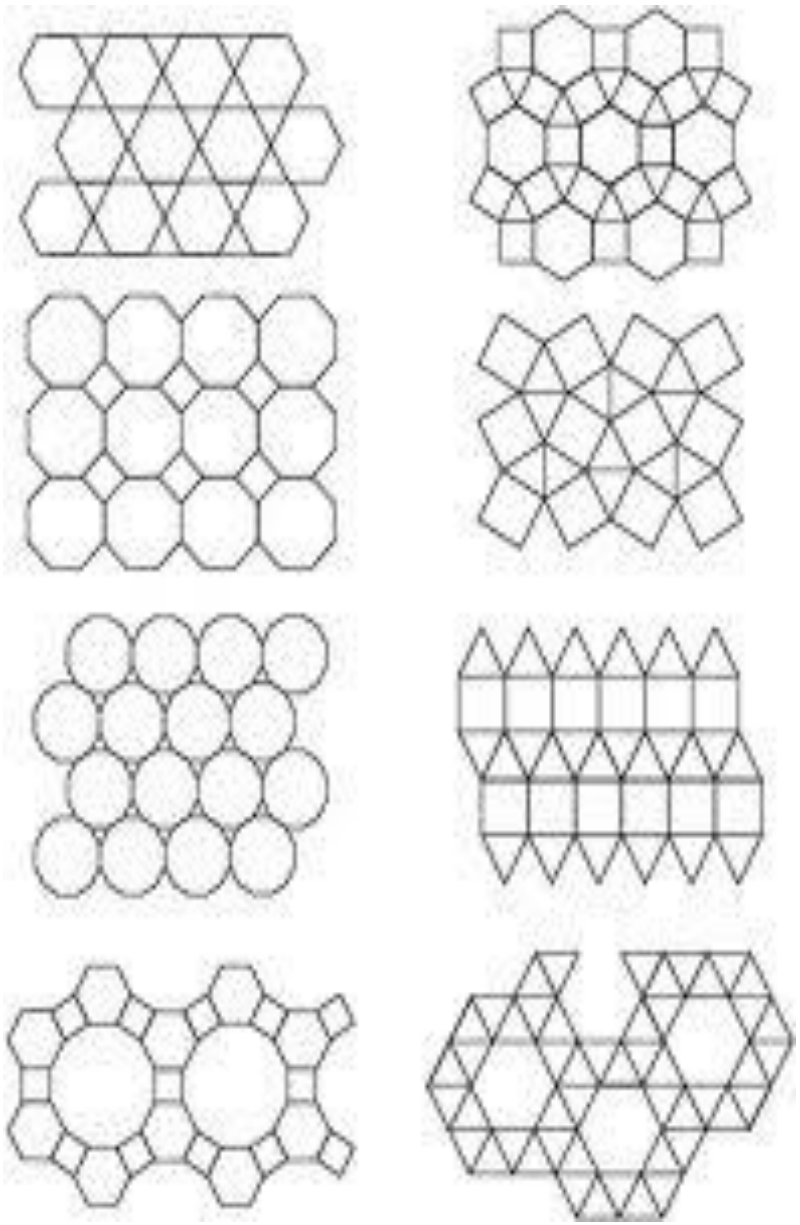
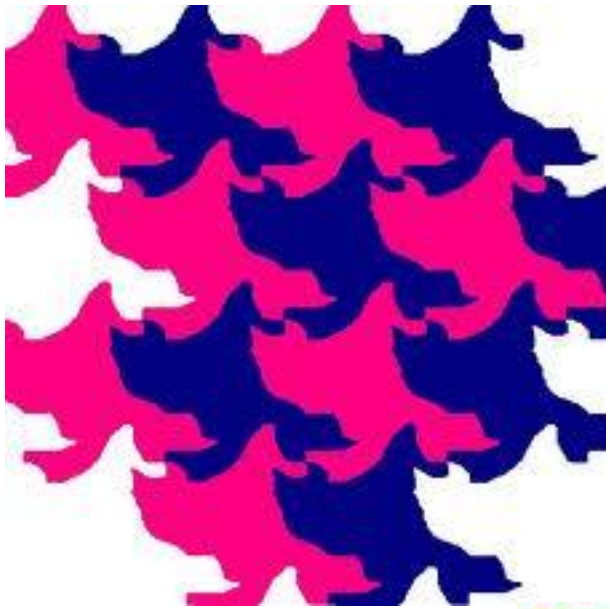
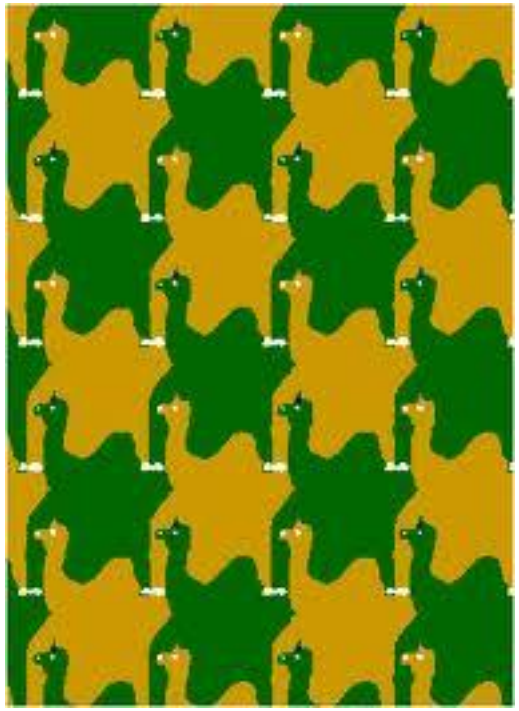
Tessellations

Where art meets math

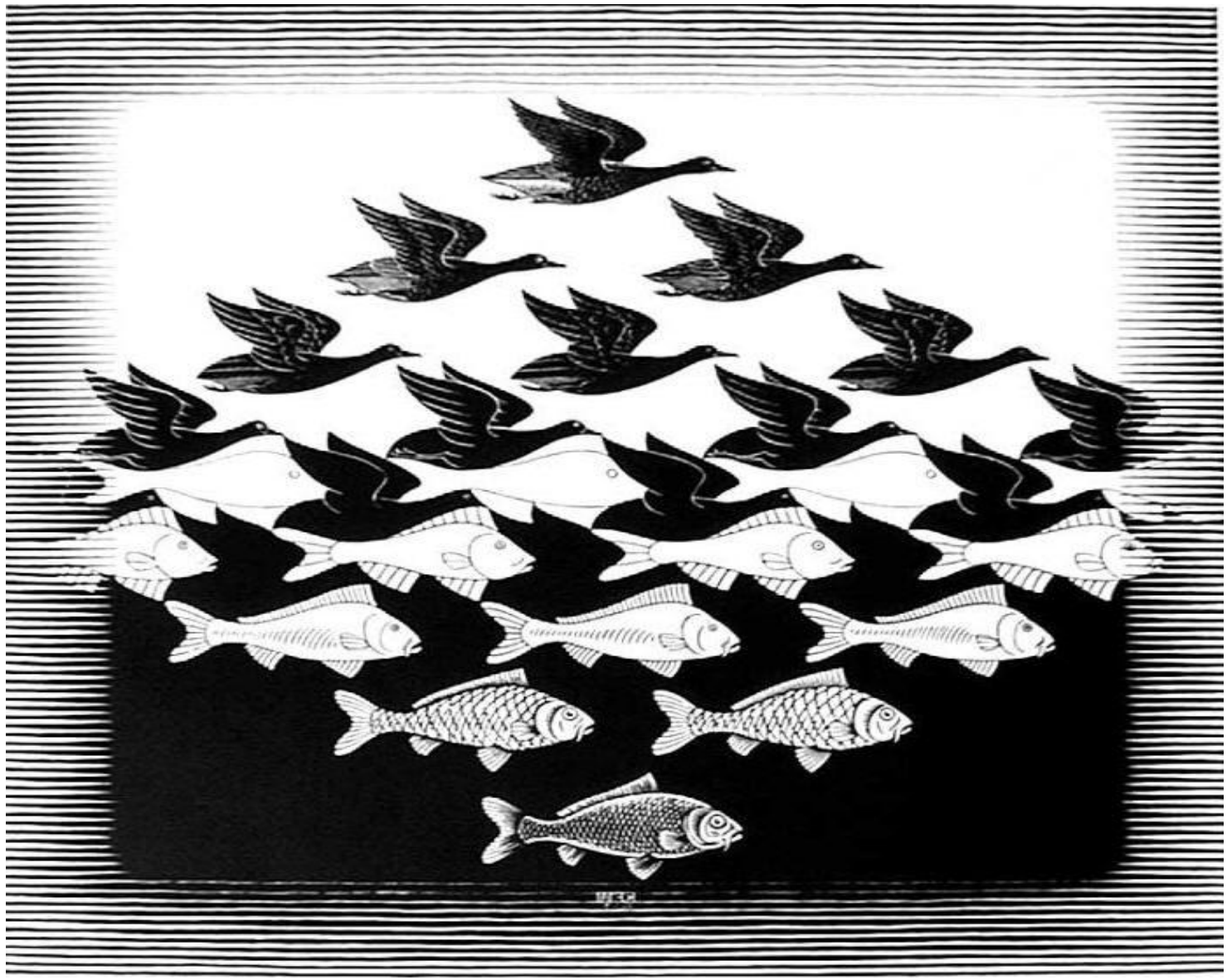


A tessellation is a design made of shapes that fit together like puzzle pieces. People use tessellations to decorate walls and floors, and even works of art. Hexagons fit together to form a beehive squares and octagons is a common floor tessellation





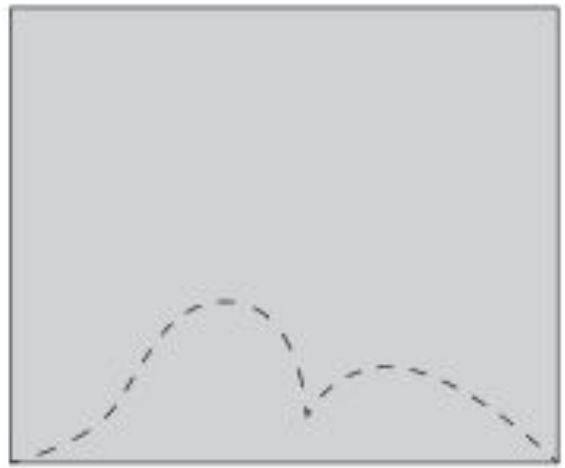
Some examples of tessellations



M.C. Escher was a master of tessellation, Here are some examples of his work.

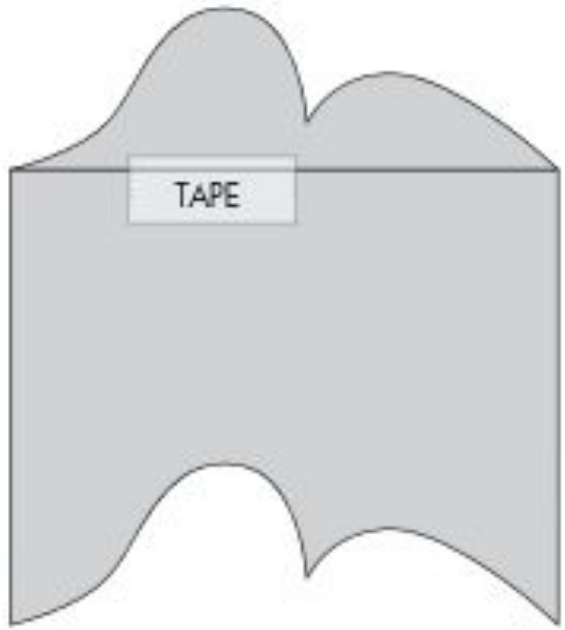
Week One: Translation Tesselation

-We will start by working with a 3” x 4” rectangle.



-Draw a unique line between two adjacent corners on one of the long sides of the rectangle. It can be squiggly or have several line segments.

-Cut out this shape, slide it to the opposite side, line up the straight edges of the two pieces and tape them together.

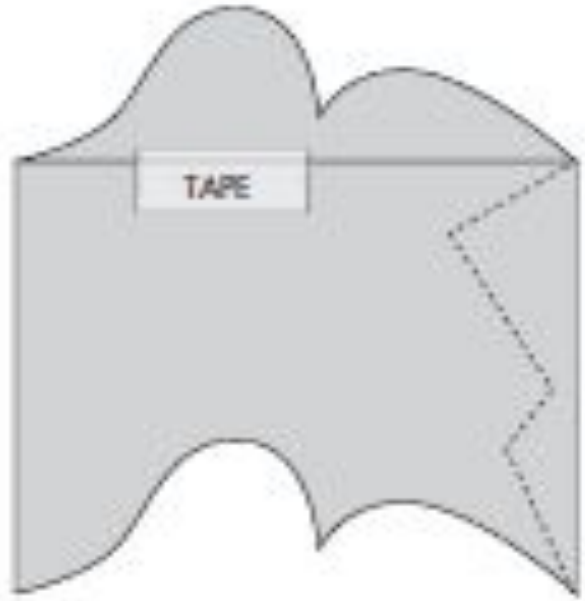


Week One: Translation Tesselation

-We will do the same thing with the 3” side

-Draw a unique line between two adjacent corners on the short side of the rectangle. Again, It can be squiggly or have several line segments.

-Cut out this shape, slide it to the opposite side, line up the straight edges of the two pieces and tape them together.



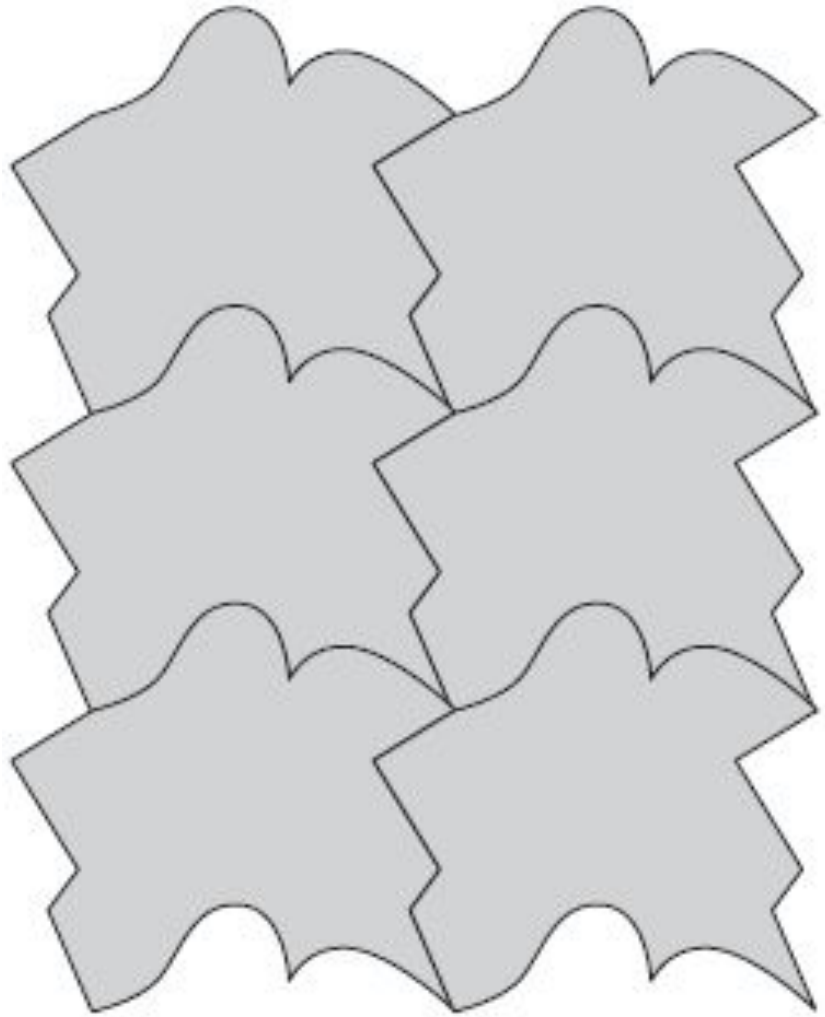
Week One: Translation Tesselation

-We will now trace the shape on our grid paper.

-Try to position it so there are no spaces or gaps in your repeating pattern

-This video will help: https://www.youtube.com/watch?v=iVXLU3SYCBw

-This is a ***translation tesselation.***

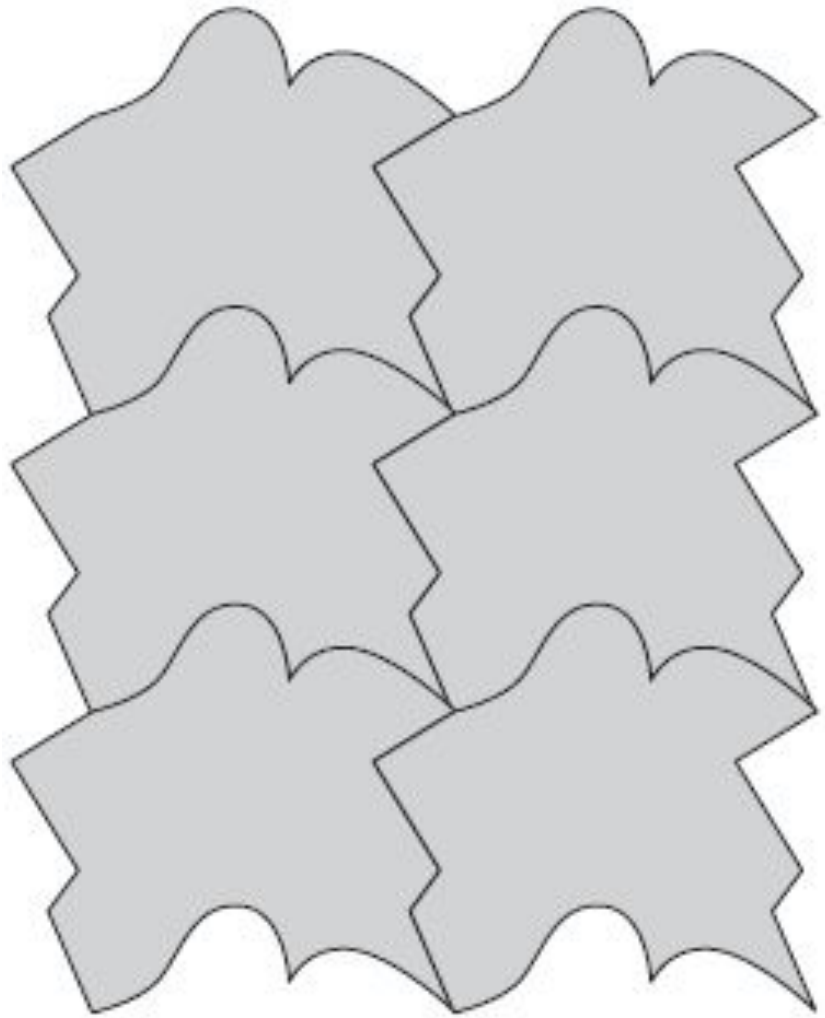


Week One: Translation Tesselation

-Now is the time to demonstrate
your own creativity.

-Does your shape remind you of
a fish, a bird, an elephant?

-Find a clever way to color in your repeating shape on your paper.



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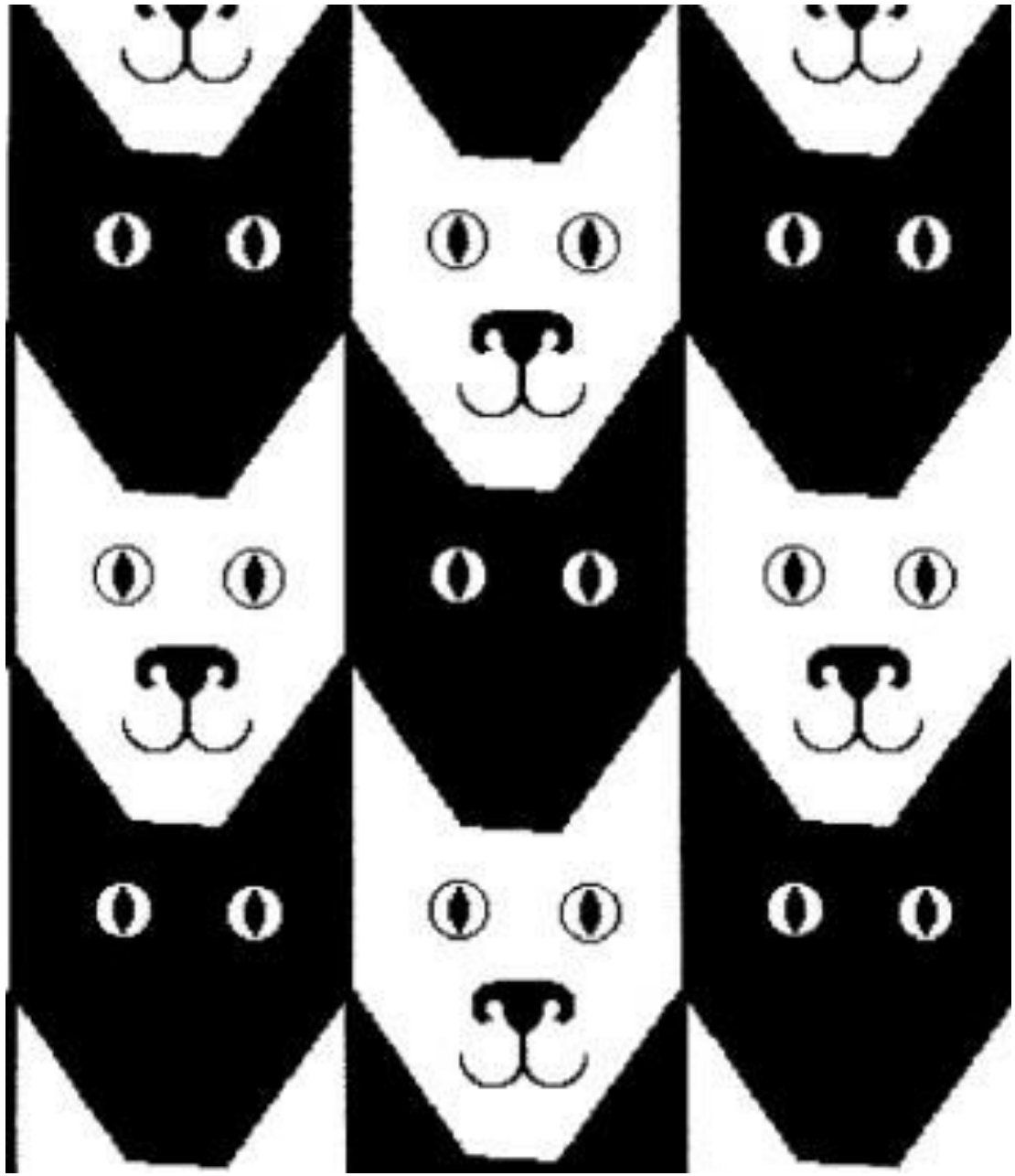
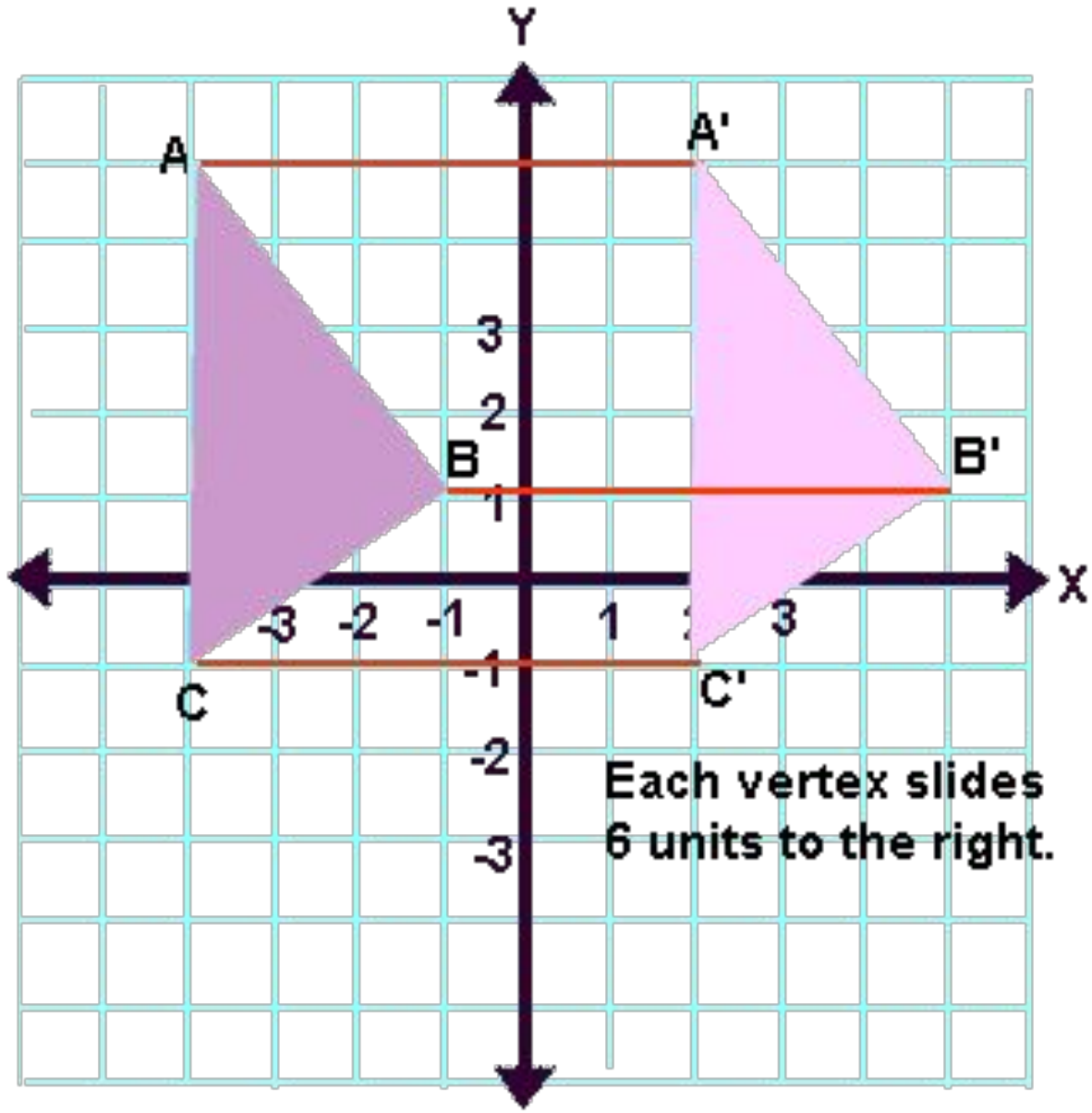
More examples of **Translation** Tesselations



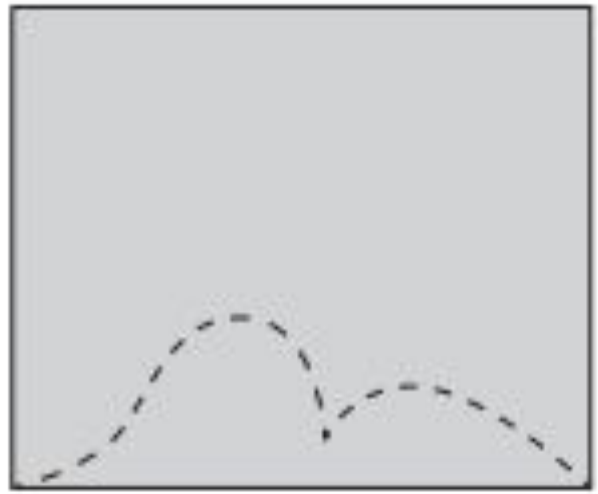
More examples of **Translation** Tesselations



Example of **Translation** in Math

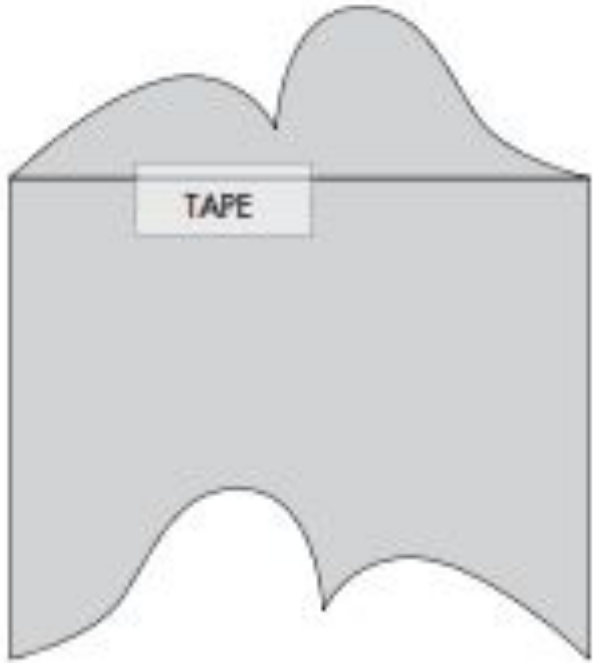
Week Two Variation: ReflectionTesselation

-We will work with a new 3” x 4” rectangle.



-Draw another unique line between two adjacent corners on one of the long sides of the rectangle. It can be squiggly or have several line segments.

-Cut out this shape, **Flip it,** slide it to the opposite side, line up the straight edges of the two pieces and tape them together.



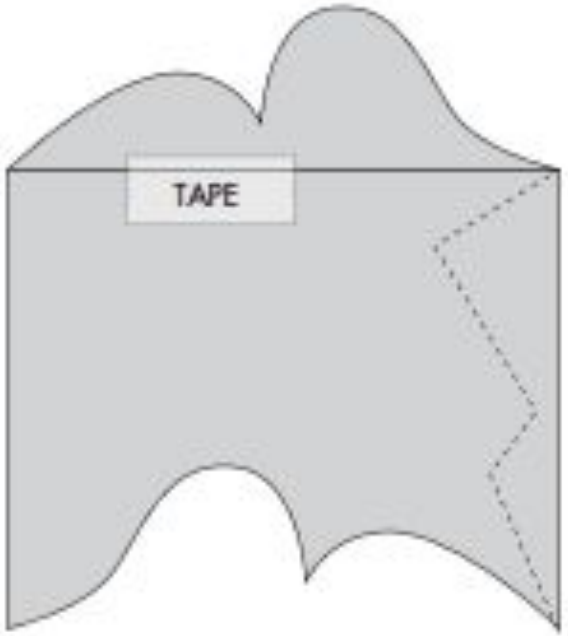
Week Two Variation: Reflection Tesselation

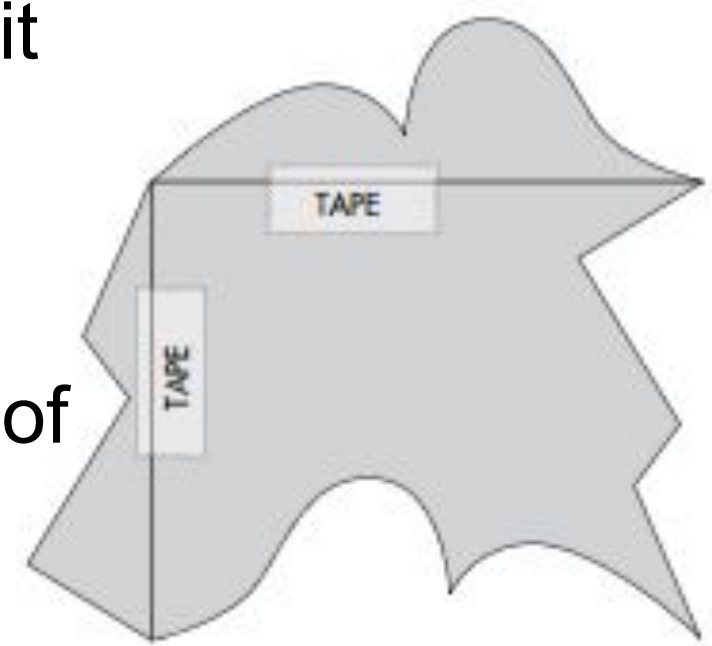
-We will do the same thing with the 3” side

-Draw a unique line between two adjacent corners on the short side of the rectangle. Again, It can be squiggly or have several line segments.

-Cut out this shape, **Flip it**, slide it to the opposite side, line up the straight edges of the two pieces and tape them together.

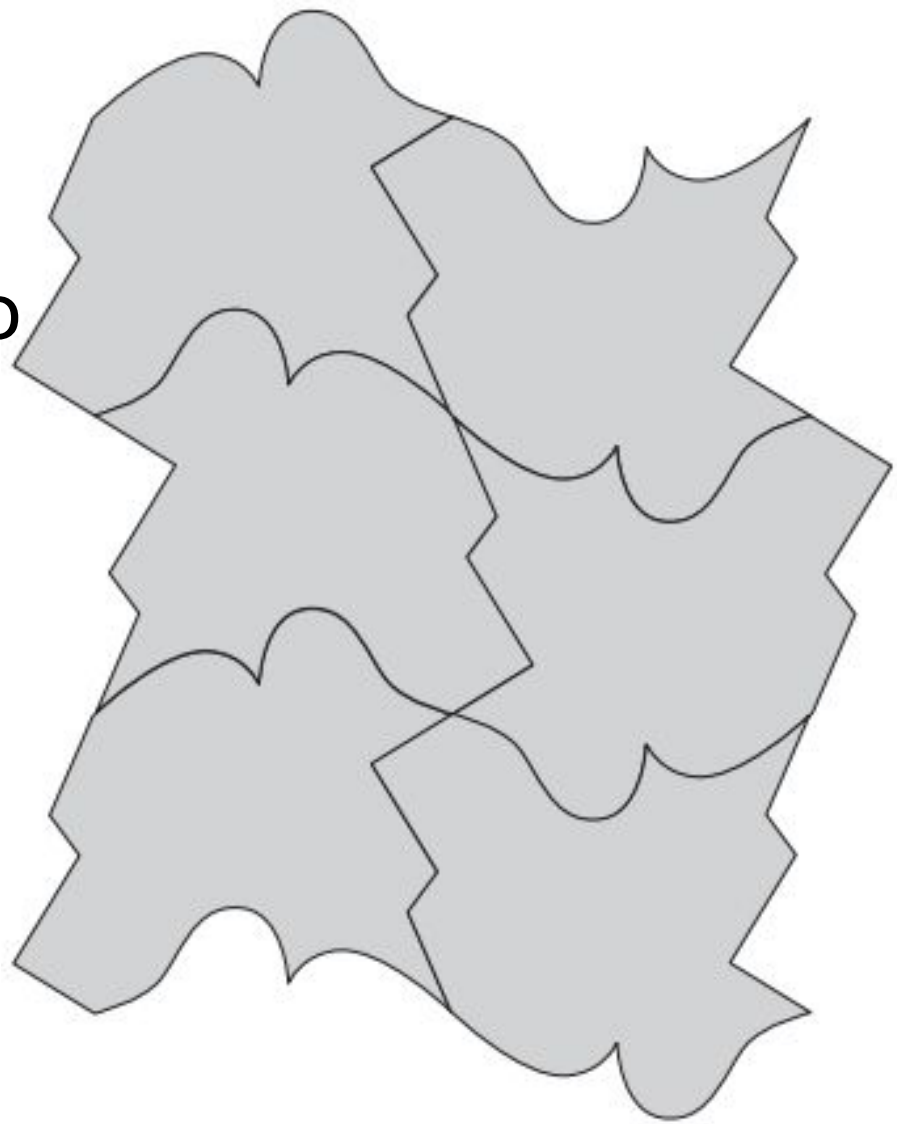
-Write the letter **“A”** on one side of this shape and **“B”** on the other



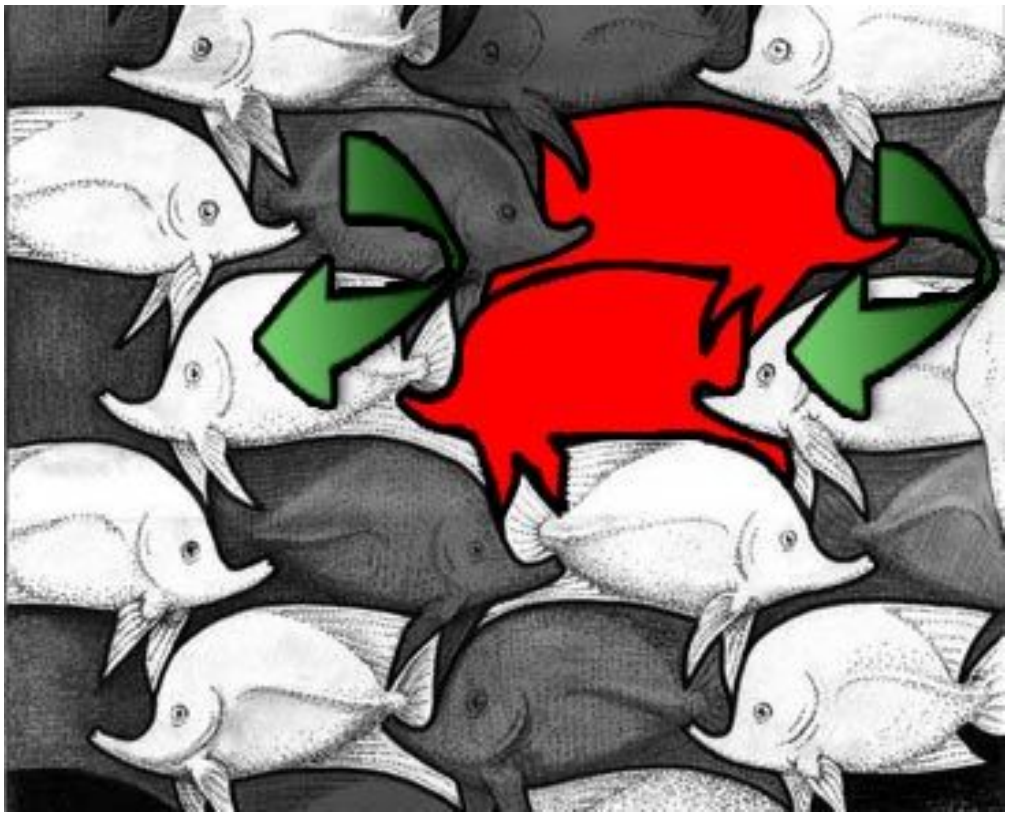


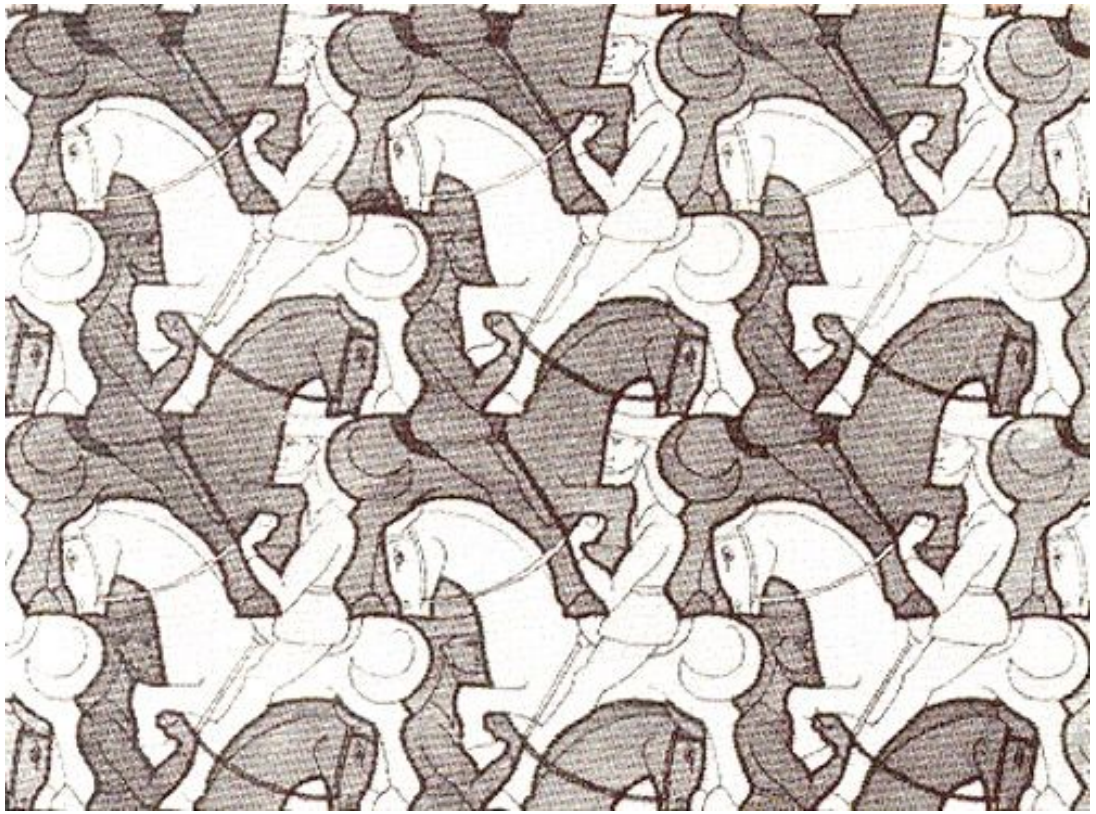
Week Two Variation: Reflection Tesselation

-Can you figure out where to place the pattern piece so that your paper will be covered with repetitions of this shape with no overlapping and with no gaps?
-Try to cover your whole sheet of paper by tracing the pattern, moving it, then tracing it again.

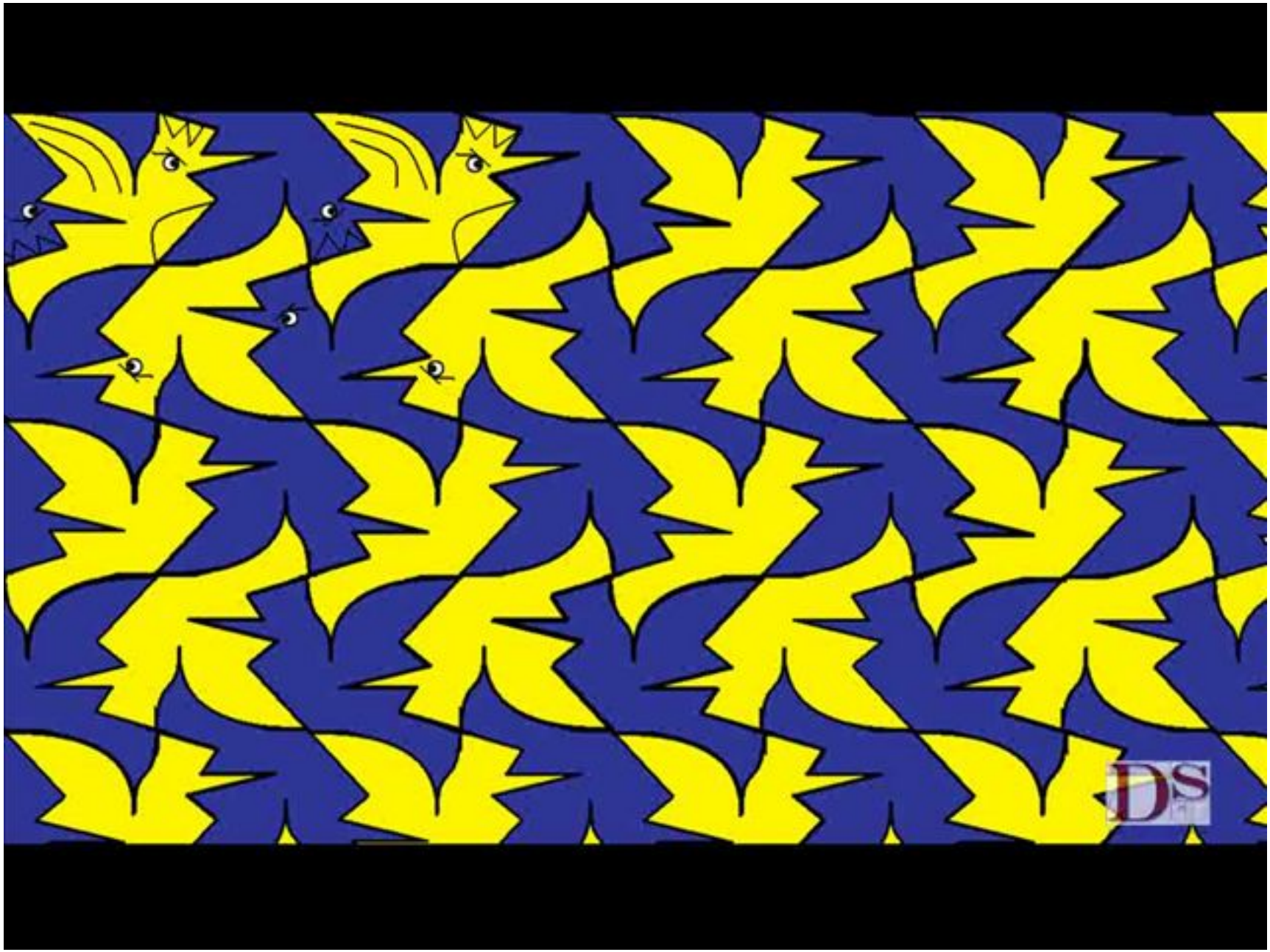


-If you start with side A facing up, do you ever have to turn it over to side B to make your tessellation?

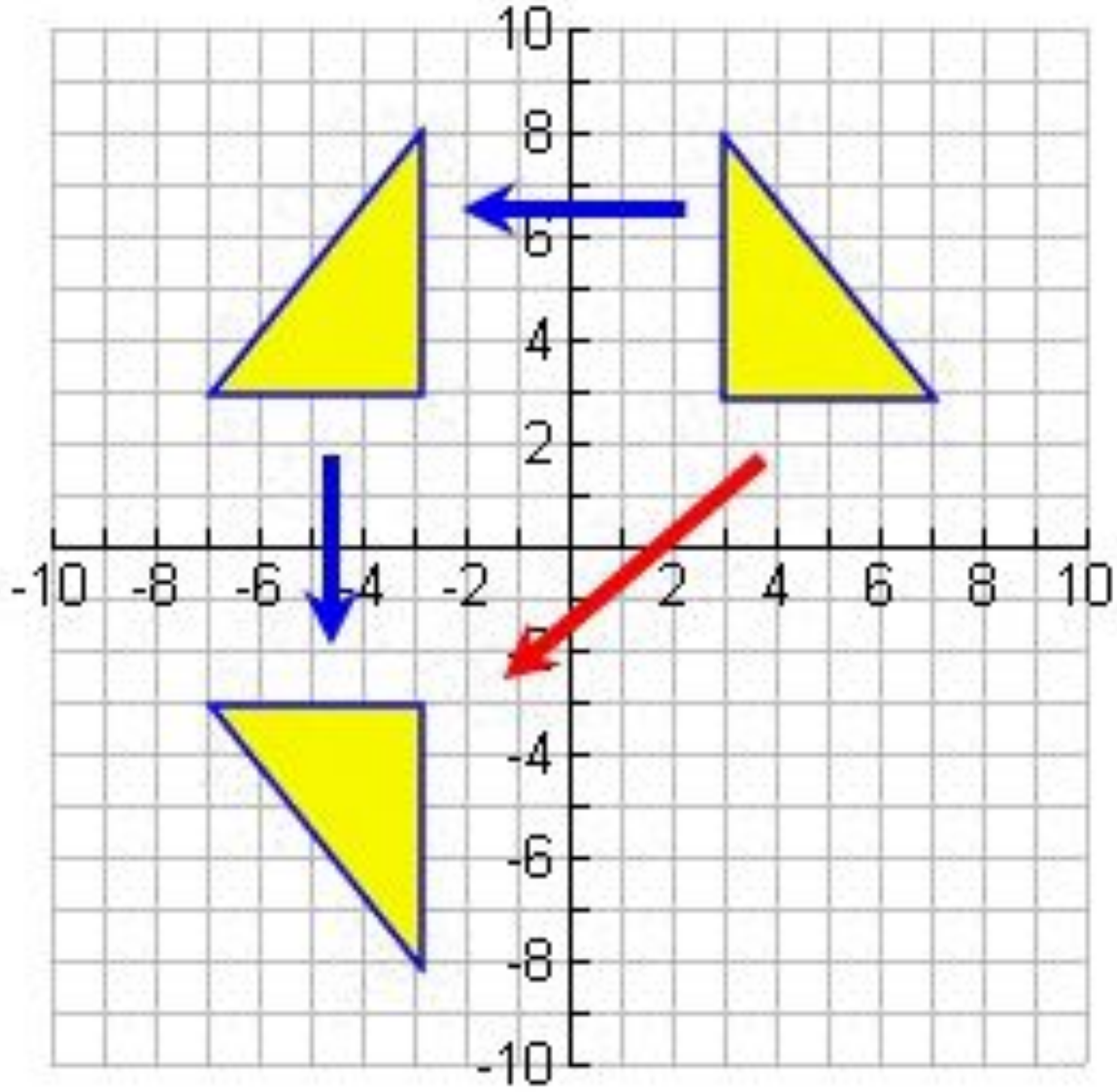




Examples of **Reflection** Tesselations



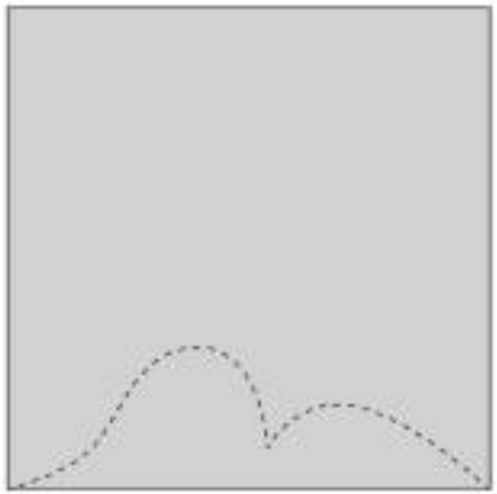
Examples of **Reflection** Tesselations



Example of **Reflection** in Math

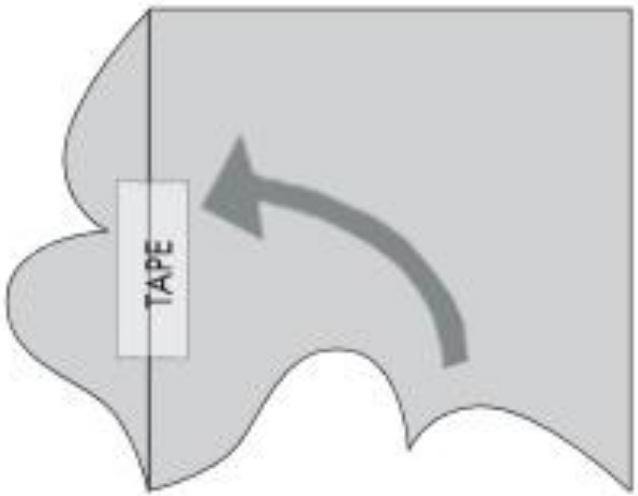
Week Three Variation: Rotation Tesselation

-This time we start with a 4” x 4” square



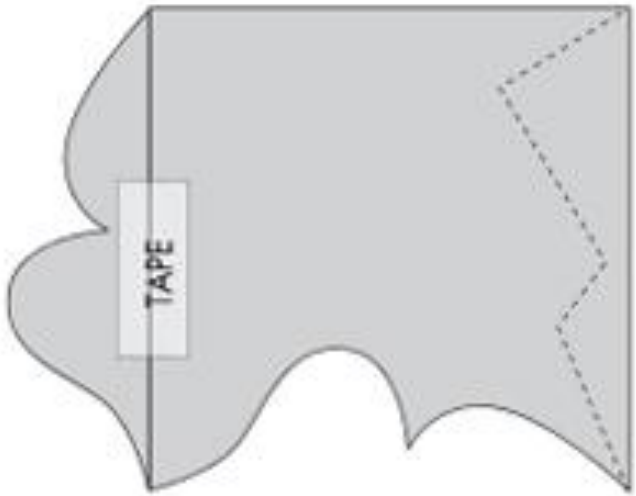
-Draw another unique line between two corners on any of the sides of the square. It can be squiggly or have several line segments.

-Cut out this shape and **slide it without flipping it** to an adjacent side, line up the straight edges of the two pieces and tape them together.



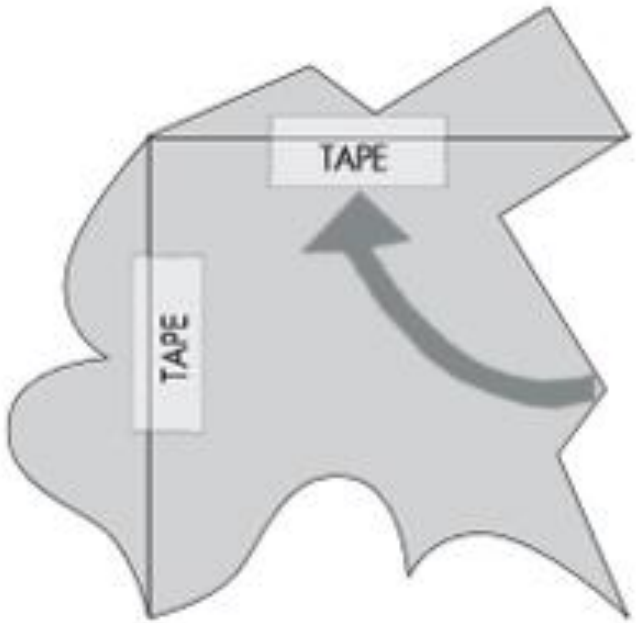
Week Three Variation: Rotation Tesselation

-We will do the same thing with the other side.



-Draw another unique line between two corners on the other side of the square. Again, It can be squiggly or have several line segments.

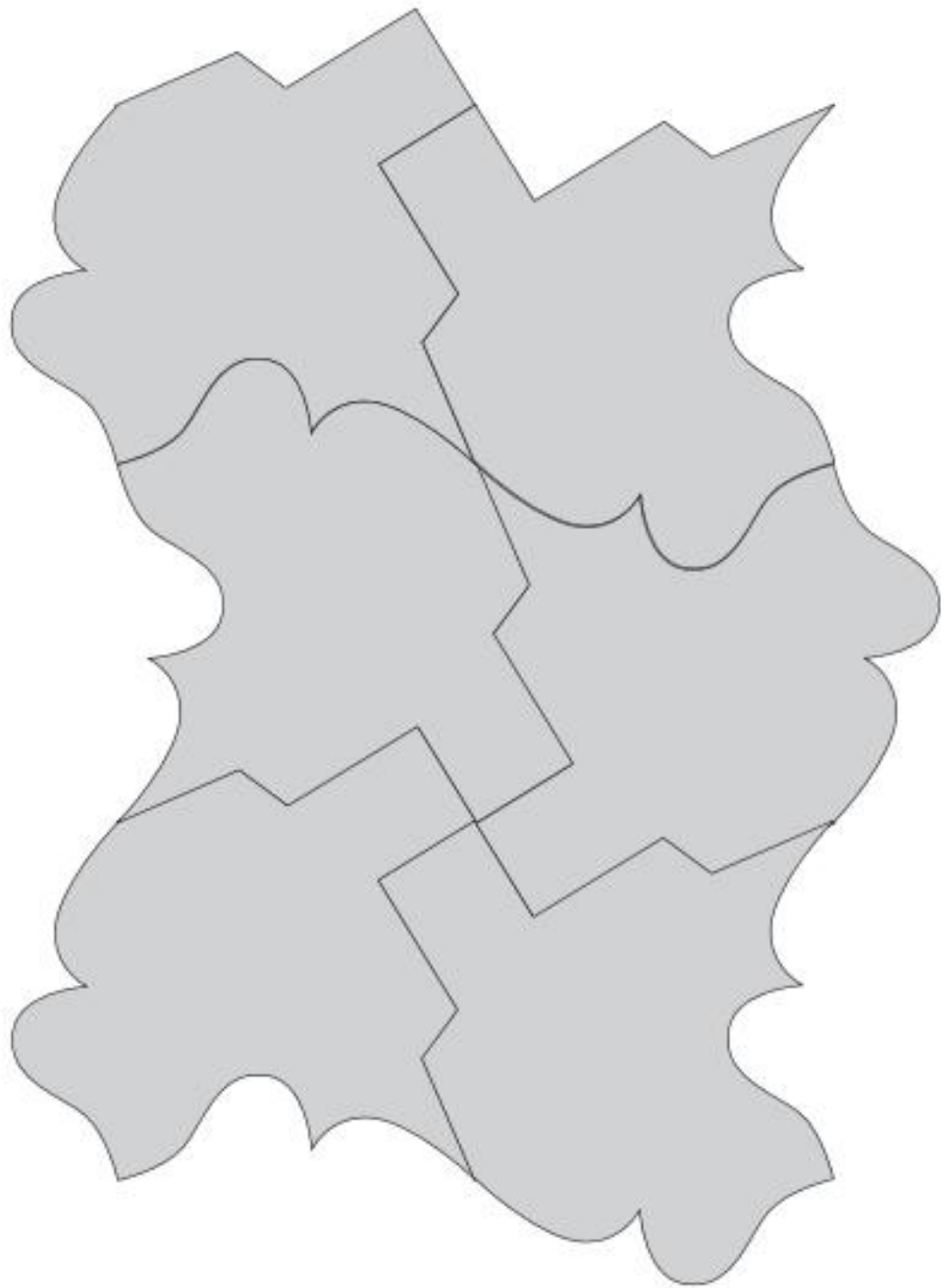
-Cut out this shape, **slide it without flipping it**, line up the straight edges of the two pieces and tape them together.



Week Three Variation: Rotation Tesselation

-Can you figure out where to place the pattern piece so that your paper will be covered with repetitions of this shape with no overlapping and with no gaps?

-Try to cover your whole sheet of paper by tracing the pattern, moving it, then tracing it again.



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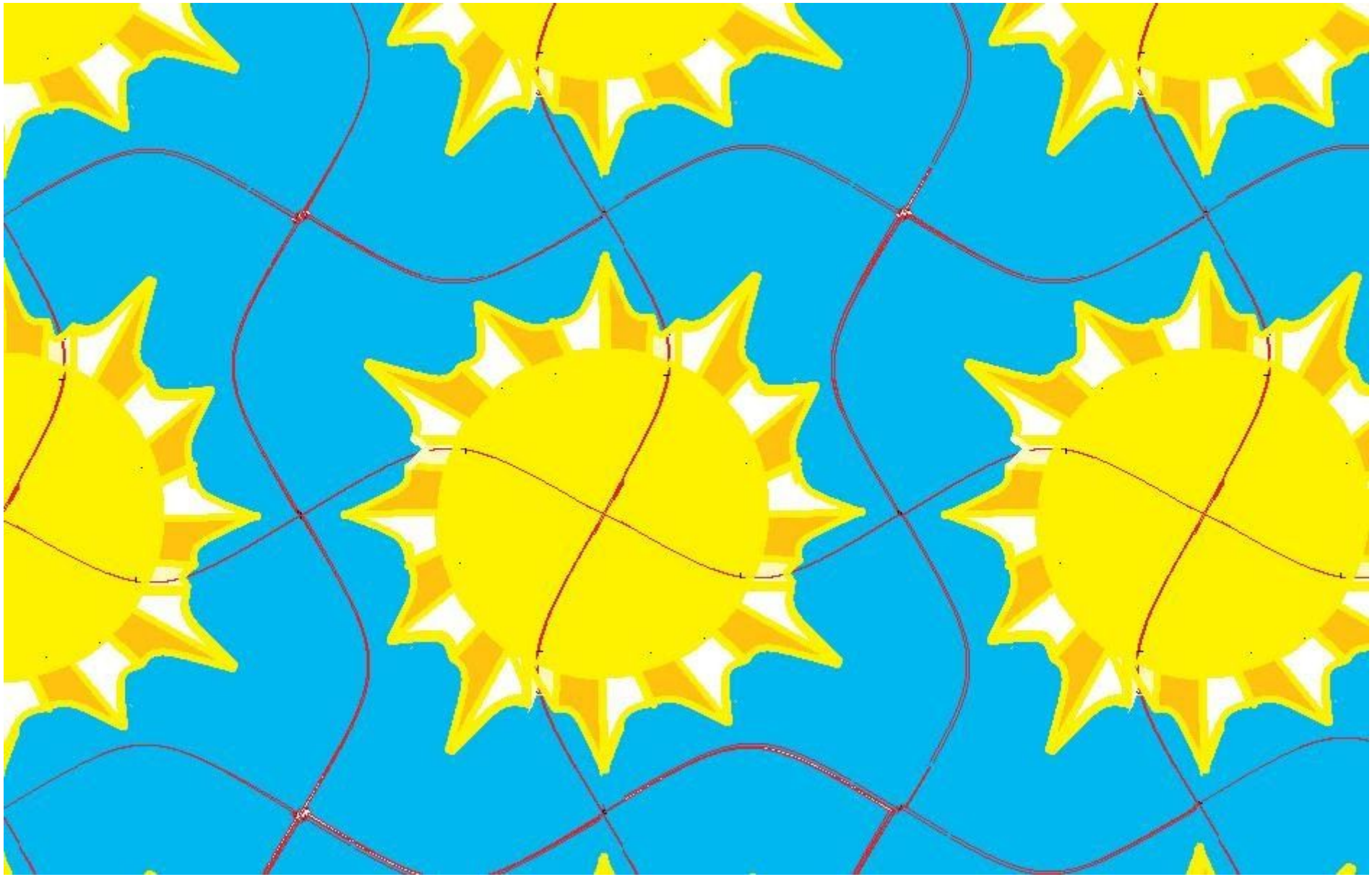
Examples of **Rotation** Tessellations

Examples of **Rotation** Tessellations



Examples of **Rotation** Tessellations

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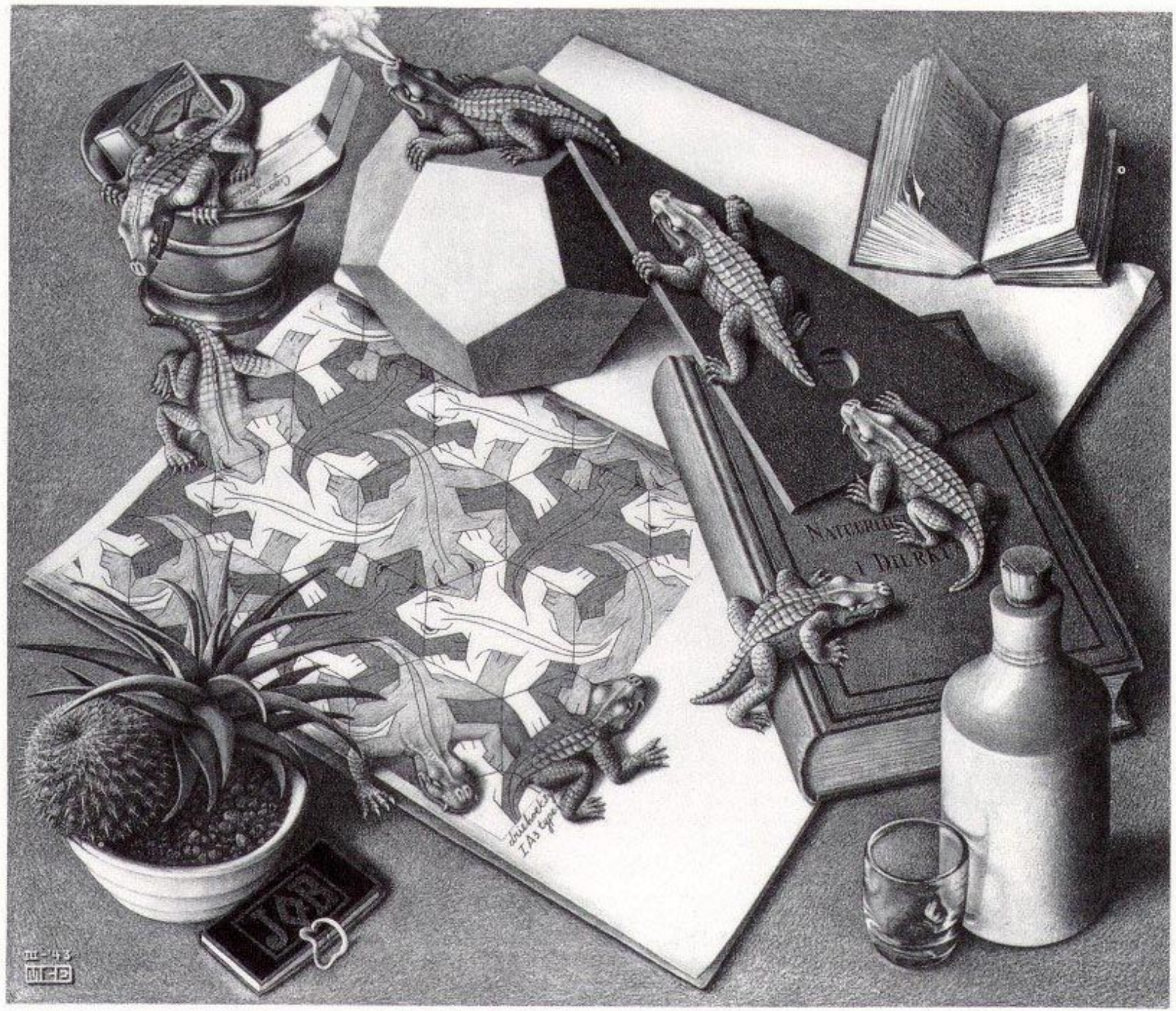
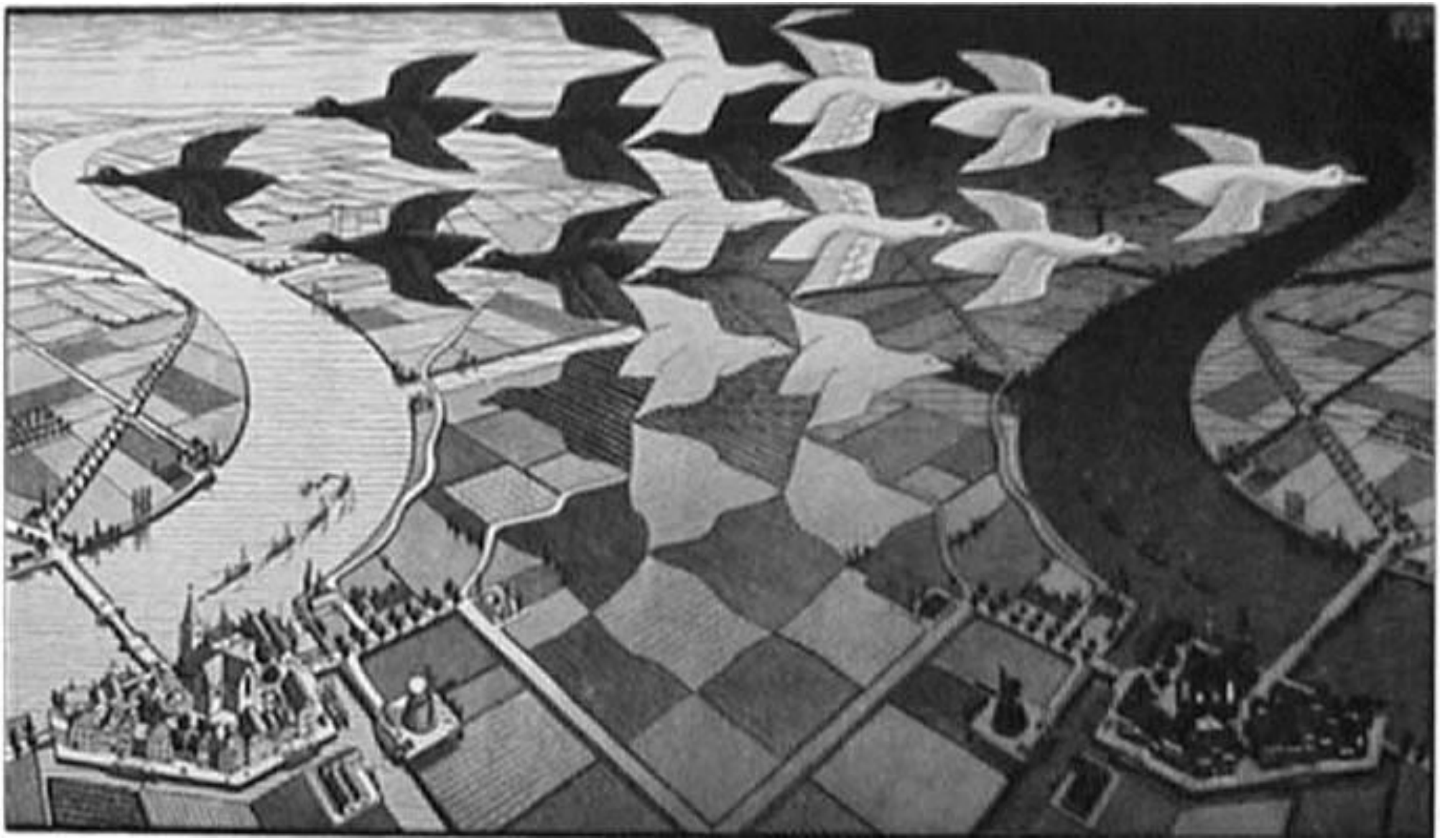


Pretty soon you will be making Tessellations like this!



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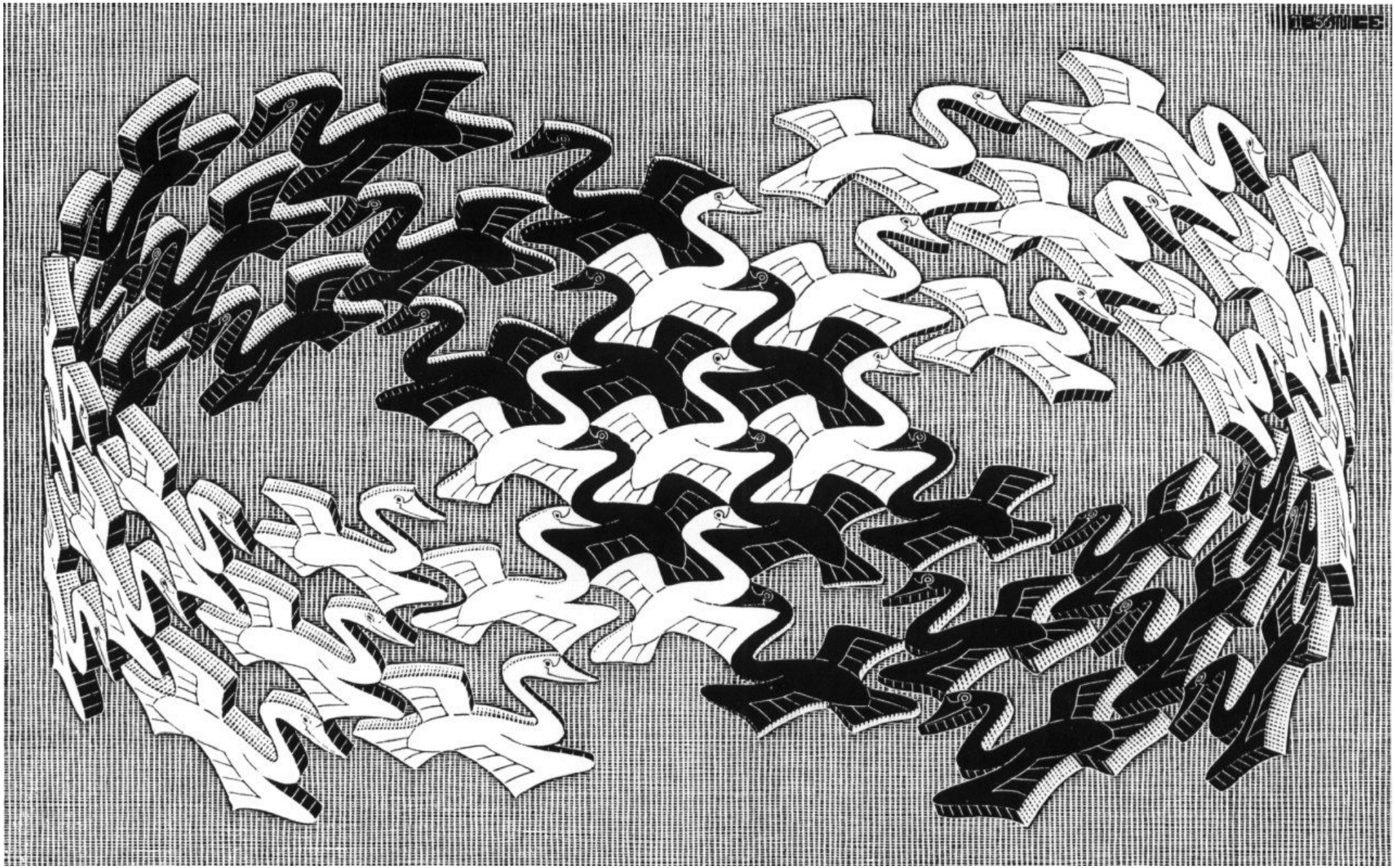
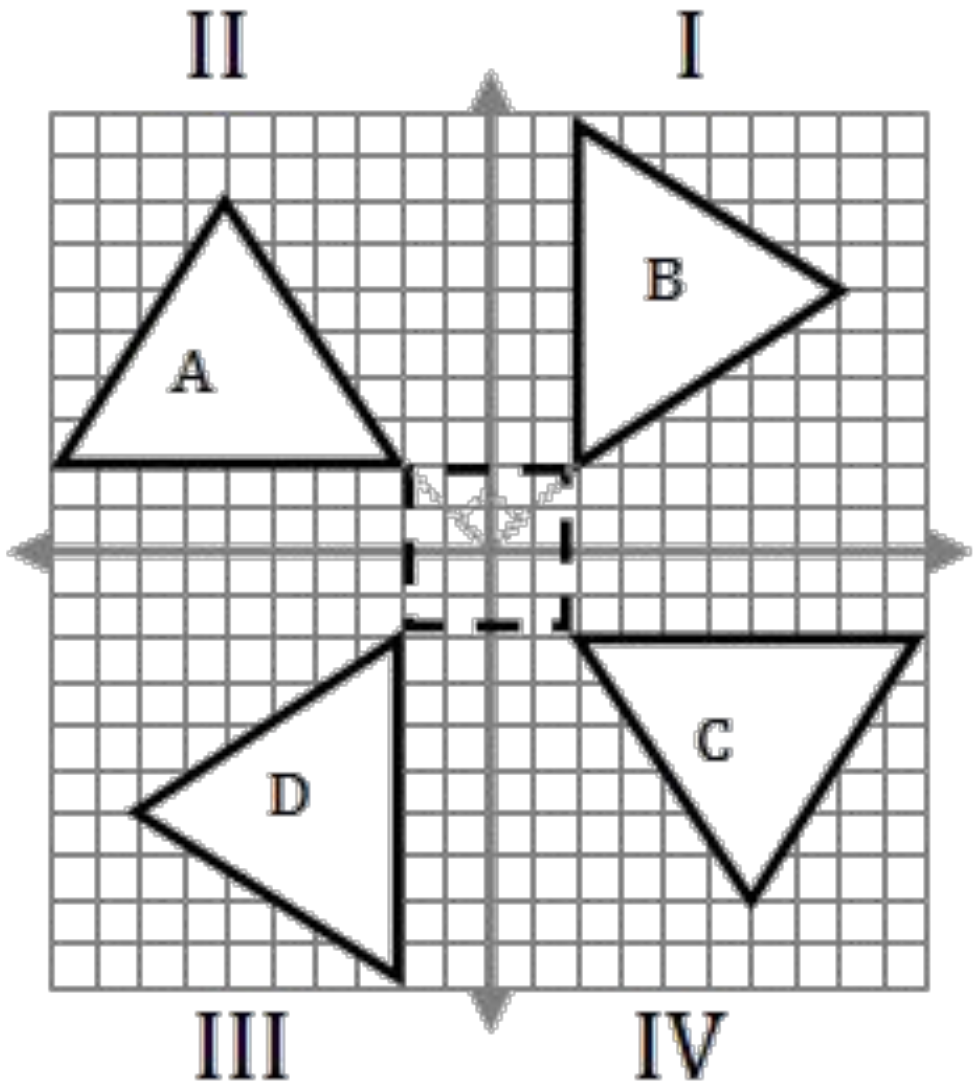


M.C Escher was the master of Tessellations!



Example of **Rotation** in Math