

Chapter 9 Project Escher–style Tessellation Project
Due Friday December 21st

Part I 50 points

You MUST turn in:

An Escher-style tessellation using a parent polygon. For this drawing you must:

1. Turn in a parent piece with your final drawing
2. Complete at least an 8 ½" by 11" tracing of the parent piece tessellating a surface
3. Must include color and design in some form. It must look like something. You **cannot** just color in the piece.
4. On the back give the final drawing a title.

Calculation of grade

1. 35 pts for the Escher-style completed artwork
 - a. 20 pts for creativity, style, correctness of tracing and parent piece and color use
 - b. 15 pts for artwork (neatness, accuracy)
2. 15 pts for description
 - a. 10 pts for description(type of tessellation) and accuracy based on parent piece
 - b. 5 pts for title

Part II 50 points

A. Transformations 30 pts.

- Provide **ONE REAL LIFE** example of **each** rigid transformation (Reflection, Rotation, and Translation). This can be in the form of a photograph, a picture from a magazine, a picture from online, etc. It must be something from the real world.
- For each sample transformation write, at least, a sentence describing how the sample you chose illustrates the specific transformation. It should be CLEAR what you're referring to and what you mean.
- Each sample is worth **TEN POINTS**. You gain points by thorough explanations, accuracy, creativity and completeness.

B. Symmetry 20 pts

Symmetry can easily be found all around us. From car hubcaps to your own face, there is evidence of symmetry. Interestingly, company logos often have symmetry.

- Your task is to **find a logo to illustrate each type of symmetry**: (1) LINE SYMMETRY and (1) ROTATIONAL SYMMETRY. You are to provide me with a copy of each logo. Logos can easily be found on the web, in a magazine or of a real item.
- For each logo you must **describe, in words, how each has symmetry**. You must correctly identify **ANY** symmetry it has and be able to clearly describe it.
- Finally you must design your **own LOGO that has symmetry**. It may just be a fun design or a possible logo for a fictional product or company. Here are some hints to help you:
 - Look at other logos to get ideas
 - Take a mathematical shape and perform transformations on it
- **GRADE**: Each logo is worth **FIVE POINTS**. Your personal logo is worth **TEN POINTS**. I will look for accuracy, neatness, creativity and accurate explanations. Keep this in mind as you do your project!

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Escher-type Tessellations by Translation

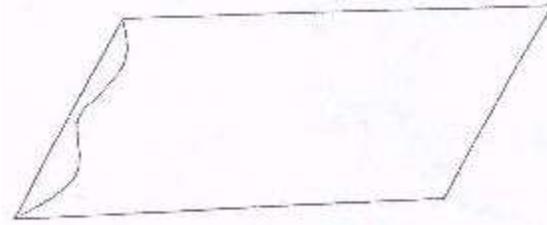
Polygons that can be used:

Any quadrilateral w/ parallel and congruent opposite sides

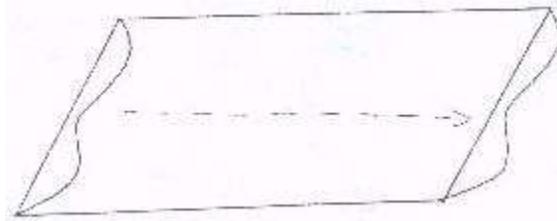
Any hexagon w/ parallel and congruent opposite sides

Technique:

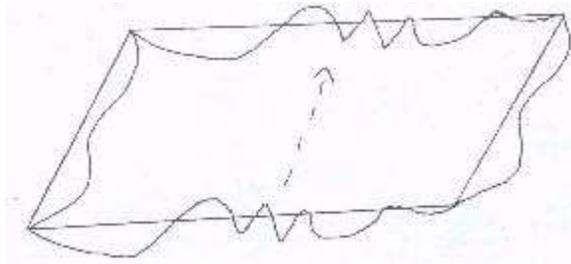
1. Choose any side. Draw any type of line design from one vertex to the other along that side.



2. On the side directly opposite, trace the same line design from step 1. The design is thus translated to the opposite side.



3. Repeat steps 1 and 2 for the other two (quadrilateral) or four (hexagon) sides.



4. You now have a completed tessellation piece. Use your imagination to decide what your piece looks like and fill in some details. It must look like something. You **cannot** just color in the piece.

5. On a piece of paper trace out the shape **near the center** of the paper. From there, continue to fill the entire piece of paper with the tessellating shape, as though you were building a puzzle in which all of the pieces were the same.

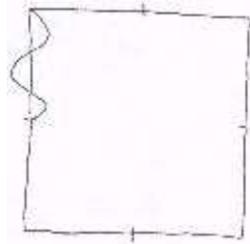
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Escher-type Tessellations by Rotation Around Midpoints of Sides

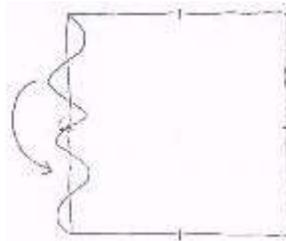
Polygons that can be used: Any quadrilateral, Any triangle

Technique: Find the midpoints of the polygon.

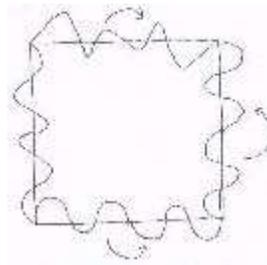
1. Choose any side. Draw any type of line design from one vertex to the midpoint along that side.



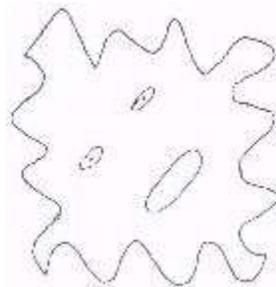
2. Rotate that design around the midpoint (180 degrees), and trace the design to finish the side.



3. Repeat steps 1 and 2 for the other three (quadrilateral) or two (triangle) sides.



4. You now have a completed tessellation piece. Use your imagination to decide what your piece looks like and fill in some details.



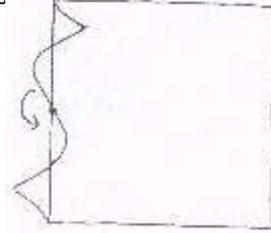
5. On a piece of paper trace out the shape **near the center** of the paper. From there, continue to fill the entire piece of paper with the tessellating shape, as though you were building a puzzle in which all of the pieces were the same. It must look like something. You cannot just color in the piece.

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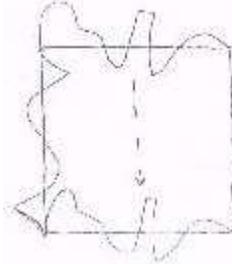
Escher-type Tessellations by Reflection

Polygons that can be used: Any rectangle

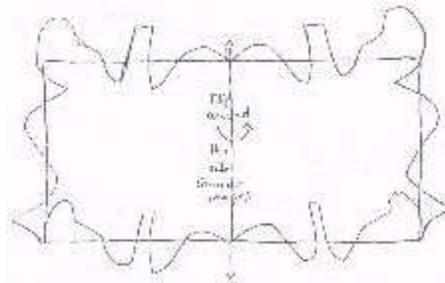
1. Start with the left side. Draw any type of line design from one vertex to the midpoint along that side. Rotate that design around the midpoint (180 degrees), and trace the design to finish the side.



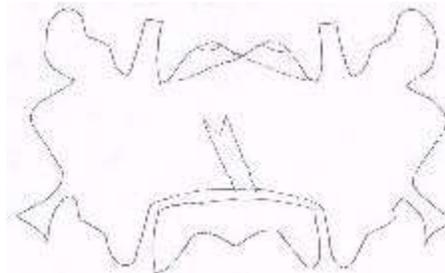
2. Choose one of the two sides that are left, and draw a line design from one vertex to the other. Translate, or slide and trace, this design to the opposite side.



3. The fourth side will serve as the line of reflection. Flip the design over this line and trace. You should end up with a tessellation piece with a vertical line of reflection in the center.



4. You now have a completed tessellation piece. Use your imagination to decide what your piece looks like and fill in some details.



5. On a piece of paper trace out the shape **near the center** of the paper. From there, continue to fill the entire piece of paper with the tessellating shape, as though you were building a puzzle in which all of the pieces were the same. It must look like something. You cannot just color in the piece.