

TESSELLATION PROJECT PACKET

You are to create your own tessellation masterpiece. Your tessellation will be created based on specific criteria. You **MUST** follow the guidelines given in order to receive full credit. The tessellation will be constructed on white computer paper. Your grade will be based on the following. This is a **test grade**.

Tessellation Creation	
8 $\frac{1}{2}$ by 11 computer paper	(10)
Template for Tessellation	(10)
Appearance and Neatness	(10)
<u>Creativity/Originality/Difficulty</u>	<u>(20)</u>
Total Points	(50)

Create your own Tessellation

The appearance of your tessellation should be neat! Your tessellation (pattern) should cover the ENTIRE page (no gaps or unintentional white spaces). You are to turn in the template figure you used to create your tessellation. **The original square should be 3 inch by 3 inch.** Coloring should be in between the lines, and No wrinkled or torn projects! Your project will also be based on Creativity and Difficulty. The more difficult and complex the tessellation is, then the higher the grade. You may not simply take a polygon and slide, rotate, or reflect it over and over again to create your tessellation. You **must** use a figure created using one of the nibbling methods.

What to do

1. View the Tessellation Power Point on Moodle.
2. Begin by creating a "template" using at least 1 of the nibbling methods. Be sure to label all the pieces.
3. Once the template has been created, place your template at any of the four corners of your computer paper and trace your first figure. (the square that you start with should match the corner of your paper, and therefore your template may hang off the edge of the paper).
4. Once your figure has been traced slide it or reflect it and trace your next figure (whether you reflect or slide it depends on the nibbling technique you used)
5. Continue step 3 until the entire page is covered. All your figures on the paper should fit together so that it looks like a puzzle. Figures at the edge will only be partial images
6. Once you have the page covered in your tessellation, begin to add color in the figure. The figured can be animated as well (see attached examples for animations).
7. Be creative and have fun with the project!

****Remember the more creative your tessellation is the more points!**

WHAT TO TURN IN

Tessellation Creation

Tessellation Template

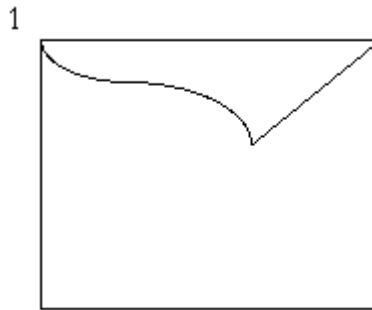
Put Name on back of Tessellation Creation

This project is
DUE Friday May 6th

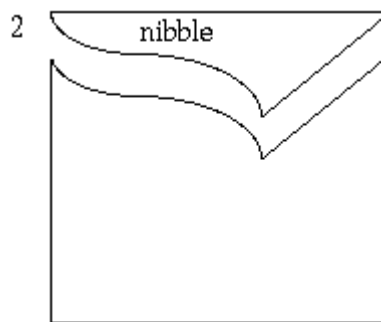
CREATING YOUR TEMPLATE

METHOD 1: The nibbling technique for geometric transformations:

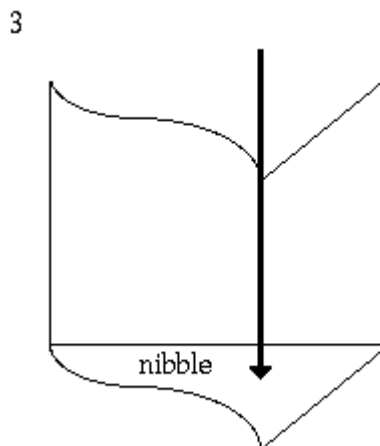
1. Begin with a square and design from one corner of the square to an adjacent corner. (Do not draw diagonally). Do not stop halfway across!



2. Cut on the design line, being sure to have 2 pieces when done -the nibble and the rest of the sheet. There should be no other pieces laying around. **This is very important! No trimming allowed.**



3. Slide the nibble across the sheet to the opposite side and tape the straight edges together. (Do not attach it to an adjacent edge. Do not flip the nibble around. Do not overlap the edges when taping.) The corners of the piece and the nibble should match perfectly.

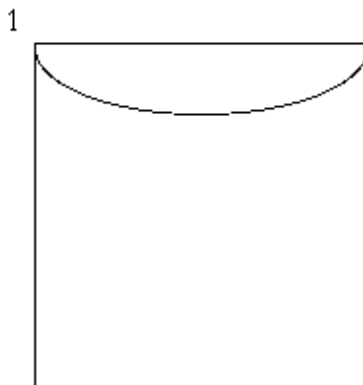


4. Repeat the procedure for the other sides

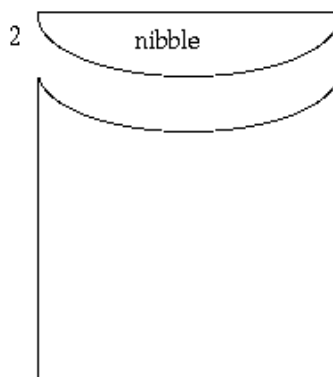
METHOD 2: The Rotating and nibbling technique for geometric transformations:

1. Begin with a rectangle and design from one corner of the rectangle to an adjacent corner. (Do not draw diagonally). Do not stop halfway across!

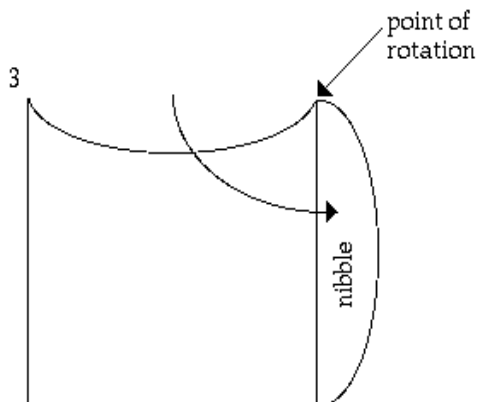
Rotation



2. Cut on the design line, being sure to have 2 pieces when done -the nibble and the rest of the sheet. There should be no other pieces laying around. **This is very important! No trimming allowed.**



3. Instead of sliding the nibble, rotate the nibble at its end point to an adjacent side of their square (not an opposite side). Mark your point of rotation and tape the straight edges together. (Do not overlap the edges when taping.) The corners of the piece and the nibble should match perfectly.

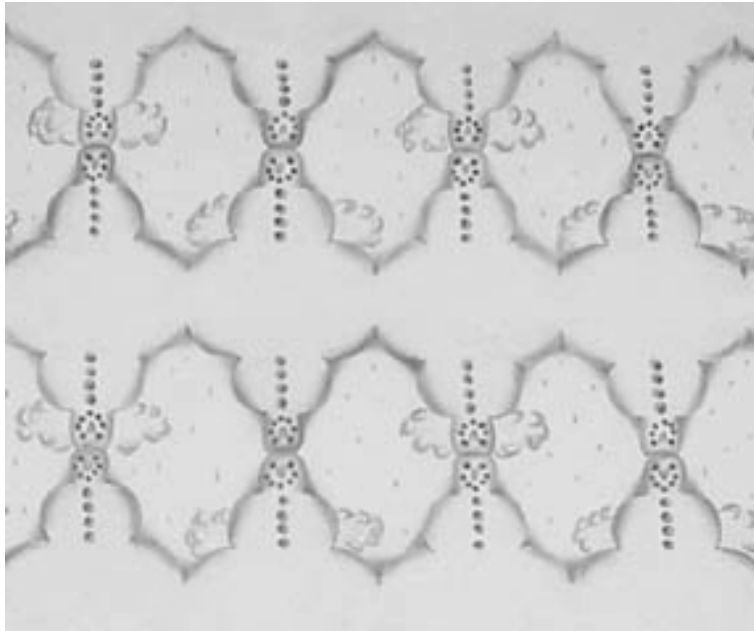


4. Repeat the procedure for the other sides

Creating a Tessellation Using Reflections:

1. Select any figure you want to use as your pattern (can use a figure from the nibbling Methods or a combination of both).
2. Then reflect or "flip" the figure repeatedly vertically (over the y-axis).
3. Once you have a row of "flips", take that row and reflect it horizontally (over the x-axis)
4. Continue Steps 2 and 3 until your paper is covered.

Example



EXAMPLES OF TEMPLATES AND THEIR TESSELLATIONS

Two specific silhouettes or illustrations of animate figures are shown below. They are examples of alterations of opposite sides of a regular grid by translations

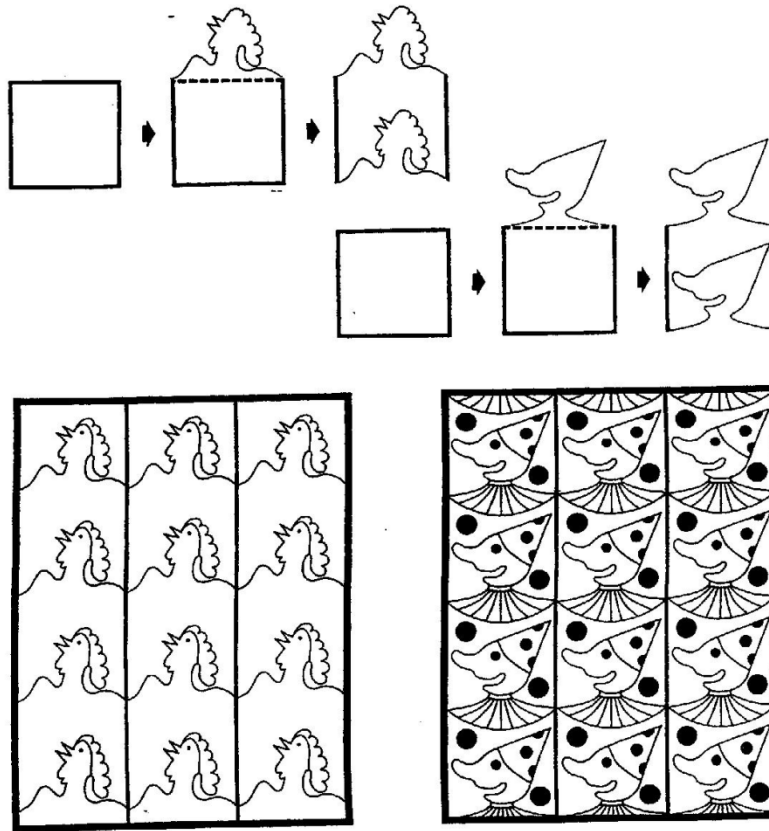
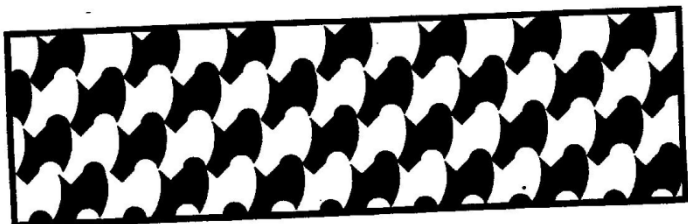
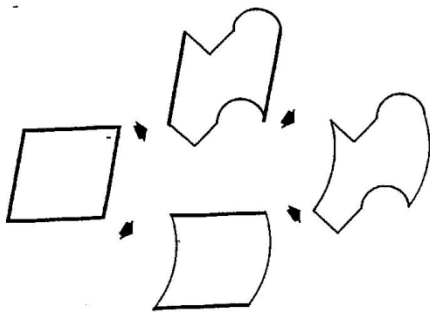


Figure 3-7

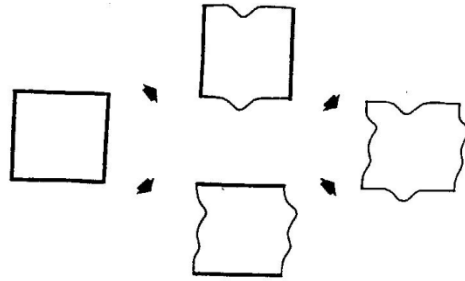
Tessellating shapes can be formed by applying the "nibbling" techniques to both pairs of parallel sides. An example is shown below.



Creating Animate Figures with Tessellations

There are two approaches to altering tessellating polygons into animate figures

1. Have a specific object in mind and to alter the original polygons (rectangle, square, or parallelogram) sides to make the shape look like the object (nibbling techniques). This approach may require a bit of trial and error.
2. Create a new shape using the nibbling techniques and then use you imagination to see that you think it "look like". Below are two examples



Does the new shape look like anything special to you? Does it remind you of anything? There are many things it could be. It could be the head of a person wearing a feather in his cap

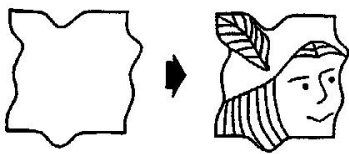


Figure 3-15

50



Here is a different altered square. What does it look like to you? Maybe a flying owl?

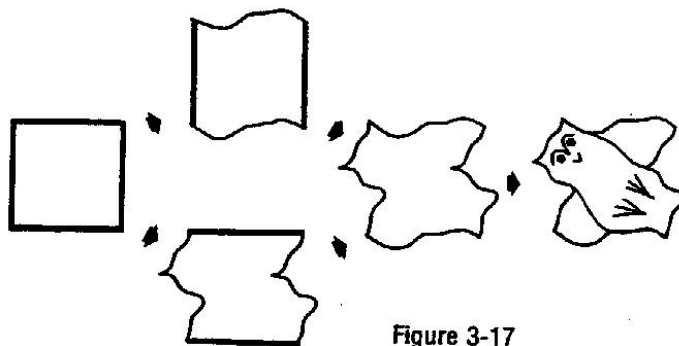


Figure 3-17