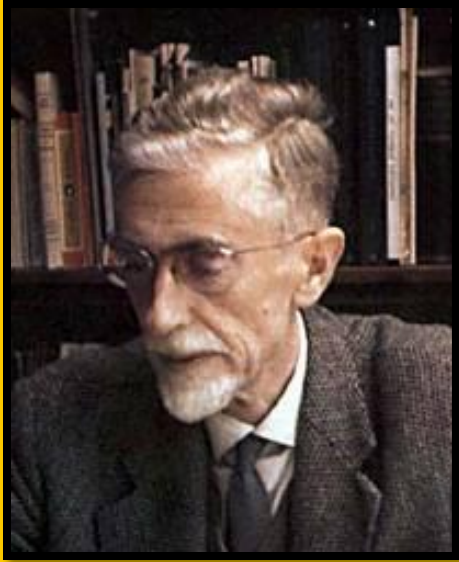


# Liberty Pines Academy

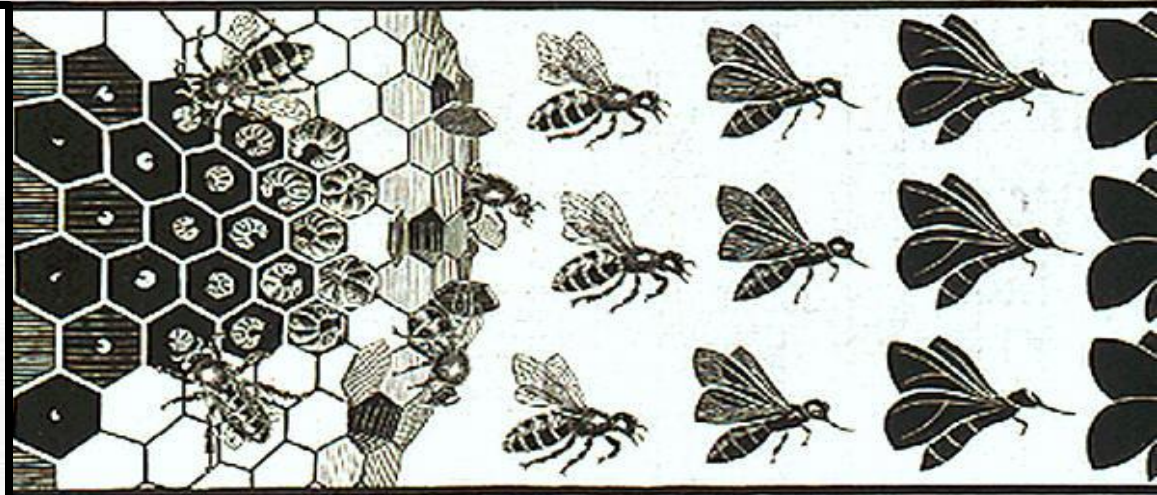


**10901 Russell Sampson Rd.  
Saint Johns, FL 32259**

# M.C. Escher

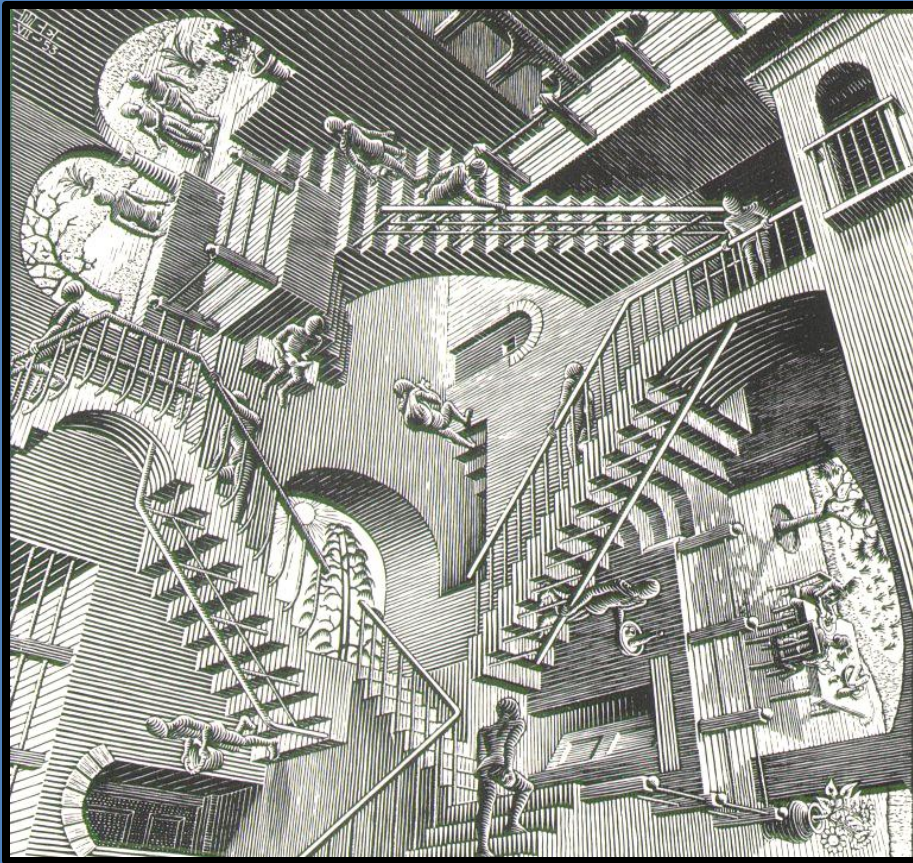


1898 - 1972



# Escher

**M. C. Escher is one of the world's most famous graphic artists. He is most famous for his so called impossible structure and ...**



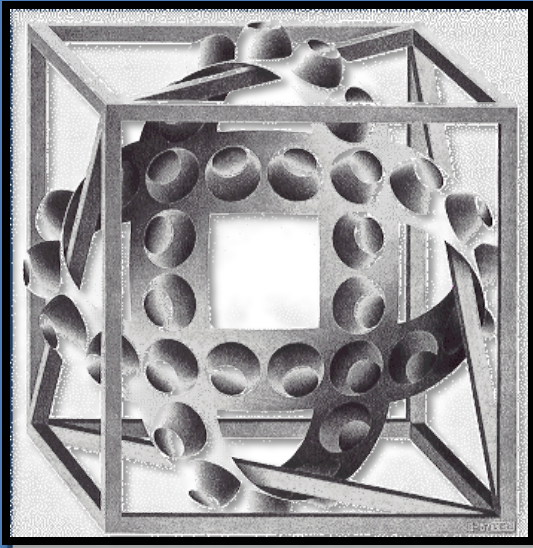
**Relativity - 1953**



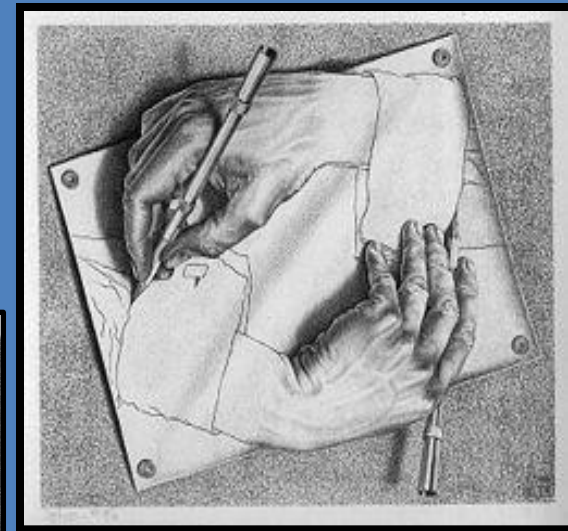
**Ascending and Descending - 1960**

# Escher

...mind bending drawings and prints. These artworks explore perspective, mirror images and impossible physical shapes.



**Cube with Ribbons - 1957**



**Drawing Hands - 1948**



**Reptiles - 1943**

# Escher



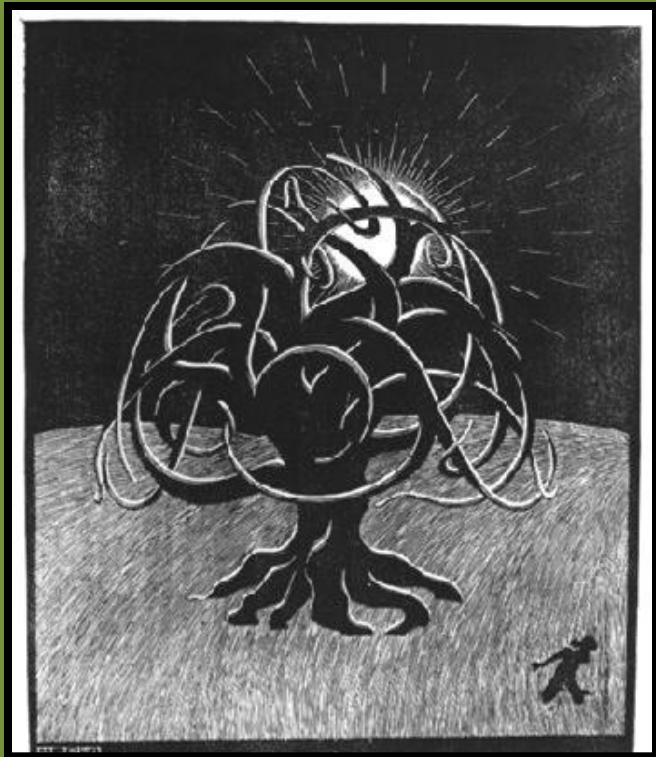
**Escher was born in Leeuwarden, Holland in 1898 and was the fourth and youngest son of a civil engineer.**

**As a child, he always had an intensely creative side and an ‘acute sense of wonder’, often claiming to see shapes that he could relate to in the clouds.**



# Escher

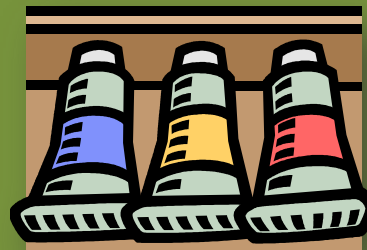
As a student, Escher excelled at drawing, but failed his high school exams and never was good at math. A loop hole allowed Escher to enroll in the School for Architecture and Decorative Arts.



**The Tree - 1919**



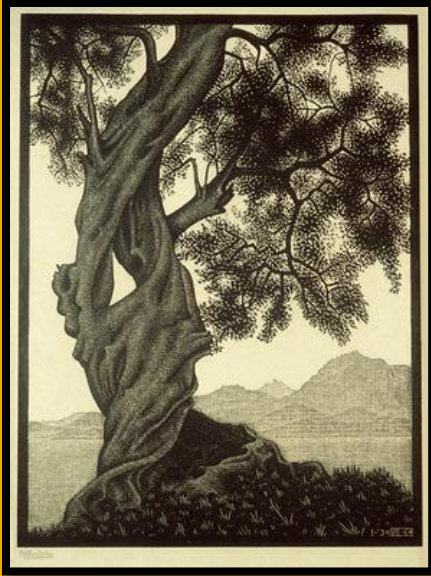
There a teacher encouraged him to change his major from architecture to graphic arts, which involved drawing, illustrating, print making wood and linoleum block cuttings.



# Escher

C

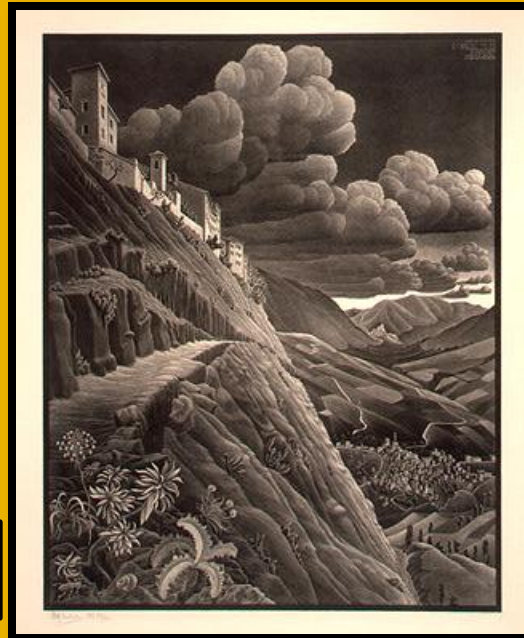
After finishing school, Escher spent the next 10 years traveling around southern Europe. The Italian landscape and architecture is reflected in many of his drawings and lithographs for the rest of his life.



**Old Olive Tree - 1934**

Escher had several art shows in Holland and Switzerland. Many people labeled his art as mechanical and “reasoned”.

***Castrovalva - 1930***



He also met his wife, Jetta and they lived in Rome for many of these years.



**Portrait of Jetta –  
1925 Woodcut**

# Escher

In 1936 Escher traveled to Spain and saw the Alhambra Palace in Granada. There he was fascinated with the tiles, which gave him the inspiration to draw tessellations of regular and irregular shapes.



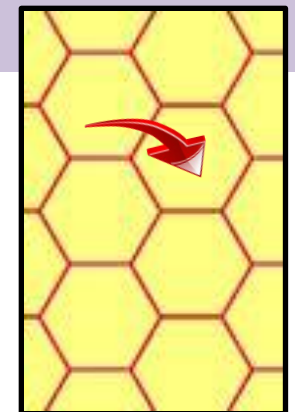
Tessellations are arrangements of closed shapes that completely cover the plane without overlapping or leaving gaps.



**Columns in the Court of Lion**

**Tiles in the Alhambra Palace**

**Interlocking Rams Horns**



**Tessellation Example**

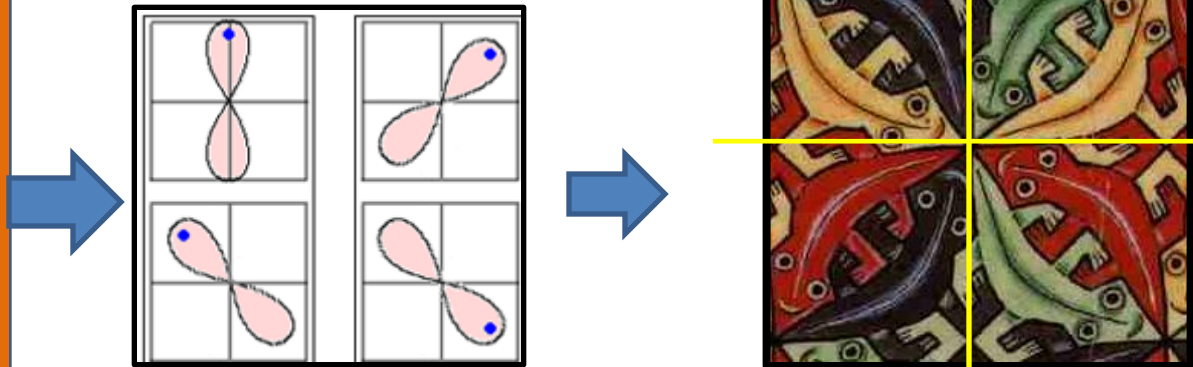
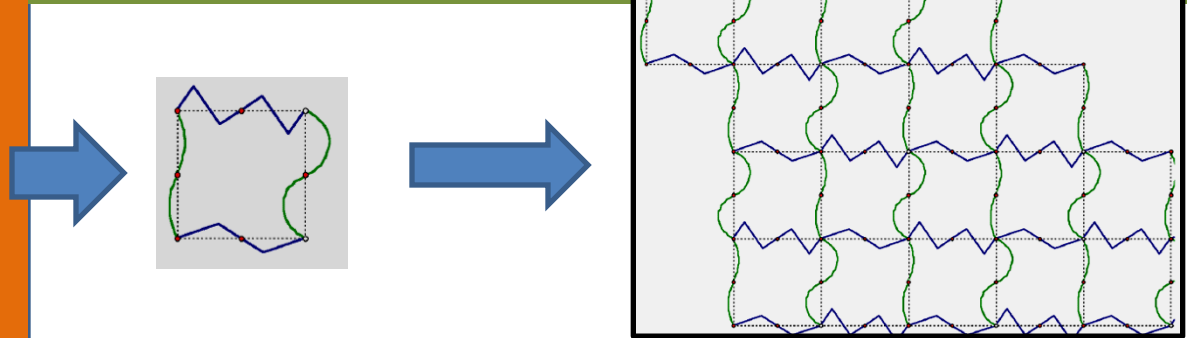


# Escher

Until then mathematicians had only considered the triangle, square, and hexagon for a tessellation. Escher exploited these basic patterns in his tessellations using the principles called *translations*, *rotations*, *reflections*, and *glide reflections* to obtain a greater variety of patterns. Let's look at the definitions.

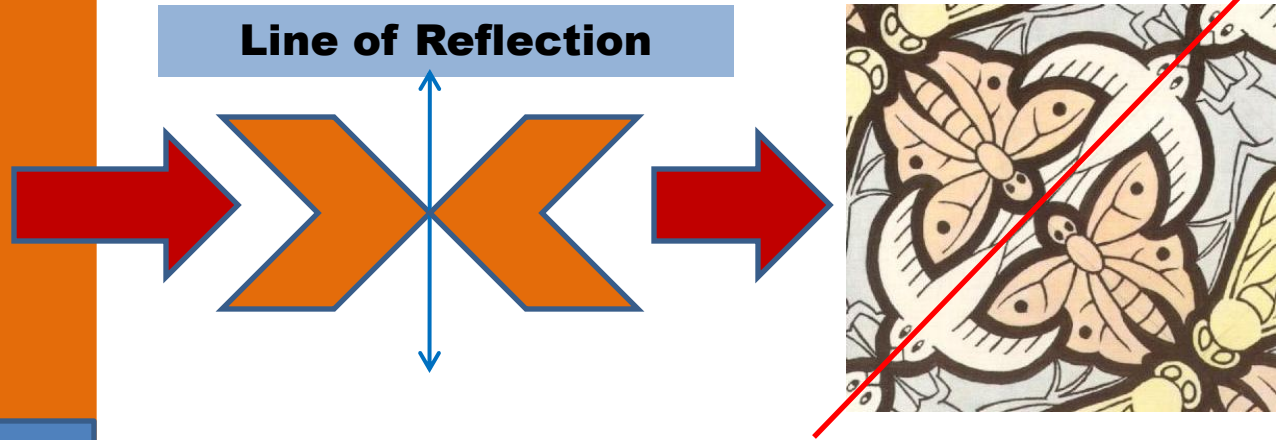
In geometry translations means *moving* the pattern without rotating, resizing, or anything else, to cover a plane or space.

Rotation is the *rotation* of a pattern at a fixed origin and fixed angle such that it covers the underlying pattern also.

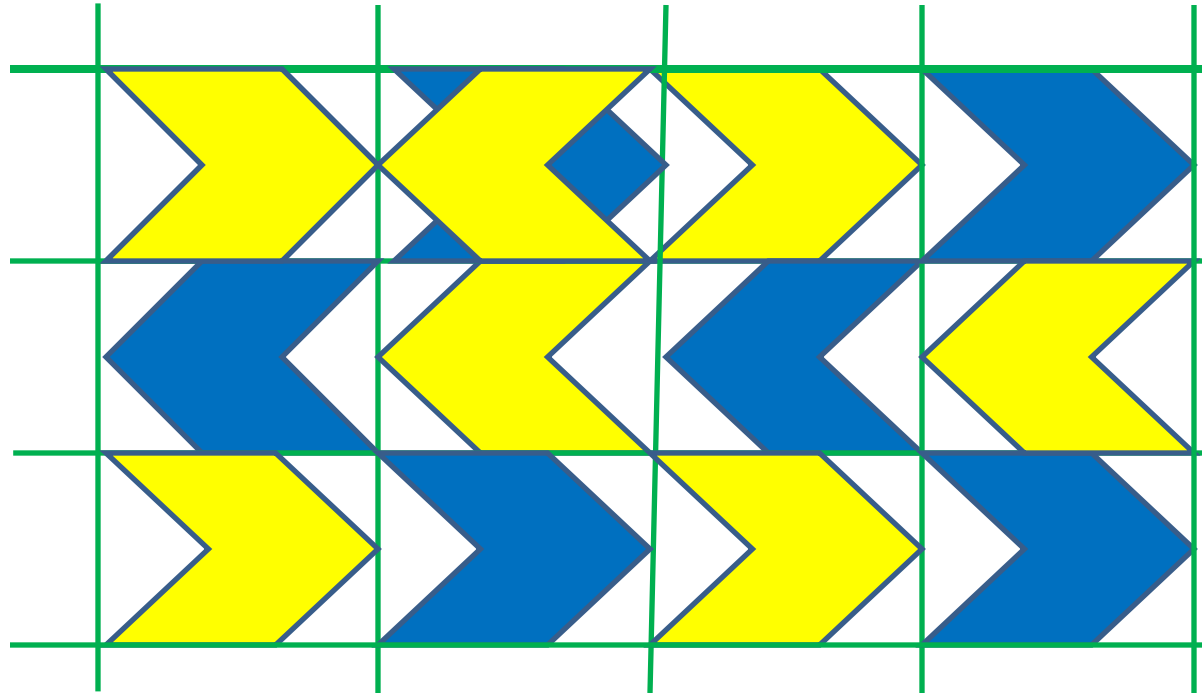


# Escher

A **reflection** is a "*flip*" of an object over a line or a mirror image of an object divided by a line.



**Glide reflection** is a two step process. The object is *flipped* over a line and *moved* down along the line. Watch the yellow arrow flipped and moved down.



# Escher

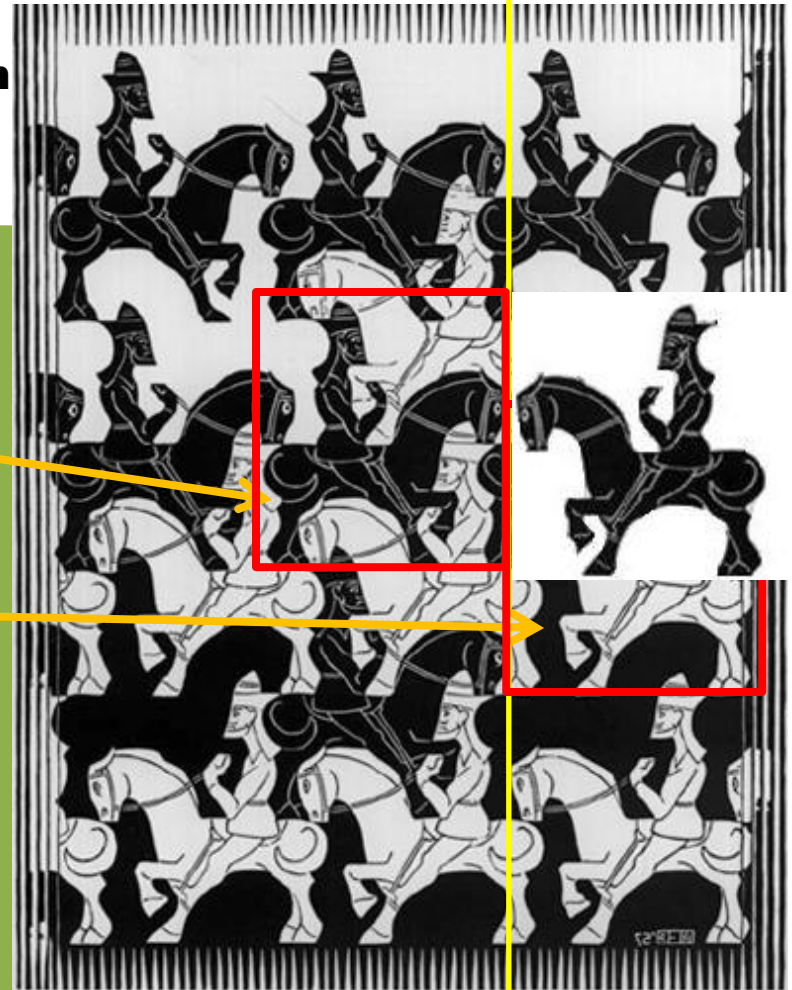
C

He also elaborated these patterns by “distorting” the basic shapes to make them into animals, birds, and other figures.

Here is an example of Escher’s use of glide reflection.

Look closely and you can see the black horseman has been *flipped* over the yellow line and moved down along the line and colored as a white horseman.

Notice that the banners at the top of each slide are a part of Escher’s Metamorphosis artworks which use tessellation and perspective.

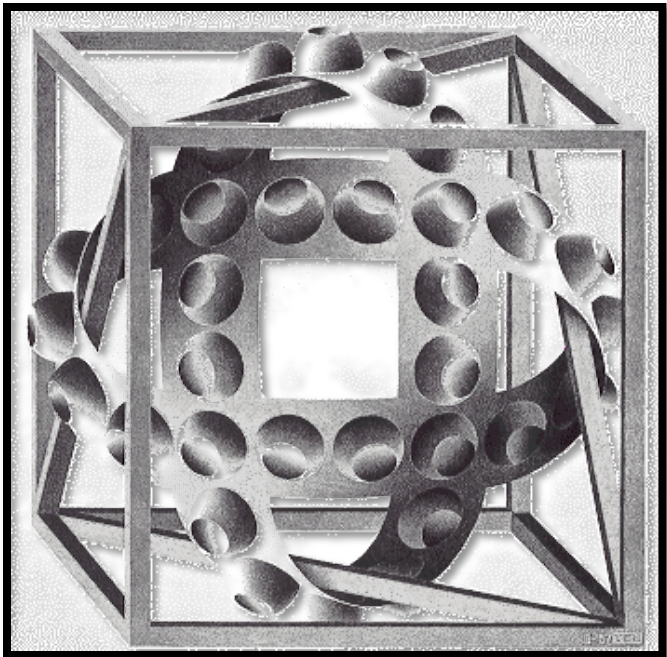




# Escher

C

**Escher was also fascinated by the logic of space and perspective. Space is the set of all possible points made up of infinite planes. The “logic” of space is about the spatial relations between physical objects. If the relations are distorted or become illogical then the picture can be a visual paradox or an optical illusion.**

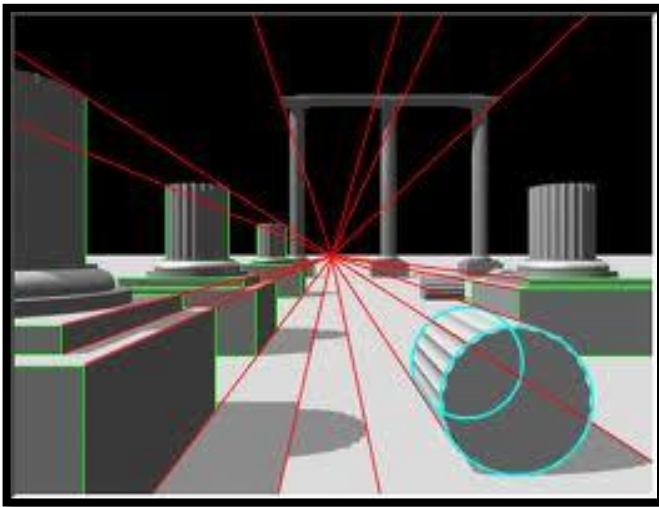
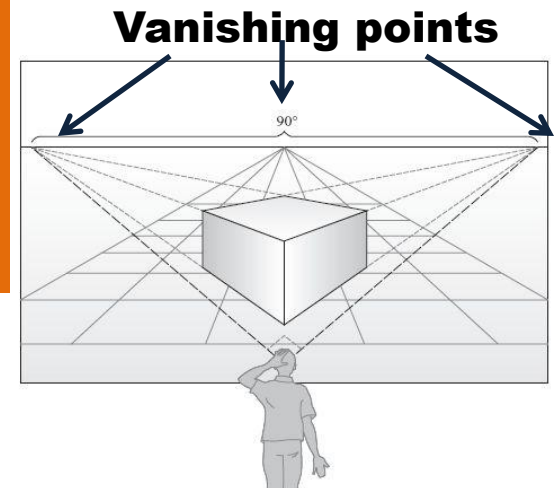


**For example, Escher uses light and shadow on concave (curving inward) and convex (curving outward) objects. In the lithograph *Cube with Ribbons*, the bumps on the bands are the visual clue to how they are intertwined with the cube. Let your eyes follow the bumps on the band around the cube. What are your eyes telling you?**

**Cube with Ribbons - 1957**

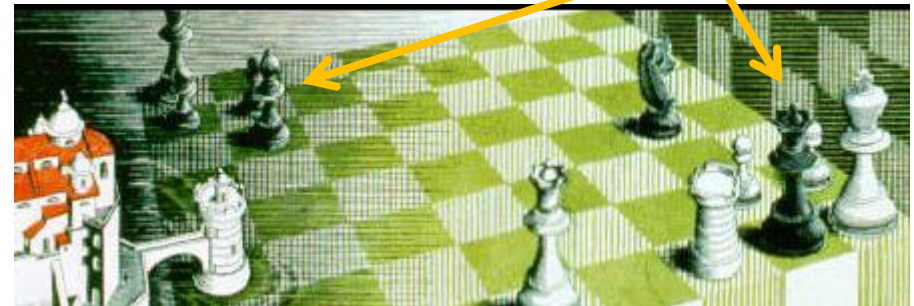
# Escher

**Escher also played with the idea of perspective. Paper is two dimensional and to make an object appear three dimensional on paper, vanishing points are used which give the object a three dimensional appearance.**



**In linear perspective objects which are smaller look farther away than the larger ones.**

**Look at the banner on top of the page. How did Escher use perspective there with the chess pieces?**



# Escher

C

By introducing unusual vanishing points and forcing elements of a composition to obey them, Escher was able to render scenes in which the “up/down” and “left/right” orientations of its elements shift, depending on how the viewer’s eye takes it in.

In *High and Low* there are **5** vanishing points:

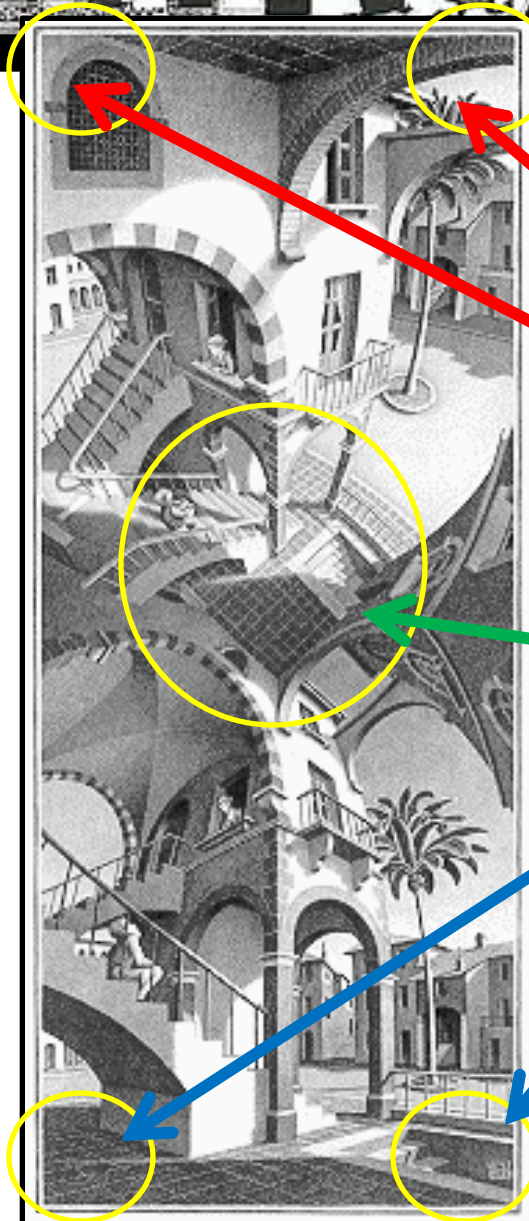
**Top left and right,**

**Bottom left and right,**

**And Center.**

The result is that in the bottom half of the composition the viewer is looking up, but in the top half he or she is looking down. To emphasize what he has accomplished, Escher has made the top and bottom halves depictions of the same composition.

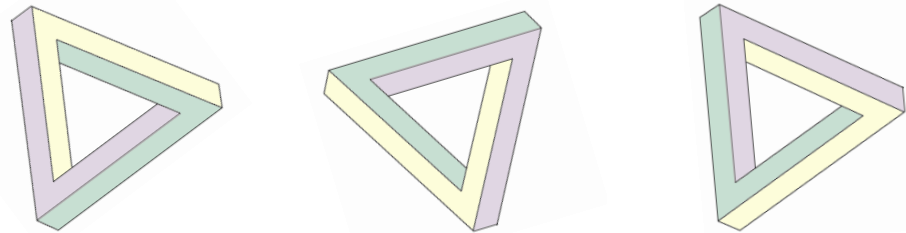
**High and Low - 1947**



# Escher

A third type of “impossible drawing” tricks the brain by using visual clues to make a three-dimensional object from a two-dimensional representation. One drawing is based on the idea of mathematician

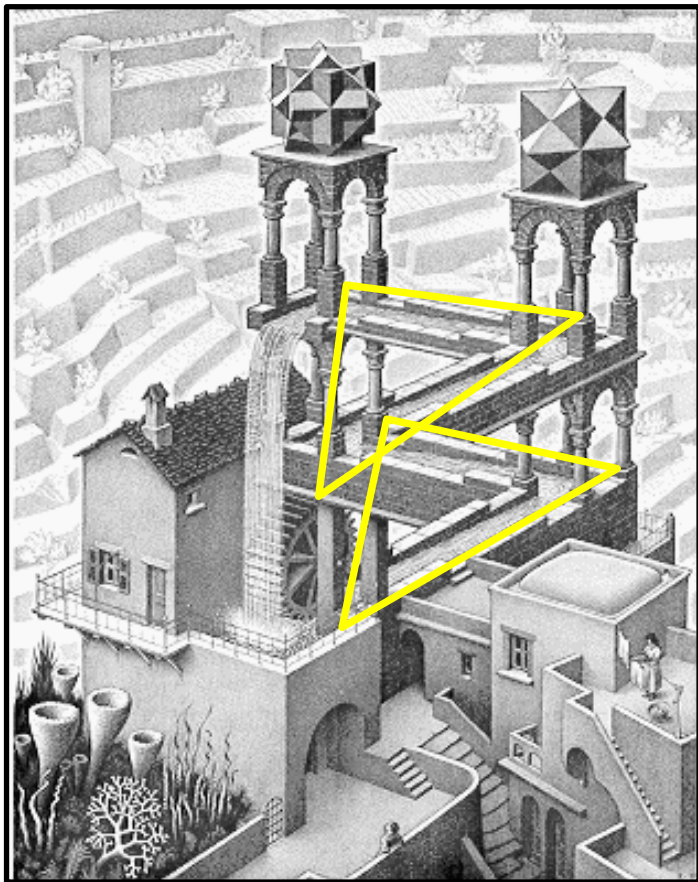
**Roger Penrose's – the impossible triangle.**



In this lithograph, *Waterfall*, two Penrose triangles have been combined into one impossible figure.

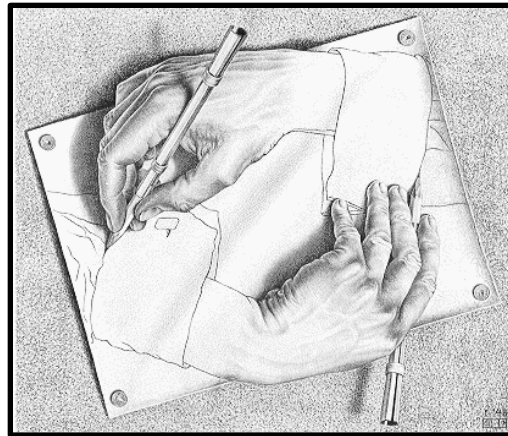
Look closely at the water channel and follow its path. It appears to be flat, but yet it reaches both the top and the bottom of the water fall.

**Waterfall - 1961**



# Escher

**Drawing Hands - 1948**



**Escher continued to explore the concept of intersecting worlds, planes and infinite space...**



**Snakes - 1969**

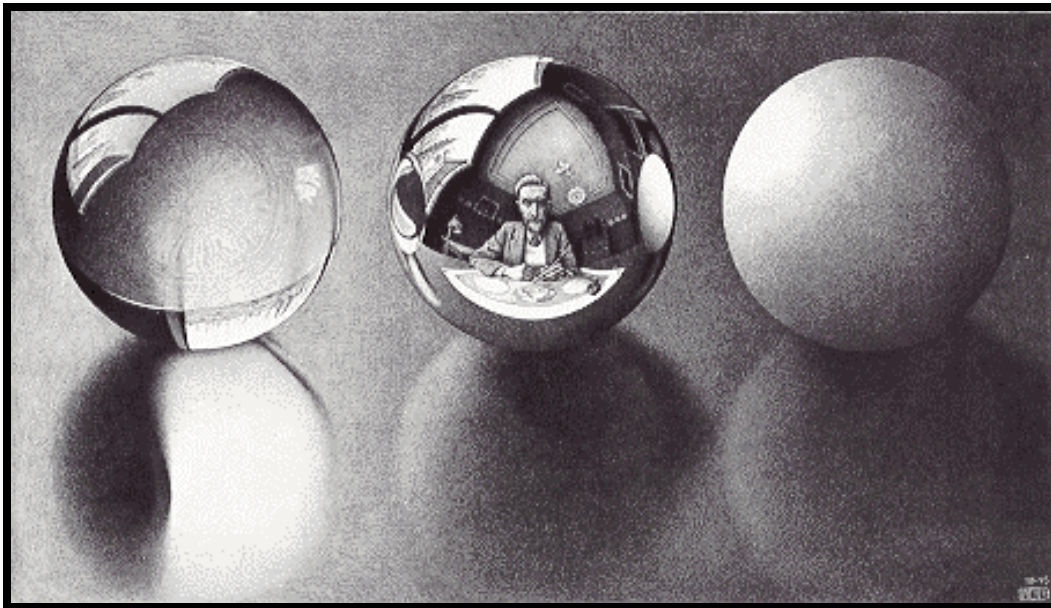


**not only on paper, but also in beech wood sphere carvings.**



# Escher

**During his lifetime, Escher made 448 lithographs, woodcuts and wood engravings as well as over 2,000 drawings and sketches. Escher also illustrated books, designed tapestries, postage stamps and murals. He played with architecture, perspective and impossible spaces.**



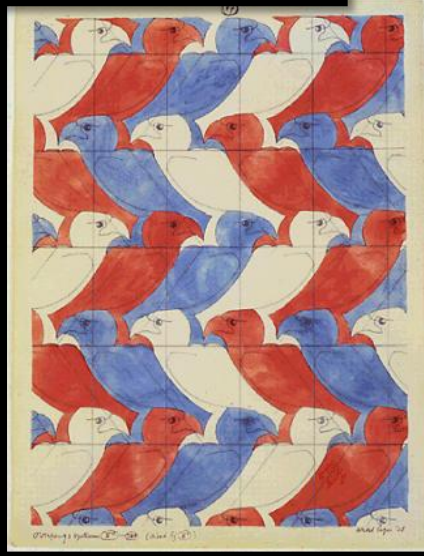
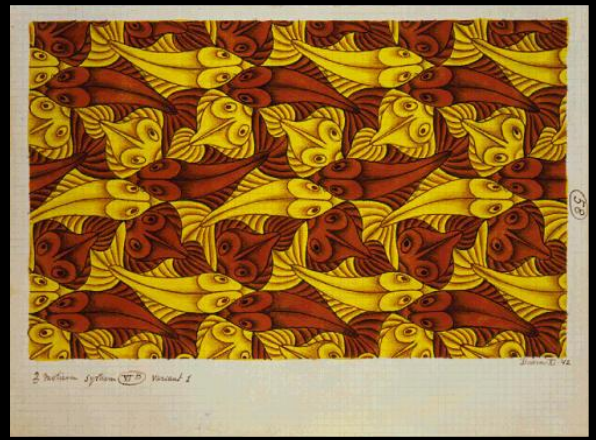
**And yet he also reflected upon these ideas from the outside as well as from within himself.**

**Three Spheres II - 1946**

**So let's discover how you would fill a plane  
with your imagination.....**



**Will it look like any of these Escher tessellations???**



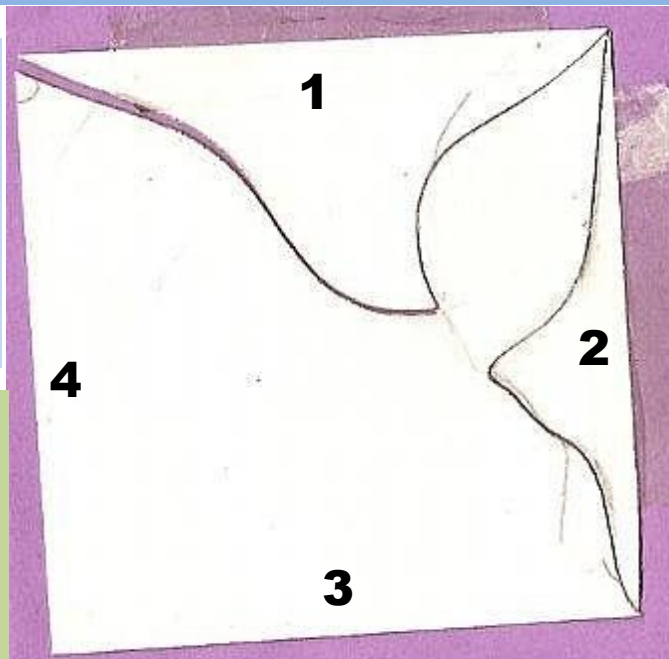
# Escher Art Project Irregular Tessellation

**Tessellation is the technical name for a repeating pattern. The word is derived from the Latin word *tessera*. Just like tiles on a wall the pattern covers a plane *without* overlaps or gaps.**

**You must follow the instructions exactly as shown, otherwise your tessellation pattern will not work. The fun begins once you have mastered this technique.**

**Step 1.** To create a tessellation, start with a 3 inch square tile made from heavy thick paper like an index card. Write the numbers 1-4 around the sides of the square.

**Step 2.** Draw a line from one corner to an adjacent corner on 2 adjacent sides. See example above right.

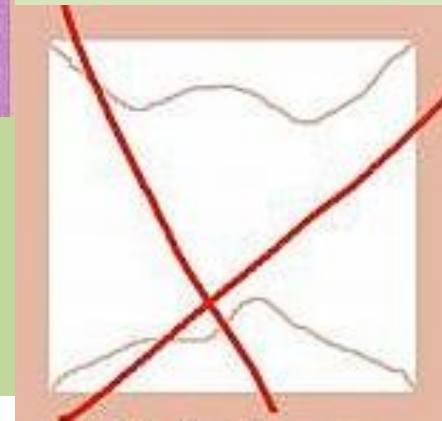


**Step 3.** Cut out the shapes 1 and 2.

**Do not include the whole corner.**

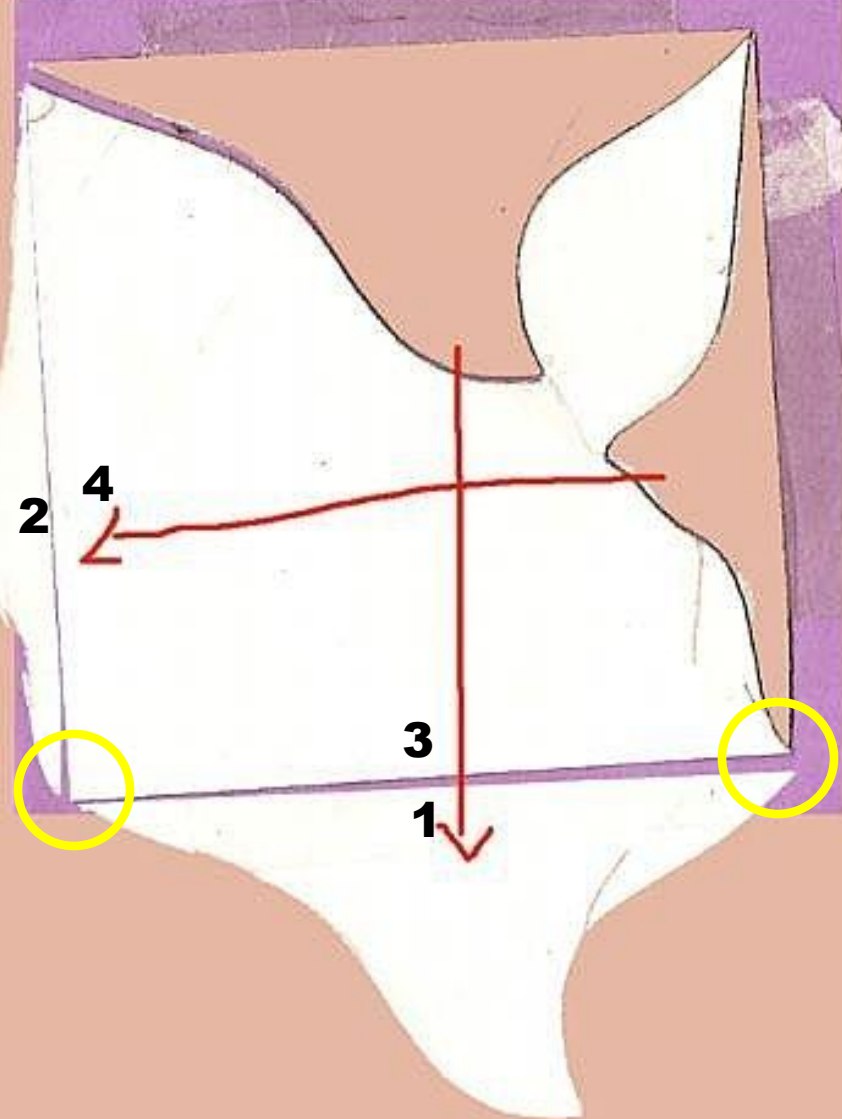


**Not Opposite Sides.**



# Escher Art Project Irregular Tessellation

**Step 4.** To create the simplest type of tessellation, the translation, slide each piece to its opposite side as shown. Remember to keep the numbers upright.

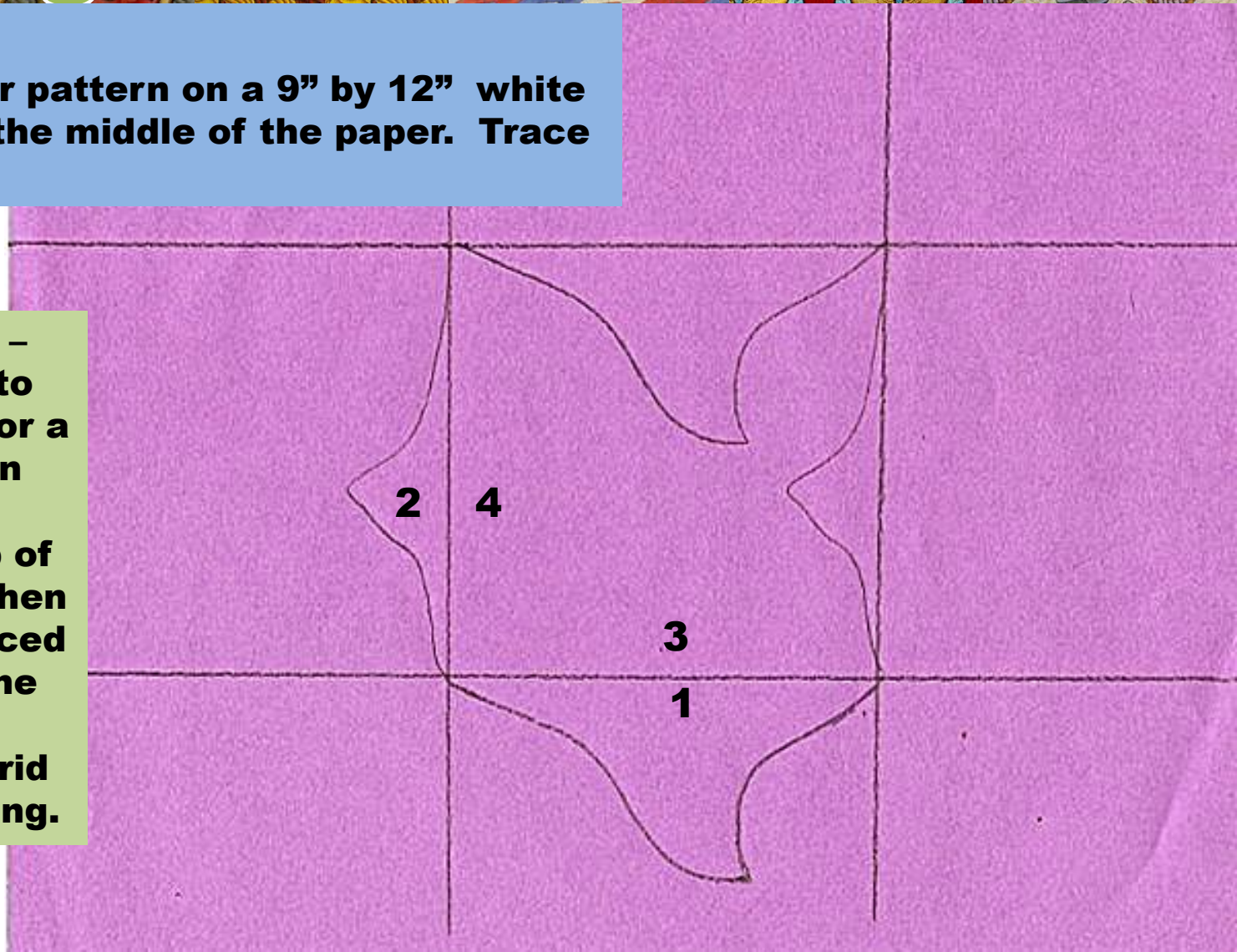


**Step 5.** Tape the edges together to create this new shape. Make sure the edges are touching and not overlapping. Also make sure that the corners are matching and not leaving a step effect.

# Escher Art Project Irregular Tessellation

**Step 6.** Place your pattern on a 9" by 12" white piece of paper in the middle of the paper. Trace your pattern.

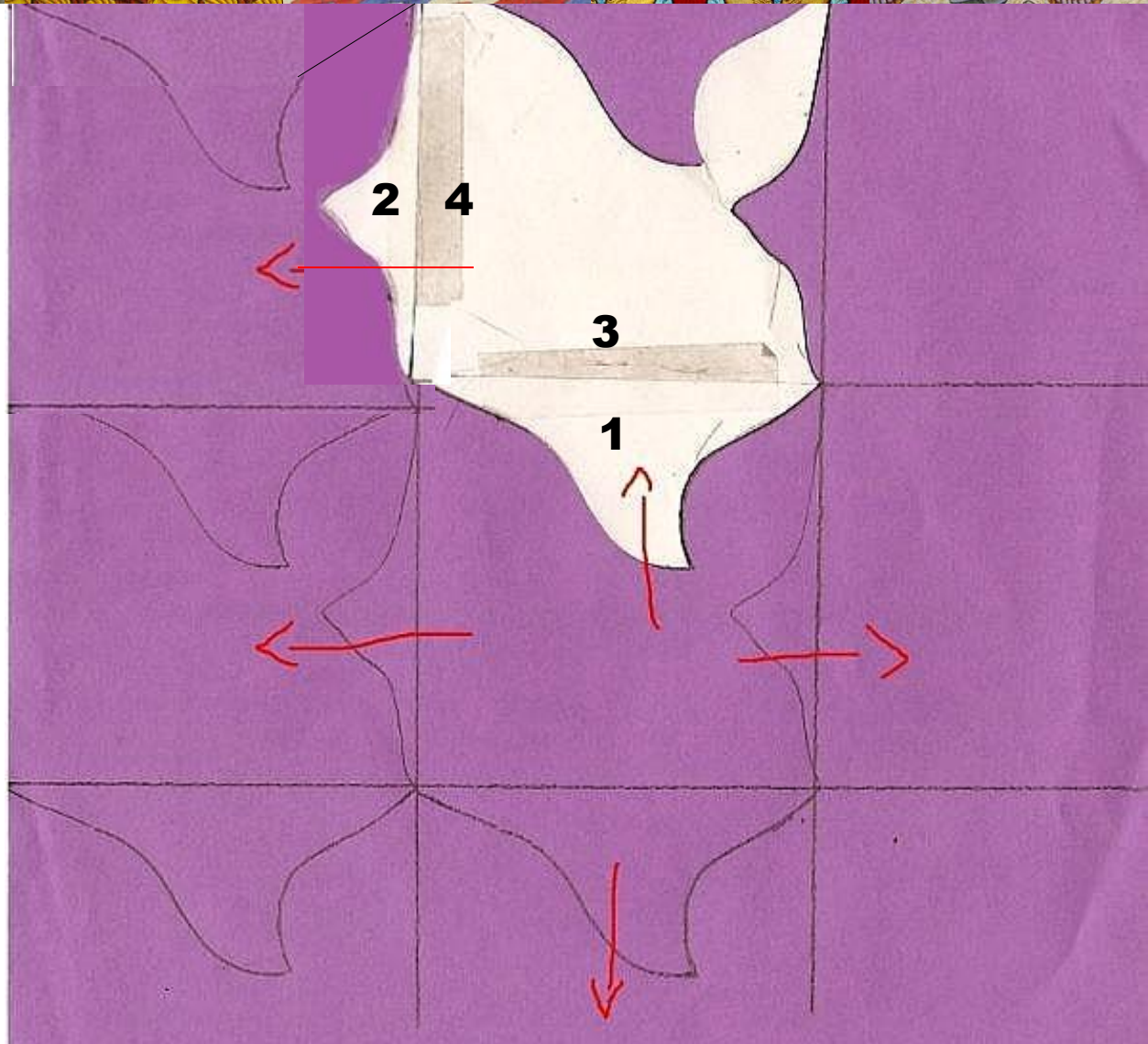
**Step 6a.** Optional – Some people like to draw a light grid for a guideline as shown here. Your grid would be made up of 3 inch squares. Then once you have traced the pattern over the entire paper, you would erase the grid lines before coloring.



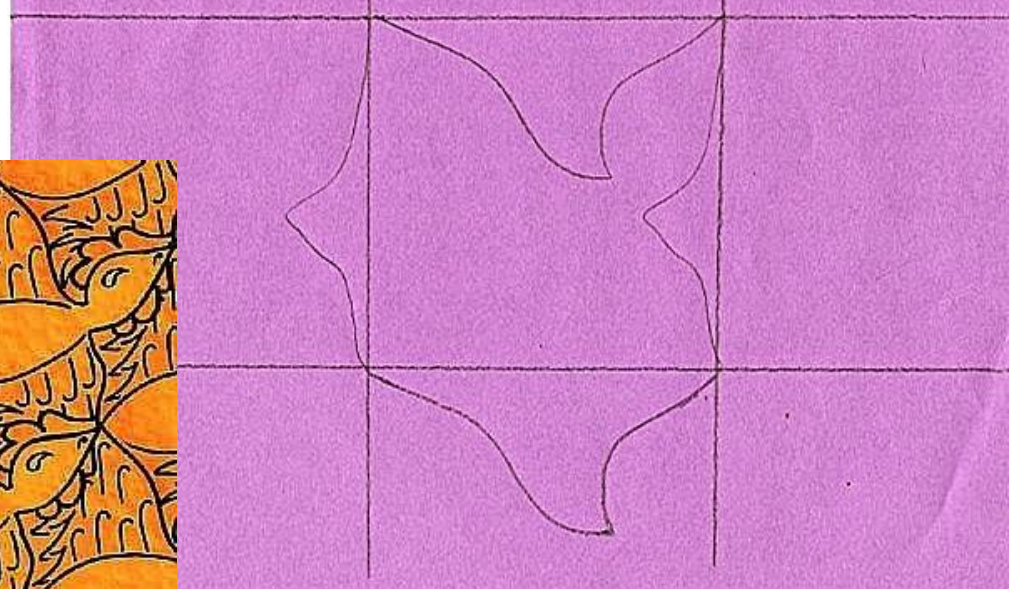
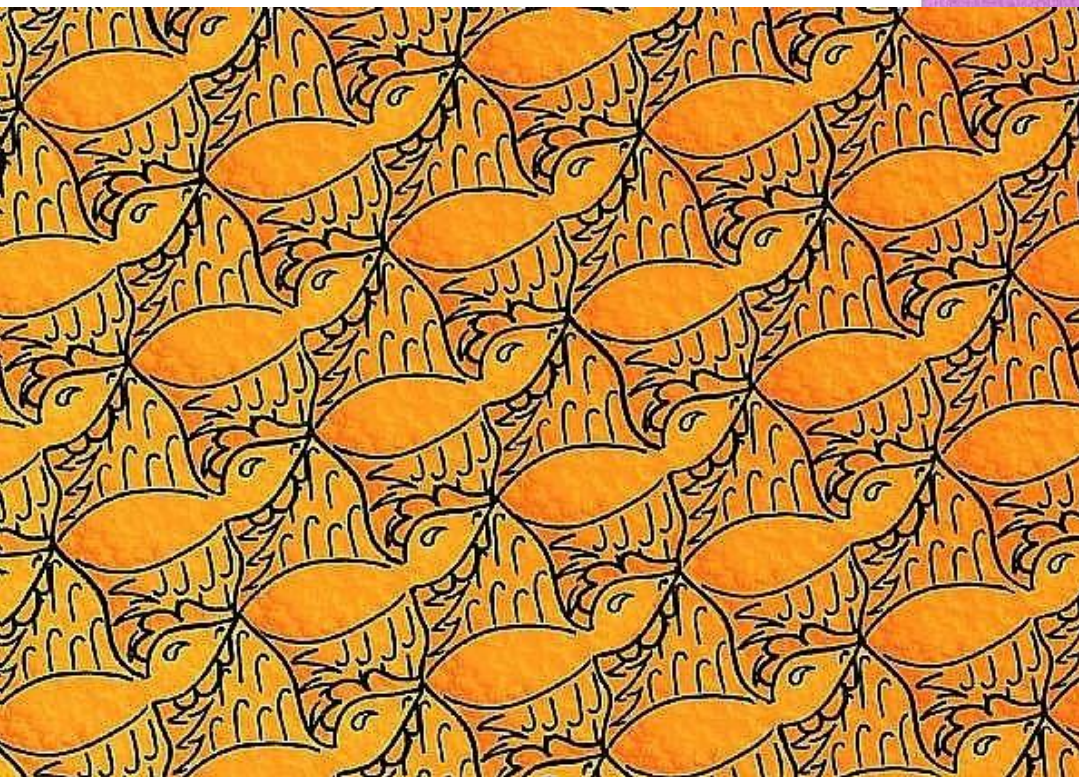
# Escher Art Project Irregular Tessellation

**Step 7.** Slide the pattern to the left to trace, as well as above.

**Step 7A.** Notice it should interlock if you did the prior steps correctly. Repeat for the left and below. Continue tracing until the page is filled.



# Escher Art Project Irregular Tessellation



**Step 8.** Now use your imagination and think of what this patterned shape looks like to you. Turn the paper upside down if right side up doesn't appeal to you. Color the pattern.





# Escher Art Project Irregular Tessellation

## **Materials Provided:**

- Index cards
- 9 X 12 inch white paper
- Scotch Tape

## **Materials Provided by the Volunteer / Teacher:**

- Pencils
- Rulers
- Scissors
- Colored Pencils or Markers
- Pencil erasers

## **Process:**

- Hand out the index cards and white paper.
- Have the students glue the artist slip on the back of the paper and write their name and date on it.
- Stress that accuracy in measuring the 3 inch square is a must! As well as following directions completely.
- Follow the steps in the previous slides 19 – 23.
- Time can be saved if you wish to make the 3 inch square for the class.



“The teaching of the arts and the humanities in our school is essential to all of us. Our ability to communicate effectively, the growth and vitality of our cultural heritage, all depend upon understanding and appreciating The pivotal role of the arts and the humanities in developing a truly literate society.”

~Andrew Haiskell, Chairman

President’s Committee on Arts & the Humanities

Chairman of the Board, Time, Inc.