

Assignments

A S Y N C H R O N O U S

WEEK 5: DUE 9/29	
CHOOSE ONE	GEOMETRY SCAVENGER HUNT (1)
	TESSELLATION ART PROJECT (2)
	CREATE A MEASUREMENT TASK (3)
	GEOMETRY OF YOUR COOPERATING CLASSROOM * (4)
REQUIRED	WELCOME LETTER TO FAMILIES
WEEK 6: DUE 10/6	
CHOOSE ONE	CREATE A LEARNING TASK BASED ON CHILDREN'S LITERATURE
	CREATE AN OUTLINE OF YOUR OWN MATH STORY
REQUIRED	STUDENT INTERVIEW (SUBMIT by 10/13)

GEOMETRY SCAVENGER HUNT

BACKGROUND:

Shapes are everywhere. Being able to identify, compose and decompose shapes is an important mathematical skill. In this task you will be creating a visual record of the shapes that you recognize around you.

WHAT WILL YOU CREATE?

You will create and submit some sort of visual representation of the shapes that you have identified and recorded. This may take the form of highlighted digital pictures, a slideshow, a series of drawings or doodles, or something else that I haven't thought of.

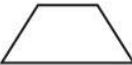
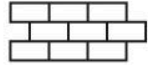
MATERIALS:

1. Camera or pencil and paper.
2. Digital editing device to edit pictures.

PROCEDURE:

1. Use the Geometry Shapes Checklist to identify shapes that you would like to find on your scavenger hunt.
2. Go on a walk or to a playground to look for these shapes.
3. When you spot a geometric shape, take a picture, or sketch the structure in which you found the shape or geometric feature.
4. Label the picture with the name of the shape and where you found it. (For instance, parallel lines – monkey bars.)
5. Compile your scavenger hunt and submit your work on our website.

Geometric Shapes Chart

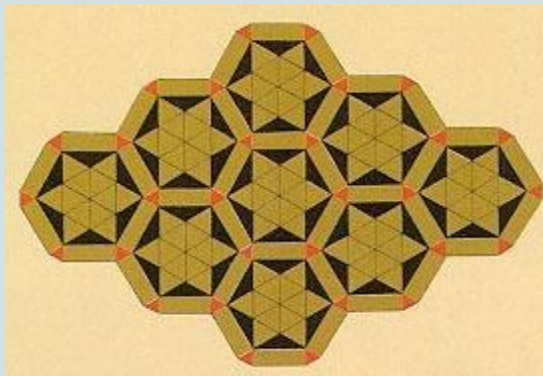
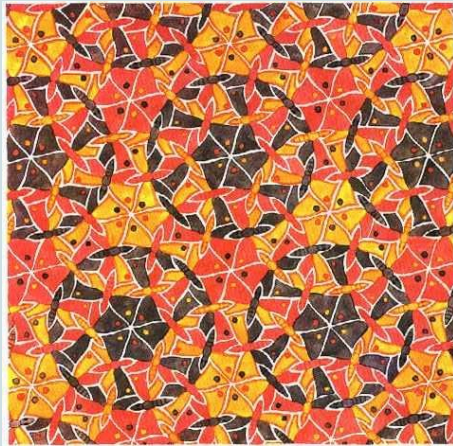
Lines and Plane Figures				
	horizontal line	vertical line	diagonal line	parallel lines
				
	perpendicular lines	curve	right angle	acute angle
				
	obtuse angle	triangle	square	rectangle
				
	pentagon	hexagon	octagon	polygon
Solid Figures				
	circle	arc	ellipse	right triangle
				
	equilateral triangle	scalene triangle	isosceles triangle	quadrilateral
				
	parallelogram	rhombus	trapezoid	tessellation
				
Solid Figures	cube	cylinder	rectangular prism	
				
	pyramid	tetrahedron	octahedron	
Solid Figures				
	polyhedron	sphere	cone	

TESSELLATIONS ART PROJECT

BACKGROUND:

A tessellation is a repeating pattern of shapes. In order for a pattern to tessellate all the shapes have to be touching each other with no overlapping and no gaps. The shapes lock into each other in an infinitely repeating tile pattern.

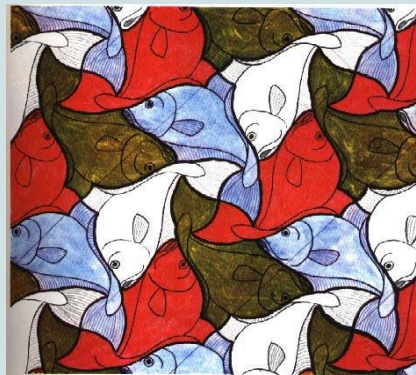
Here are some examples of tessellations from various cultures.



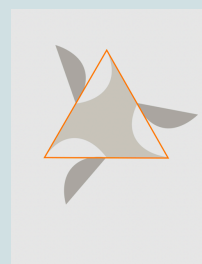
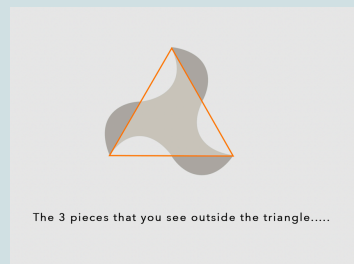
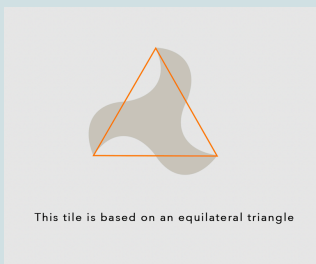


Early Persian and Islamic artists also created spectacular tessellating designs.

M.C. Escher was a Dutch artist who was inspired by Moorish tessellations and created tessellations of recognizable figures, images of animals, people and other everyday objects that his viewers would relate to. Here are some examples of his work:



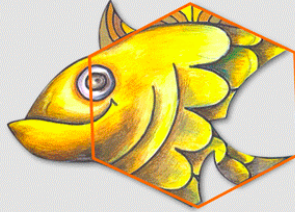
In order to create a tessellation, you must begin with a shape that tessellates itself.



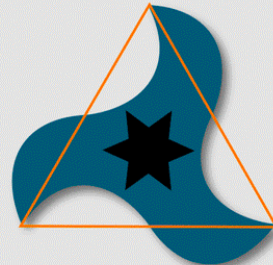
we can use for tessellations:



rectangle



hexagon



triangle

WHAT WILL YOU CREATE?

You will create your own tessellation.

MATERIALS:

PROCEDURE:

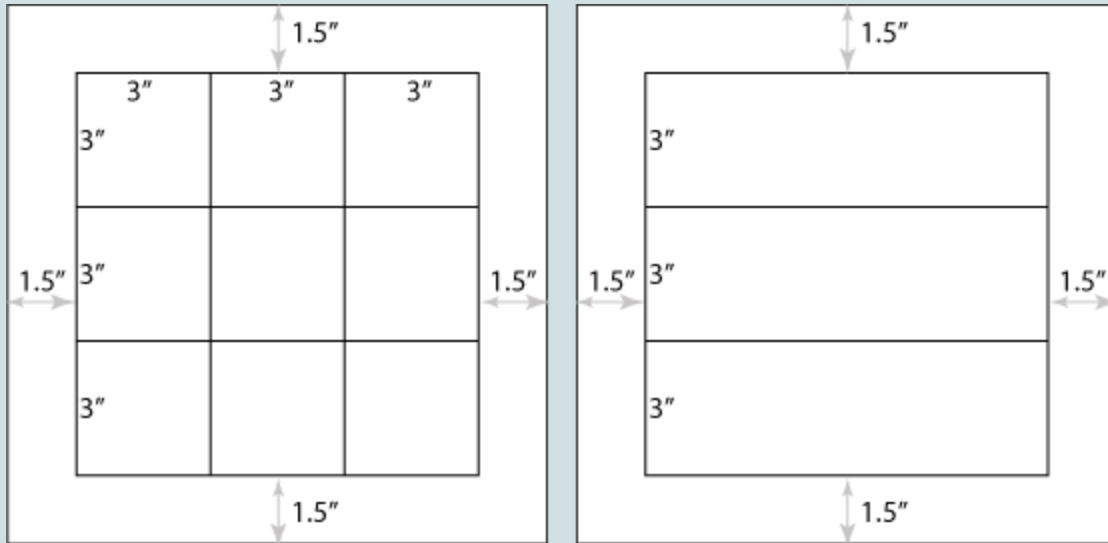
Start with creating a tessellation shape using the "translation pattern". Your tessellation should be a recognizable (not abstract) object – animals, birds, insects, fish, etc.

Pick a starting shape – square or hexagon.

Use your handout to plan and practice your tessellation.

Cut the base shape out of your handout.
You are going to work on a 12"x12" paper.

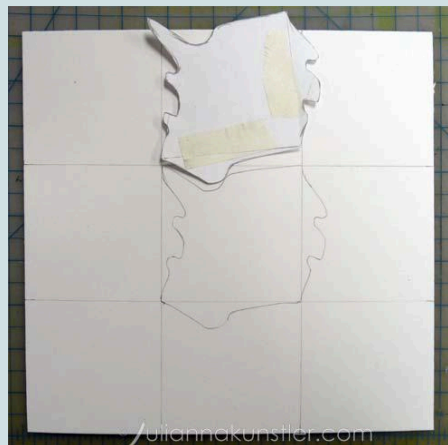
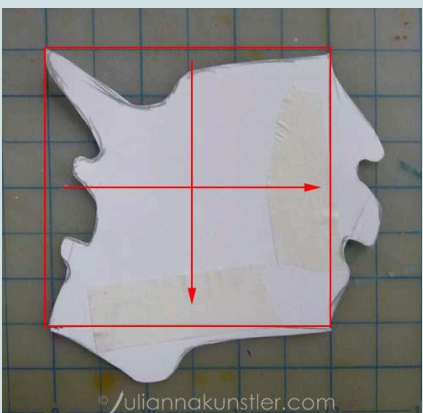
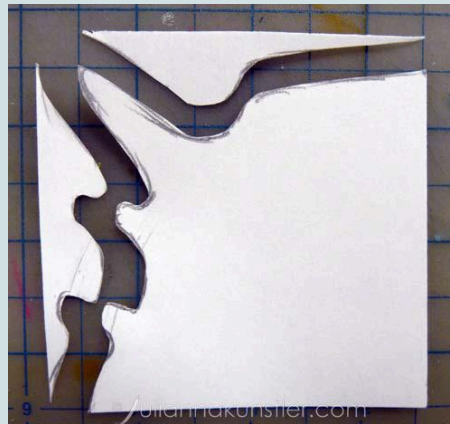
First – create an 1.5" border

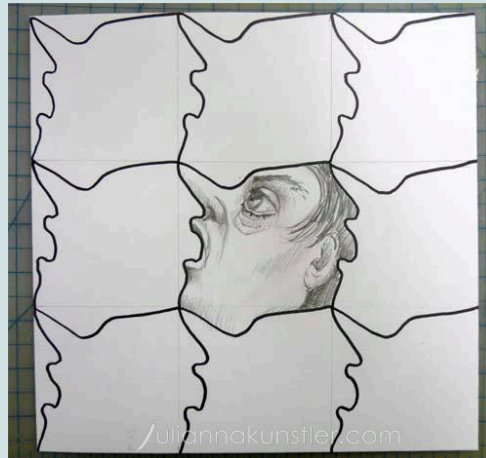
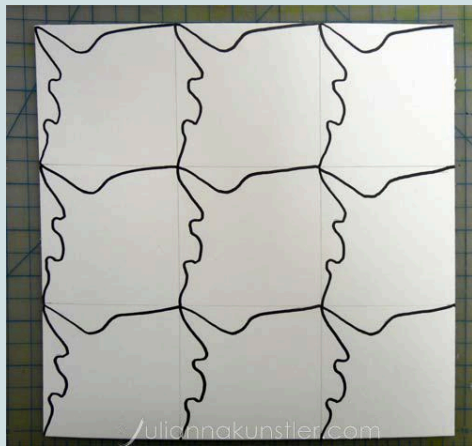


Then draw a grid – as it shows in your handout.

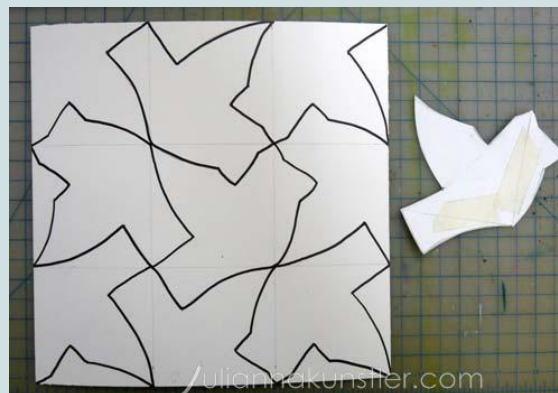
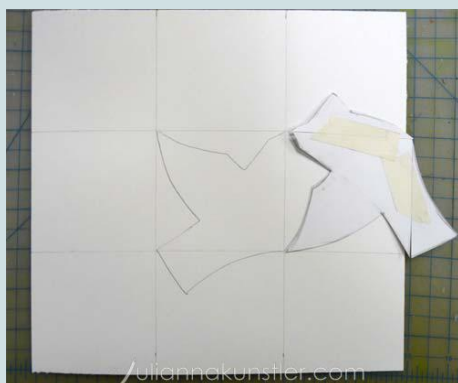
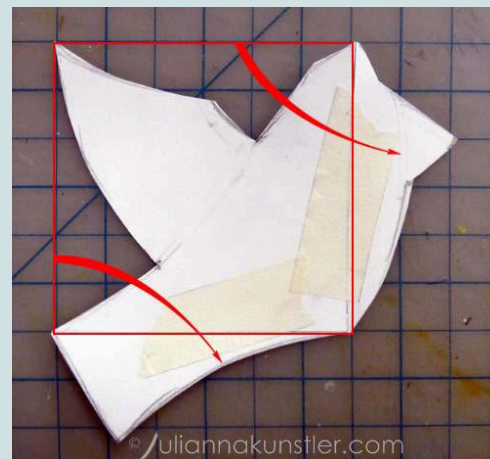
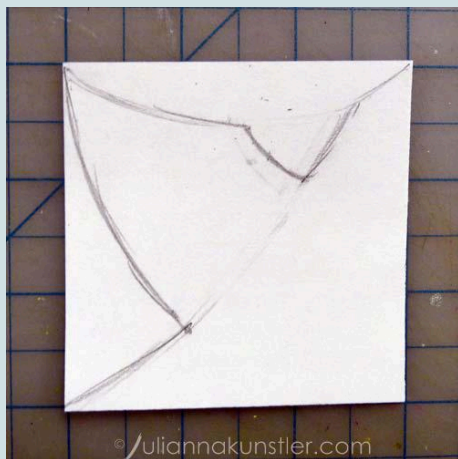
Trace your tessellation onto a drawing paper.

TRANSLATION TESSELLATIONS:





ROTATIONAL TESSELLATIONS:





TESSELLATION VIDEO:

[Youtube.org](https://www.youtube.org)

REFLECTION: (IN YOUR JOURNAL)

Where do you see tessellations in your real life?

Modified from: https://juliannakunstler.com/art1_tessellations.html#transition and <http://thehelpfulteacher.blogspot.com/2010/11/tessellations.html>
<http://thehelpfulteacher.blogspot.com/2010/11/tessellations.html>

STUDENT INTERVIEW

SUBMIT: Student interview

Choose one or two problems that you wrote during Week 4.
In an individual five-minute interview, ask a student (or someone that you know) to solve the problems.
Provide a written record of the student's solution strategy for each problem.

Answer the questions below:

What questions did you ask the students in order to determine what strategies he or she used?

Did the student use modeling, counting, or number sense strategies?

How might you use this information to further the student's understanding?

Include pictures of student work and your problem.

CREATE A MEASUREMENT TASK

BACKGROUND:

As a culturally sustaining, anti-racist teacher, you will want to make sure to build upon the strengths that children bring from home. A wonderful way to bridge the gap from home to school is to create measurement tasks that students will conduct for homework either over the course of one night or many. Measurement provides opportunities to connect mathematics to students' real lives and to allow students to learn from one another.

WHAT WILL YOU CREATE?

In order to help students and families see mathematics at home, you will create a task for your students to complete with their families. Your task does not need to be "original," but you should give credit to those who inspired you. In addition, you will complete the task yourself to provide a model for your students.

You will submit:

- ☐ The **task** with standards, learning goals and time-frame (use the tasks that you have completed for this class or the textbook as a guide). Include references if this task is adopted from another source.
- ☐ Your **completed task**.
- ☐ **Analysis/reflection** of the task: (this will be written in your journal)
 - ☐ Why did you choose or create this task?
 - ☐ How do you hope this task will help forge connections at home and help families recognize numeracy in everyday life?
 - ☐ What measurement skills or concepts are emphasized in this task?
 - ☐ How might you build off of this task in class the next day in a way that honors all students and their families?

GEOMETRY OF YOUR COOPERATING CLASSROOM

BACKGROUND:

As a teacher, there are aspects of your practice that you have control over and more systemic practices that we may only be able to change together at a policy level. Class size is a factor of education that deeply affects students and teachers, but may only be able to be changed with changes in policy. Nevertheless, there are practices that a teacher can implement to enhance their agency in the classroom, thereby making a large class feel smaller. One such practice is a redesign of the classroom space and/or a change in practice that will optimize the space using strategies that we have learned in class or ones that you have thought of yourself.

WHAT WILL YOU CREATE?

Individually or in groups of two, you will take inventory of the classroom space or school where you are conducting your fieldwork. This inventory must include square-footage and a basic blueprint, but can also include pictures of the classroom space as it is currently used. Then, you will make suggestions of how the space can be used differently. This may include different grouping strategies, changes in furniture or distancing practices, or use of outdoor spaces, or something that I have not thought of.

MATERIALS:

1. Camera
2. Measuring tape or app
3. Pencil and scissors
4. Graph paper

PROCEDURE:

You will first take a geometric inventory of the class in which you conduct your field experience.

Inventory will include:

Size (in square feet) of your classroom (and description of how you found this)
Size of either another classroom or outdoor spaces (playground, yard) at your school

Number of students per square footage of space in your classroom (and description of how you found this)

If working in pairs, a comparison between the two classrooms in which you are conducting your fieldwork.

Blueprint of the classroom floor plan (can be drawn on graph paper and uploaded on to slides). It will include:

Scale

Large furniture and key for what each shape represents

Windows and doors

Note: You may want to cut out the furniture from another piece of graph paper and place it on the floor plan of the room.

Analysis will include:

Description of how the classroom space is currently used. Description how you might set-up your future classroom and explanation of why.

REFLECTION: (IN YOUR JOURNAL)

Who are your students? Where might geometry/space/spatial awareness show up in their lives? How does that differ from/relate to where geometry/space/spatial awareness show up in your life?

Where does geometry show up in their familial, cultural, or community histories?

Where does it show up in the history of their art, crafts, and architecture? How might that be different from/similar to how geometry has shown up in your histories?

WELCOME LETTER TO FAMILIES

BACKGROUND:

As you have learned this week, creating a classroom in which all families feel comfortable is an essential part of being an effective, culturally sustaining, anti-racist teacher. Positive family participation has a strong correlation with how welcome the child feels in the classroom and has positive implications for scholastic achievement. Early career elementary school teachers often feel intimidated by parents and may have trouble reaching out to forge relationships. One way to combat these fears and begin building this important relationship is to begin the year with an inviting parent letter that introduces yourself, delineates important goals and policies, and allows for two-way communication.

WHAT WILL YOU CREATE?

You will write a beginning of the year letter to the parents of your future students. I would like for you to focus on math strategies and content, but you may include as much general education information as you would like.

Guidelines:

- Introduce yourself: your experience as an educator, where you grew up, why you want to be a teacher, etc.
- What will the students learn in math? Include your goals for math class: state content covered, mathematical habits of mind that you hope to foster, skills that you will be building this year.
- How is your math class structured and why?
- How much math homework should families expect? How can families help with homework? What should a family member do if the child is stuck?
 - Provide some resources or opportunities for parents to learn strategies to help their children at home.
- How can they communicate with you?
- You might want to give parents the opportunity to call, zoom or write to you about some of these topics:
 - What goals do parents have for their children?
 - What are some aspects of their child's education that they think you should know about?
 - What can you do to help this year run smoothly for their family?

CREATE A LEARNING TASK BASED ON CHILDREN'S LITERATURE

BACKGROUND:

A researched-based way to teach diverse learners is to embed a learning goal throughout the day to provide many different learning experiences for the students. One way to do this is through connecting mathematics to the children's literature that you may read as a whole class. This important interdisciplinary strategy may engage students who do not as readily connect to mathematics or shy away from numeracy. In addition, reading as a whole class provides a common experience and language to build the mathematics from. In this way, reading literature as part of math class or integrating math into what might be a reading lesson can be a form of bibliotherapy in which students combat math anxiety through literature.

WHAT WILL YOU CREATE?

You will create a task based on a read aloud book that you have read in your cooperating class or one that you love. The task can be an original task or can be one from another source. The book can either be a book with a math focus or you can integrate math into a beloved children's book.

You will submit:

- ☐ A description of the **book** and how it will be used.
- ☐ The **task** with standards, learning goals and time-frame (use the tasks that you have completed for this class or the textbook as a guide). Include references if this task is adopted from another source.
- ☐ Description of class: grade level, why you choose this task for your students
- ☐ Completed task

RESOURCES:

Here is a pdf of [Math Through Children's Literature](#), which has many examples of tasks to use during or after reading a book to the class.

Our textbook also lists children's books at the end of the chapter.

7 ways to use children's books in math class.

Welchman-Tischler's 7 ways	Children's book	Possible use
Provide a context	<i>Divide and Ride</i> (Murphy, 1997)	Children at an amusement park have to make decisions about how to organize their group to ride various rides.
Introduce manipulatives	<i>The Penny Pot</i> (Murphy, 1998b)	Students can use coins as manipulatives to organize as the story is read about gathering enough money for face-painting at the carnival.
Model a creative experience	<i>One Hundred Hungry Ants</i> (Pinczes, 1993)	After 100 ants reorganize themselves in various ways on their journey to a picnic, students can create their own combinations in a new story with a different number of ants.
Pose an interesting problem	<i>Counting on Frank</i> (Clement, 1991)	A young boy's wonderings provide several interesting problems that could be explored further.
Prepare for a concept or skill	<i>The Doorbell Rang</i> (Hutchins, 1986)	Sharing cookies with friends and neighbors prepares students for the concept of division.
Develop a concept or skill	<i>Sir Cumference and the First Round Table</i> (Neuschwander, 1997)	Sir Cumference's quest to find the best shape for a table leads to the discovery of the properties of circles.
Provide a context for review	<i>Pigs on a Blanket</i> (Axelrod, 1996)	Following the family of pigs in their journey to the beach allows students to review elapsed time.

Rogers, R. M., Cooper, S., Nesmith, S. M., & Purdum-Cassidy, B. (2015). Ways that Preservice Teachers Integrate Children's Literature into Mathematics Lessons. *The Teacher Educator*, 50(3), 170–186.
<https://doi.org/10.1080/08878730.2015.1038493>

CREATE AN OUTLINE OF YOUR OWN MATH STORY

BACKGROUND:

One of the most effective, and underutilized ways of using children's literature in the mathematics classroom is as a model for a creative experience. Students can use the structure of a math book to create their own versions of the story. In this way, children can develop their understanding of mathematical content, their understanding of story structure and their creative side. Further, an activity such as this allows students to share a part of themselves that you might not usually see in math class.

WHAT WILL YOU CREATE?

Using children's literature as a model, you will create an outline for an **original** story that develops a mathematical concept that we have studied so far.

You will submit:

- ☐ The name and a brief description of your mentor text
- ☐ The learning goal and common core state standards
- ☐ Description of class: grade level, why you choose this task for your students
- ☐ Your outline or completed graphic organizer.

RESOURCES:

Story Options: (You may choose another not listed below.)

[Bunny Money](#) by Rosemary Wells

[Frog & Toad: Lost Button](#) by Arnold Lobel

[A Remainder of One](#) by Elinor J. Pinczes

[The Math Curse](#) by Jon Scieszka and Lane Smith

Our textbook also lists children's books at the end of the chapter.

Graphic Organizers:

Here are two options for graphic organizers or you can create your own:

[one](#) & [two](#)

This [article](#) offers some guidelines that might be helpful for writing a math story.