

The Arts



PART II.2

Polygon Pets2

NOTE: This document is a work in progress. Parts II and III, in particular, are in need of further development, and we invite the submission of additional learning experiences and local performance tasks for these sections. Inquiries regarding submission of materials should be directed to: The Arts Resource Guide, Room 681 EBA, New York State Education Department, Albany, NY 12234 (tel. 518-474-5922).



POLYGON

Pets

ARTS

1

- ▲ create art works
- ▲ develop ideas
- ▲ understand/use principles

ARTS

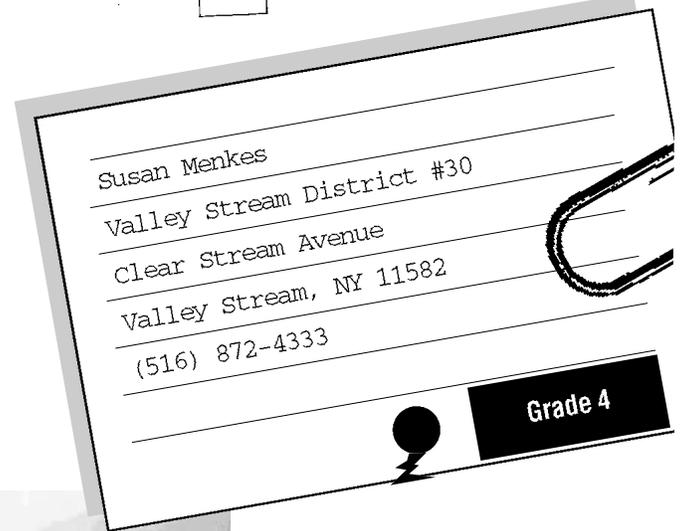
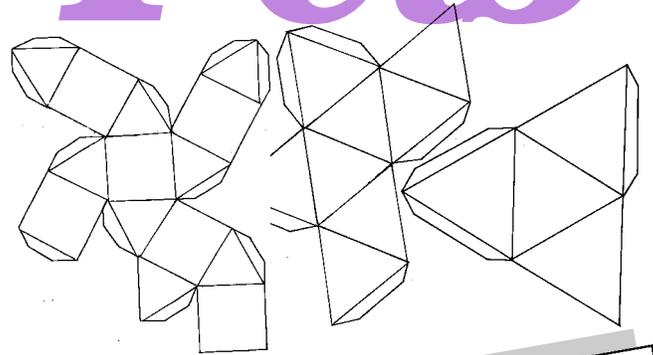
2

- ▲ understand mediums

ARTS

3

- ▲ explain visual qualities
- ▲ explain themes
- ▲ explain ideas



I think this learning experience reflects current scholarship in my field and “best” classroom practices because it includes:

- sequential learning experiences
- integration of academics with art
- success for all my students
- decision-making without the fear of “making a mistake”
- cooperative learning
- authentic assessment
- higher level and critical thinking.

Recommended Resources;
 Cut and Assemble: 3-D Geometric Shapes,
 by A.G. Smith, Dover Publications.
 Everyday Mathematics, University of
 Chicago Mathematics Program.

In our mathematics curriculum in grade four, students are learning to form two-dimensional polygons. In art class, this experience will be applied to a third dimension, as this hands-on activity will teach students how tessellated polygons fold to create sculptural geometric forms.

Students need to:

- understand the definition of a polygon
- understand that when polygons are put together in a particular pattern they may be folded to create three-dimensional shapes (such as squares into cubes, triangles into pyramids)
- be able to trace, cut, and glue these patterns
- effectively combine a variety of materials and/or additional shapes to create an imaginary animal.

Students will:

- begin with a discussion about what they have learned about polygons in math class (definition, properties, vocabulary words such as vortex and angle)
- identify shapes with three, four, five, six, seven, and eight sides and find examples of these shapes from teacher's prepared patterns.

Teacher will:

- facilitate this discussion
- define new vocabulary such as tessellate (put together shapes with no spaces in between) and polyhedron (a three-dimensional shape created by folding two-dimensional polygons)
- demonstrate with a drawing on the board or on paper how tessellated shapes have no spaces in between and draw non-tessellated shapes to show the difference.

Teacher will:

- demonstrate that polygons may be tessellated and combined to create polyhedrons by folding examples for the class
- elicit definitions of new vocabulary from the class as a review

Students will:

- describe the creation of these forms within the context of the new vocabulary they learned. I actually had students state, "We are going to fold tessellated polygons to create polyhedrons."
- carefully trace polyhedron patterns, including tabs for glue
- cut out shape and fold along lines.

The study of polygons is a difficult concept for many children. This activity helps many children visualize the abstract. What a wonderful, creative and fun way to internalize geometry.

Teacher



Teacher will:

- provide students with polyhedron and polygon patterns
- provide materials which the students may use to add features to their animals.
- elicit a list of features from the students (examples: beak, wings, claws, tail, paws, whiskers)
- glue tabs to create their shape
- add features to create an imaginary animal, using color, texture and/or shapes.

Teacher will:

- develop a rubric for this lesson and an evaluation scale for the students to use in their assessment
- use an assessment rubric to evaluate the lesson.

Students will:

- discuss and assess their projects using an assessment rubric with specific criteria.



Lesson One

- discussion—20 minutes
- tracing and rough cutting (one inch all around pattern)—25 minutes
- review of learning experience—5 minutes
- clean up—10 minutes

Lesson Two

- discussion of previous week's learning experience—10 minutes
- demonstration on how to fold and glue—5 minutes
- finish cutting on lines, careful folding, gluing together form—35 minutes
- clean up—10 minutes

Lesson Three

- share ideas of how animals might look, features to include, materials to use—15 minutes
- choose materials, implementation of ideas—30 minutes
- check-off list—5 minutes
- clean up—10 minutes

Student Checklist

Am I:

- Tracing neatly and completely?
- Helping to hold my partner's pattern so it can be traced?
- Cutting $\frac{1}{2}$ " around pattern first, then cutting slowly and carefully on pattern line?
- Folding on the lines?
- Glueing all tabs and attaching them to the sides?
- Using a variety of materials?
- Remembering that I can't make a mistake when I use my imagination?

Name: _____
Teacher: _____

Lesson Four

- finish creating animal—30 minutes
- “museum moment” (students rotate around the room to view their classmates’ art)—10 minutes
- verbal/written assessments or discussion—30 minutes
- clean up—10 minutes

My Icosahedron Leopard “Saves The Day” by Sara Palazzolo — Grade 4

My Icosahedron Leopard is little. He has big eyes, and two little ears. He's made from triangles on all sides. He has no legs, so he flies in the air like a bird. Well...

... One day while my Icosahedron Leopard, and I were taking a walk in the park we passed by the lake. While we went over the bridge I fell in!!! My leopard leaped in and started looking for me. The bridge was over the middle of the lake so it was kind of deep. My leopard was allergic to water so he couldn't swim. Since I taught him some telephone numbers, and he had change from the icecream we had bought earlier, he went to the nearest pay phone. He quickly dialed 911, and then waited for

We loved this project because we could create any animal we wanted from a polyhedron. This project helped us in math and it taught us how to put together geometric shapes. It was the best.

Student

them to come to the pond. When the ambulance got there I had been in the water for 10 minutes. When I was found I was okay. Then with the rest of my soggy allowance, we went out for some pizza as a thanks to my leopard!



Assessment Rubric - Visual Arts

LESSON TITLE: Polygon "Pets"

GRADE LEVEL: 4

Evaluation Scale:

It's "awesome"; Absolutely	Very Well; Probably yes	Satisfactorily; Only if I don't have to walk it	Needs more work; Probably not
-------------------------------	----------------------------	---	----------------------------------

CRITERIA

	STUDENT	PEER	TEACHER
1. Do the sides tessellate and fold properly? (TECHNICAL)			
2. In addition to its form, does the imaginary pet have other elements of art?			
3. line ?			
4. shape ?			
5. texture ?			
6. color ?			
7. How well is the sculpture put together? (NEATNESS)			
8. Are there a variety of materials used?			
9. Are the materials used creatively? (AESTHETICS)			
10. Would you like to keep this animal for your "pet"?			
TOTAL			

REFLECTION

This learning experience is a part of sequential learning. Therefore, students will go on to study Escher and his famous metamorphic tessellations, in grade five. Having the basis of knowledge of geometric tessellation, students will create tessellated, free-form designs by rearranging the area of a four-sided polygon.

REFLECTION:
REFLECTION

My Pyramouse

I have a pyramouse.
He lives in a triangular house.
He has three kids who are nice.
They're all my pyramice.

By Laura Zurlo

