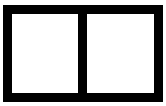
Introduction: What is a Polyomino?

A **polyomino** is a shape made by joining identical squares edge-to-edge.

A **Domino** has 2 squares, a **Tromino** has 3 squares, a **Quadromino** has 4 squares, a **Pentomino** has 5 squares, etc.

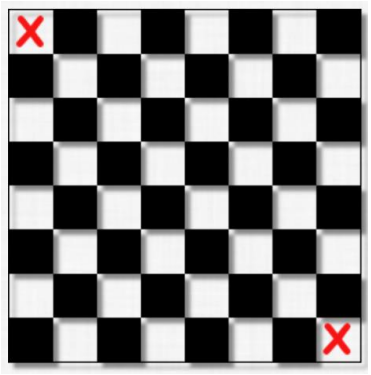
Part 1: Dominoes



A standard chessboard has (8 x 8) 64 squares (32 black and 32 white).

1. Can you completely cover a chessboard with dominoes so that there are no gaps? If so how many dominoes would you need? If not, why not?

2. Now, what If you cut off the **top-left** and **bottom-right** corner squares. Can you cover this board with dominoes? If so, how can you do it? If not, why not? (Hint: think of the colours on a chessboard).



Part 2: Trominoes (3-square shapes)

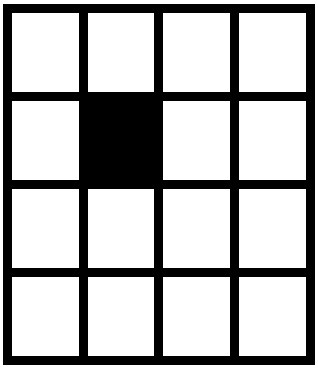
1. How many different shaped trominoes are there? Can you draw them?

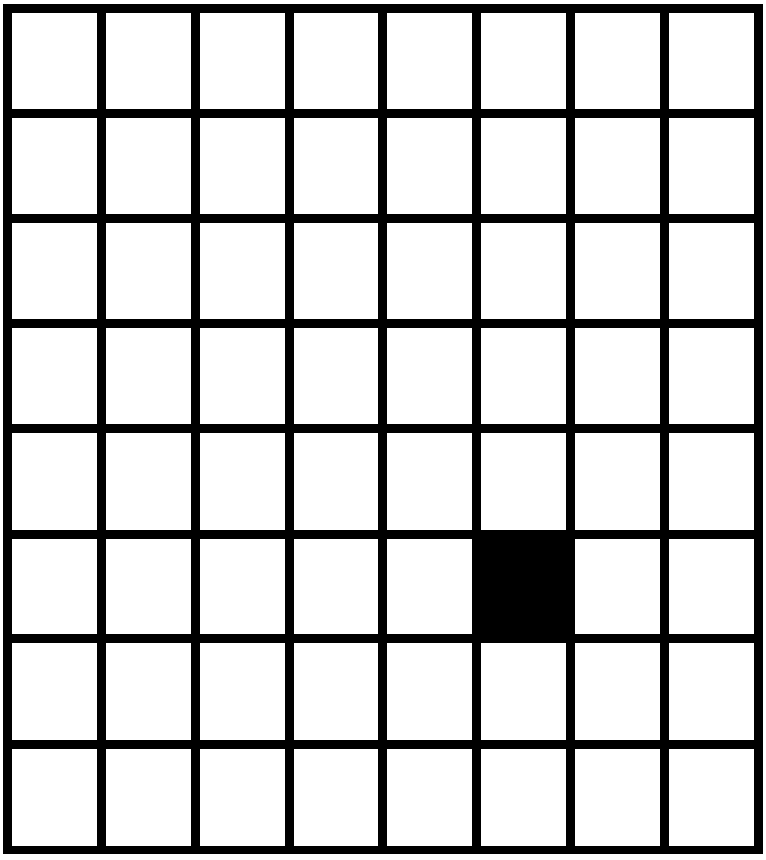
An **L-tromino** is an L-shaped piece made of 3 squares.

2. You cannot completely cover a chessboard with L-trominoes. Why not?

If you remove one square from an 8 x 8 chessboard, can you cover it with L-trominoes? Prove it.

(Hint start by drawing a 4 x 4 board with one square removed and try to cover it with L-trominoes).





Part 3: The Pentomino Hunt

How many **unique pentominoes** (5-square shapes) are there?

Draw as many of them as you can find.

Part 4: The Great Tiling Race

1. Using a complete set of pentominoes, can you form them into a rectangle? What are the dimensions of this rectangle?

2. What is the longest possible side length of a rectangle made from a complete set of pentominoes?

3. Can you use a complete set of pentominoes to cover an 8 x 8 chessboard leaving an empty square in the middle?