Unit 6: Tessellations

Content Area: **Art**
Course(s):
Time Period: **Full Year**
Length: **8 Weeks**
Status: **Published**

Unit 6: Tessellations

Unit Rationale

The purpose of this unit is to...

- Teach students that a tessellation is the tiling of a plane using one or more geometric shapes, called tiles, with no overlaps and no gaps.

Essential Questions

- Are tessellations art or math (or both)?
- Can you think of other areas where art and math intersect?

Pre-Assessments

As students enter the art room, they will receive a worksheet that has half of a tessellation on it. Based on the information they are given, they will be asked to continue the pattern. The educator will ask for the students' to show their work and be able to see if they have prior knowledge of what a tessellation is.

Instructional Plan

See description below for Lesson 1.

Lesson 1: Creating a Tessellation

Student Learning Intentions or We are learning to/that … (WALT)

- Tessellations can be found in nature.
- MC Escher was a master at making tessellations.
- A tessellation can be made out of a square of paper by cutting out a section from one side and the bottom and moving that cut out shape directly across the square and attaching it. You will then have a shape that when

traced fits into itself going in either direction.

Student Success Criteria … "I can statements"

- Create a tessellation pattern using the square paper cut out technique.
- Repeat this pattern to the edges of a larger sheet of paper.
- Use color in such a way that it becomes an orderly and exactly repeating part of the tessellation.

Instructional Strategies and Activities

Lesson 1: Creating a Tessellation

- Students will complete the pre-assessment described above.

- The educator will then review how to create a tessellation with the whole class.

- Students will make a pattern for a tessellation out of a 3" square piece of construction paper.
- Students will trace tessellation so it is level both vertically and horizontally with the edges of the paper.
- Students will alternate tessellation squares for color.

Formative Assessments:

Throughout the process of creating a themed color wheel, students will be evaluated using the following methods:

- The educator may question individuals or the class as a whole for understanding of concepts.

- The educator may look at individual works in progress to check for understanding.

- Did students make tessellation pattern correctly so shape fits into itself?
- Can student self adjust placement of cut out and taped shape so it fits into itself when traced?
- Did students trace pattern so tessellation is perfectly horizontal and vertical so it is aligned with the edges of the paper?
- Did students use color so tessellation are alternated color wise (just like a checkerboard)?

Instructional Materials and Resources

Student Supplies: Pre-assessment paper, tessellation paper, pencil, eraser, Sharpie, coloring materials

Educator Materials: Tessellation lesson sample, tessellation paper, pencil, eraser, Sharpie, coloring materials

Reflections and Suggested Modifications

To be reflected upon by the educator at the completion of the unit.

Modifications and/or Accommodations

Suggested Modifications (ELL, Sp. Ed, GIfted, At-risk of Failure)

English Language Learners

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

Special Education Students

Chunking: The teacher presents information in a way that makes it easy for students to understand and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

Checking for Understanding: It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

Extra time: The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

Oral Reading: The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

Timers: The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

Students with 504 Plans

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Gifted & Talented Strategies

Extensions/Enrichments: Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

Modify/Change Activities: Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

Students at Risk of School Failure

Directions or Instructions: Make sure directions and/or instructions are given in limited numbers. Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

Peer Support: Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

Alternate or Modified Assignments: Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

Increase One to One Time: When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

Contracts: It helps to have a working contract between you and your students at risk. This helps

prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

Hands On: As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

Tests/Assessments: Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

Seating: Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.

New Jersey Student Learning Standards: Content Area

VA.3-5.1.5.5.Cr1a	Brainstorm and curate ideas to innovatively problem solve during artmaking and design projects.
VA.3-5.1.5.5.Cr2b	Demonstrate craftsmanship through the safe and respectful use of materials, tools and equipment.

Integration of Diversity, Equity and Inclusion, Climate Change, Informational and Media Literacy

Integration of Diversity, Equity, and Inclusion:

Students will create a tessellation inspired by the work of Dutch artist, MC Escher. At the end of the unit, students will conduct a "museum walk" critique that will give them the opportunity to provide feedback to each other and observe their work. They will collaborate on ideas, share their constructive criticisms, and embrace the differences in each of their tessellations.

Integration of Career Readiness, Life Literacies and Key Skills

CRP.K-12.CRP6	Demonstrate creativity and innovation.
WRK.9.1.2.CAP	Career Awareness and Planning

Integration of Computer Science and Design Thinking

CS.K-2.8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

21st Century Life and Career

CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Interdisciplinary Connections: NJSLS for ELA, Social Studies, Science and/or Math

MATH.K-12.5	Use appropriate tools strategically
ELA.SL.PE.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.