

Problem 2:

F:

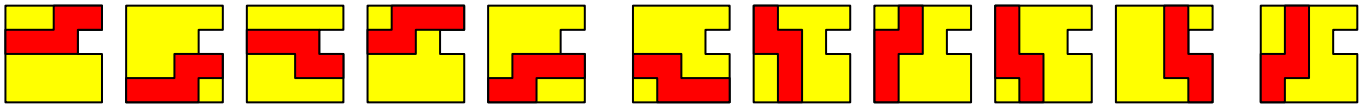


Case 8+2 can only be covered by positions 1, 2, 9 and 11.
Case 6+4 can only be covered by positions 1, 9 and 10.
The resulting 8- and 6-pieces can have the following shapes (partly including their mirror images):



No combination of an 8- and a 6-piece can cover the sum pattern.

N:

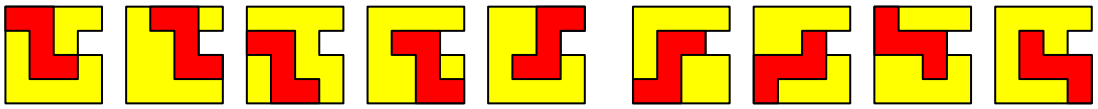


No case 7+3 is possible.

X:

No case 8+2 (or 7+3 or 6+4) is possible.

Z:

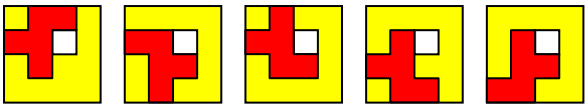


Case 8+2 can only be covered by positions 3, 5 and 9.
Case 6+4 can only be covered by positions 5, 6, 7 and 9.
The resulting 8- and 6-pieces can have the following shapes (and mirror images):

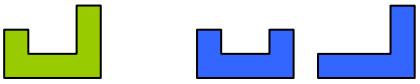
No combination of an 8- and a 6-piece can cover the sum pattern.

Problem 3:

F:

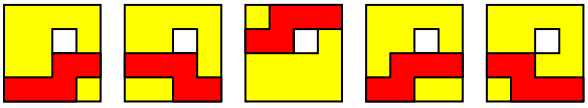


Case 7+3 can only be covered by position 5.
Case 6+4 can also only be covered by position 5.
The resulting 7- and 6-pieces can have the following shapes (and mirror images):



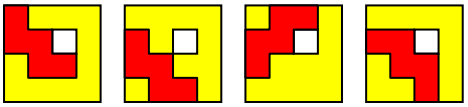
No combination of a 7- and a 6-piece can cover the sum pattern.

N:

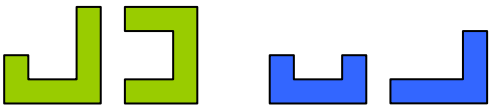


No case 7+3 (or 6+4) is possible.

W:



Case 8+2 can only be covered by position 1.
Case 6+4 can also only be covered by position 1.
The resulting 8- and 6-pieces can have the following shapes (and mirror images):

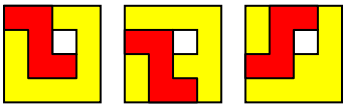


No combination of an 8- and a 6-piece can cover the sum pattern.

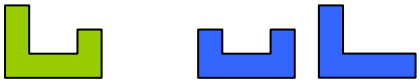
X:

No case 8+2 (or 7+3 or 6+4) is possible.

Z:



Case 7+3 can only be covered by position 1.
Case 6+4 can also only be covered by position 1.
The resulting 7- and 6-pieces can have the following shapes (and mirror images):



No combination of a 7- and a 6-piece can cover the sum pattern.