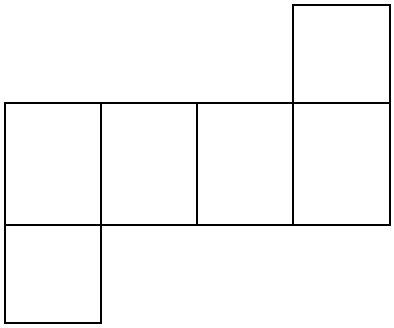
Cutting a Cube

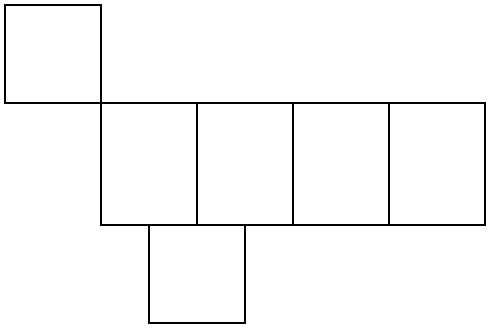
Level E

Patterns of six attached squares are called hexominoes. The word is like dominoes, except it has six squares instead of just two squares. A hexomino has six squares, and all squares must share at least one side with another square, and all the vertices of the squares must coincide. Arrangement A below is a hexomino, while B is not.

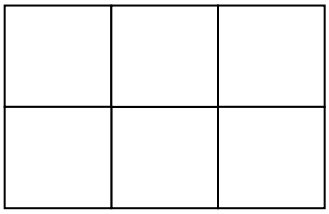
A.



B.



There are some hexominoes that can be folded into a cube. These are called nets. There are other hexominoes that do not fold into a cube. For example, a pattern of six faces arranged in three columns of two squares all attached together cannot fold into a cube.



Find all the configurations of hexominoes. These include all the nets that fold into cubes and all the other hexominoes that can't fold into cubes.

- Draw all unique hexominoes.
- How did you go about determining the number of unique hexominoes?
- How do you know that you have found all the unique hexominoes?
- What percentage of hexominoes are nets that fold into cubes?
- Convince a skeptic that you have found all unique hexominoes.

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