



AIM: Art, Identity, and Mathematics

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Piedmont IB Middle School

This curriculum unit is recommended for:
IB MYP, year 3; Mathematics, grade 7

Keywords: identity, artistic expressions, artistic license, self-exploration, cubism, geometry, area, triangles, squares, rectangles, hexagons, cubes, and triangular prisms and volume

Teaching Standards: See Appendix 1 for teaching standards addressed in this unit.

Synopsis: This curriculum unit is designed as a cross-curricular and cultural experience for students. Integrating the arts, history, current events, psychology and mathematics. The unit will mainly focus on artists who had a unique sense of identity or went through an identity “crisis”. By analyzing the artist’s works of art by these artists, we will dive deeper into the idea of what identity is and how it can influence anyone at anytimes. By examining artists who took a more geometric approach to their art we can see and study many geometrical shapes: triangles, squares, rectangles, hexagons, cubes, and triangular prisms. Students will also discover how ratio and scale is integrated into the arts. Students will create their own works of art, utilizing a global context (war, current protesting, world hunger, social injustices, etc.), using their background knowledge of what it took Frida Kahlo to express her identity. We will explore other artists such as Pablo Picasso and how his identity as an artist was shaped by his trauma from the Spanish civil war. Picasso will be a focus for this unit due to his use of using scale to emphasise his experience particular element in his main works.

I plan to teach this unit during the coming year to 130 students in IBMYP, year 2; Mathematics, grade 7.’

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Background Information

Piedmont International Baccalaureate IB Middle School

Piedmont IB Middle School is an International Baccalaureate school located in Charlotte, North Carolina. International Baccalaureate School utilizes the Common Core curriculum as well as integrating global context and exploration.

According to data assembled from the 2015-2016 school year survey, Piedmont serves more than 1100 students. 68% of our students are African-American, 15% are white, 7% are Hispanic, 7% are Asian, 5% are Multiracial, and 1% are Pacific Islander. The gender breakdown of our school is 47% male and 53% female students. Nearly 50% of our students are on free and reduced lunch. About half of our students live below the poverty line. Piedmont was awarded an “A+” rating by the state of North Carolina, based on our test scores in 2015 and 2017. Piedmont is currently ranked as the 19th top middle school out of 675 middle schools in North Carolina.¹

The culture at Piedmont, encourages innovation, creativity, and hands-on learning. Teachers are adept at taking risks and conducting lessons that may not be found in an everyday textbooks. The current administration trusts the teachers at Piedmont to make decisions about what is best for the students of Piedmont, so the teachers do not feel that anyone is looking over their shoulder, and they do not feel as though they need to conform to any certain style of teaching.

At Piedmont we follow the Common Core State Standards in Mathematics. In 7th grade, there is a strong emphasis on ratios, proportions, decimals, operations, surface area, volume, and statistics.

In the 7th grade at Piedmont, students are split into “Honors” and “Standard” classes. Based on assessments in 6th and 7th grade, our honors students can complete both Math I and Math II in the 8th grade. Math I and Math II are high school courses in Charlotte-Mecklenburg Schools, and some of our brightest students will complete two high school courses before they graduate middle school. Often students will complete Math I in the 8th-grade and while standard students will complete the 8th grade curriculum as laid out in the CCSS (Common Core State Standards). This unit can be adapted with both honors and standard classes and also, adjusted to students who are “typical learners.”

Background Knowledge of Students

With each new school year, students come to Piedmont with varying math backgrounds. Some are proficient with fractions but struggle with geometry. Some are proficient in geometry but struggle with decimals and percentages. Some have a strong math background while others may need more assistance. Most of them, as a result of too much standardized testing, do have a strong desire to “get the answer” as quickly as possible. They struggle with open-ended questions and questions that require a lot of perseverance to solve. They have been trained that the answer is always “A”, “B”, “C”, or “D”. This type of thinking is appropriate for a multiple choice test, is less applicable in making an important life decision, inventing something new solving a problem that has several possible solutions. Most of the students are all either eleven or twelve years old, with the few exceptions. Despite the differences that my students have as far

as their race, household income, math ability, etc., the fact that they are all eleven or twelve years old means that they have much in common.

For his unit, the students are supposed to come to Piedmont with knowledge of how to calculate the mean and median of a set of data, understand how fractions work, understand geometrical shapes, as well as a variety of other math skills.

Rationale and Content Objectives

Rationale

By incorporating Spanish art and artists, students can grow in their global awareness, which is the basis of the IB curriculum. With a growing latinx population in our school and country. Regarding curriculum content, this will be a more engaging way to teach about geometry compared to last year. Last year as a PLC (personal learning community), the lessons were based on worksheets and holding three-dimensional figures. This year I am excited for students to learn about geometry through artistic expression and cultural learning.

In regard to recent event and tensions including current political administration is asking for a border between The United States and Mexico and the DREAMERS program in process of being retracted, it is more important than ever to educate students about other cultures and customs so we do not repeat patterns that occurred over racism, sexism, and other discriminations that our citizens face today. I have faith that if we can reach our students at an age when they are young enough to be able to form understanding and tolerance, we can make a change.

Content

Students will be exploring identity and art through the modeling and integration of math throughout this unit. We will be exploring the life and art of the following artists; Pablo Picasso, Salvador Dalí, Jean Rene Bazaine, Frida Kahlo, and other artists. We will be utilizing the seventh-grade common core standards and IB content standards. We will be incorporating art, identity, mathematics and history.

Strategies and Classroom Activities

Art will be the main focuses of this cross-curricular unit. Showing examples of how artists expressed their identity in their works, students will be exposed to artwork that they may have never encountered before in that context. Throughout the unit, students will learn about artworks, the artists, and complete an assignment based on the relevant interactions.

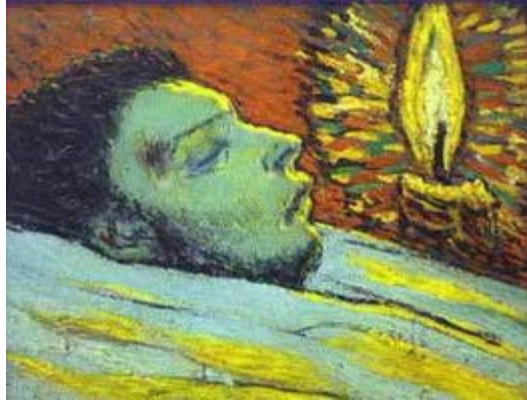
Activity Connections to Student-Centered Teaching, Identity, and Artists

Student-Centered Teaching Trait	Trait Description	Activity	Artist
Listening	When an assignment is reviewed with the class, students must listen to gain	In class introductions to topics and	N/A

	knowledge on how to execute the activity	directions to activities 1, 2 and 3	
Understanding	Students must execute their activity using a set of instructions as their guide. Having an understanding of the concept is key to being successful.	1, 2, 3	Picasso and Kahlo -Execute activity based about the two artists
Cooperation	Students use the “3 then Me” questions system. Students must ask 3 other students before asking the teacher for support. This encourages dialogue and team building.	1, 2, 3	Picasso and Kahlo -Before asking for clarifications from teacher, students ask 3 other students
Autonomy	Students are given a set of instructions and construct product on their own without step by step instructions.	1, 2, 3	Picasso and Kahlo -Upon completion of activity 1,2, 3 students will show how they have constructed a product based off of the influencing artist

Exploring the works of Pablo Picasso

Pablo Picasso is a famous Spanish artist who is known for his innovations of “Periods”. His “Blue” period was a time in Picasso’s life where he was going through some turmoil as an early twenty early old. . Pablo’s friend Carlos Casagemas committed suicide after finding out that his unrequited love was in a relationship with Pablo. He was quoted as saying “I started painting in blue when I learned of Casagemas's death”. He fell into severe depression afterwards. This period is marked by muted colors, monochromatics and his color palettes that mostly unhappy or in a state of contemplation.



"The Death of Casagemas" 1901

Picasso's next period, his "Rose" period which started in 1904. Many speculate that he was in a loving and happy relationship with Fernande Olivier, his muse. His paintings took on a more happy and romantic theme. The subjects of his painting were more joyful and he used many colors, especially pinks and reds. ²



"Young Girl with a Goat"-1901

Picasso's third period was his "African" period which came about after he visited Tocadero in Paris, France where he became familiar with African art. He liked the "archaic" way that the statues and artistic artifacts were much more simplistic than most work that he had produced so far. He took on the identity of a cultural artist. His subjects were those around him and he took their inspiration and painted many faces in the "archaic" style. This was his transition into his Cubism movement as he was experimenting with basic geometric designs. ³



“Head of a Man”-1907

Picasso created Cubism with Georges Braque. It is a second method for showing three-dimensional images.. Influenced by his appreciate for African art, Picasso had a mentor he looked up to for his new way of expression. Paul Cezanne was a french artist who was influential on his cubist movement. He was quoted saying:

Treat nature by means of the cylinder, the sphere, the cone. Using these simple basic elements you can do anything...Nature is a thing that cannot be reproduced, but must be represented by something else – by color.

Picasso was profoundly influenced by “the father of us all.” Unlike Cézanne’s more traditionally influenced art of his African period, Picasso’s cubism was more abstract and covered many aspects of everyday life. From still life to musicians to portraits to even sculptures, Picasso covered many topics from 1908-1921.⁴



1. *“Flowers in a Grey Jug and Wine Glass with Spoon”-1908*
2. *”Portrait of Daniel Henry Kahnweiler”-1910*
3. *“Polichinelle with Guitar Before the Stage Curtain” 1919*
4. *“Head of a Woman (Fernande)”-1909⁵*

Short lived but sweet, was Picasso’s Neoclassicism period. At this time in his life, he had started to move away from cubism and into art which was influenced by Greek and Roman

antiquity. His wife at the time, Russian ballerina Olga Khoklova, asked to paint her in a more realistic way so people could tell who she was from his paintings . During this period, Picasso stated in the journal, “The Arts” that

“To me there is no past or future in art. If a work of art cannot live always in the present it must not be considered at all. The art of the Greeks, of the Egyptians, of the great painters who lived in other times, is not an art of the past; perhaps it is more alive today that it ever was.”⁶



“Portrait of Olga Khoklova”-1918

“Still-Life with a Pitcher and Apples”-1919

From 1925 until his death, Picasso went through a few more periods. Followed by the war, and lastly with his final works. The Spanish civil war which lasted from July 1936 until April 1939, saw Picasso’s tone shift drastically. His paintings shifted from the light and airy works of art to dark and muted scenes of despair. After the war ended, Picasso’s work gained a reputation for being predictably unpredictable.



Pablo Picasso’s legacy will always be one marred with personal tragedy, a little mystery, and global accolades. Pablo was one of the few artists who wholly expressed himself through drawing, painting, sculpture as well as minor arts such as ceramics, printmaking and tapestry.

Each period was marked by a change in his life. Like so many, he reinvented himself and his art as he evolved.

All about Frida

On July 6th, 1907 in a small town on the outskirts of Mexico City, Mexico, one of the most complex artists in the Spanish world was born. Magdalena Carmen Frida Kahlo y Calderón known as Frida Kahlo, was raised in Mexico by her photographer and German immigrant father and her indigenous Spanish mother who she would describe as, "kind, active and intelligent, but also calculating, cruel and fanatically religious".⁷ Her father moved to Mexico after leaving school in German due to his epilepsy. Both her mother and father were chronically for Frida's whole life, this took a toll on her as she experienced her own trying times.



She grew up with 3 sisters in the home and 2 sisters from her father's first marriage, lived in a convent from childhood. She bonded with her father as they both suffered from illnesses. Her father with epilepsy and Frida with polio. He taught her about art and literature and exposed her to many topics including, "boy" activities. Her father sent her sisters to convent school, but since Frida contracted polio at the age of six, she started school much later than her peers and attended a German school. She studied science with the goal of attending medical school. She was one of only 35 girls to be accepted into a new co-ed school. She maintained high grades and also had fun at school. She was in a group with eight other students called the "Cachucas", a political actions group named after the caps that they wore.⁸ These students played pranks, spoke about philosophy and Russian classic novels, such as "Crime and Punishment". The group produced many successful individuals who became some of the top intellectuals in Mexico. During this period, Frida became interested in Mexican nationalism and socialism. She would often refer to herself as "the Daughter of Revolution", claiming her birthday to be on July 7th, 1910, the start of the Mexican revolution. This was also to cover up the fact that she was embarrassed about being 3 years older than her peers.⁹

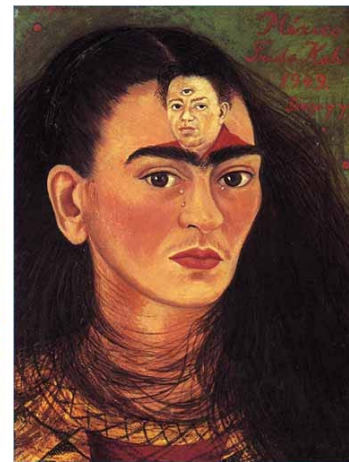
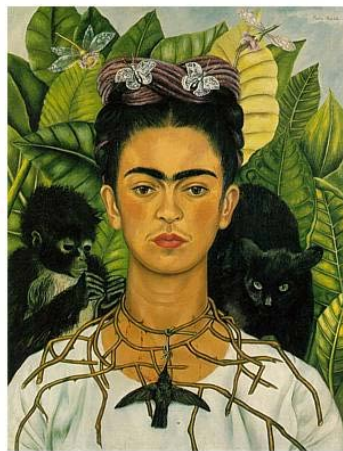
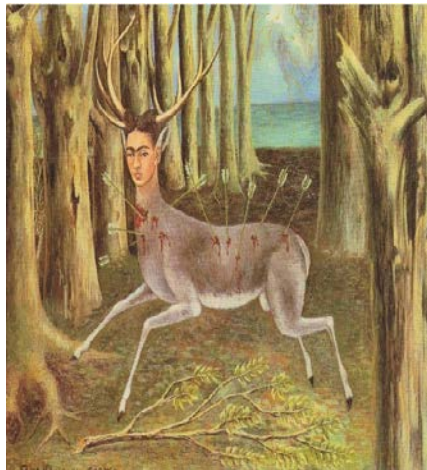


(Left to right: Christina, Matilde, Adrianna, and Frida.)

At the age of 18, Kahlo was in a terrible bus accident which caused the death of many of the riders and caused serious injuries to Kahlo. She suffered a fractured pelvis, broken leg, crushed collarbone, several broken ribs and a handrail went through her pelvis, and which lead to fertility issues later in life. She wore a back brace for many months and would wear it occasionally afterwards. She would paint and decorate her brace. With the encouragement of her father, Frida began to paint in bed. Kahlo's art changed drastically. She started to paint macabre scenes of birth, physical deformity and hopelessness. She became more fragile, emotionally and physically. She limited her social engagements as time passed. Her identity shifted from independent young woman to longing for what she was missing out on. Frida met her husband Diego Rivera when she was a student of his. They married in 1929 when Kahlo was 22 and Rivera was 42. Her art took on an obsession with Diego. Her once macabre filled paintings were filled with her pudgy and unconventional looking husband. They were both political activists in Mexico and were members of the communist party. They had close relationship with Russian government official and especially close relationship with Leon Trotsky.¹¹



Her most famous works were her self portraits. Sometimes she was injured, other times she was in a serious pose. Her work reflected her inner struggles that ranged from miscarriage to injury from the bus accident to her relationship with Diego.¹²



“The Wounded Deer” - 1946

“Self-Portrait with Thorn Necklace and Hummingbird”-1940

“Diego and I”-1929

Frida’s legacy was not well known until after her death. She became a statement of the non-conforming, dark, tortured, female artist. Her art reflected her inner self but her activities reflected those of her love for Diego. In her work, “Diego and I”, Frida paints a self portrait with Diego as her third eye. The third eye symbolises the inner realms of oneself. Frida would almost absorb Diego into her physically by her infatuation with their relationship.¹³

Conclusion

By the time our unit comes to an end, my hope is that students can use their knowledge of these Spanish artist's works and create their own, while using their common core knowledge and IB basis. By measuring the area of their shapes and learning how to communicate the meaning of their work, I hope students can grow in their global awareness as well as their math skills.

Implementation

The identity of a classroom can be described as; a room with four walls, desks, posters, and a whiteboard. But what makes a classroom, is the students. Working with up to 150 students a day, their identity creates the environment, mood, personality, and defining characteristics of the room. One block may be identified as challenging while another, might be the best class in every way. While the teacher is the foundation of the culture in the room, the students are the walls, the decoration, and the slates to the identity of the room.

To create a cohesive and accepting environment for students to express identity, there are fundamental ideas that have to be laid out and explained to the students. There are four main pillars that build a safe, and welcoming environment for identity exploration and expressions; child-centered teaching, cultivating diversity as a resource, classroom relationships, and caring classroom environments.

The premier pillar is, student-centered teaching, which is made up of four key concepts: listening, understanding, cooperation, and autonomy. Students often feel ignored or dismissed by their teachers and peers, by taking a true interest (or having the body language that you are listening), this can bring a sense of leadership and contribution in the classroom. Secondly, understanding the content is important to the identity of the student. How many times have you or have you heard "I am just not good at (insert subject)"? When students are not comfortable with the content, they will not feel like they have a purpose in the class. They are there to get in and get out with a passing grade. A passing grade is not sufficient. Students need to be able to be comfortable enough with the content to take their experience with the content and connect it to real world situations. This builds a stronger sense of understanding.

Cooperation is the third fundamental base. Like a two way road, teachers are the solid yellow line and the students can be in either travel lane. While students have a choice everyday to either go north or go south, it is the teacher that determines the boundary. There is no physical barrier that keeps a driver from crossing the centerline but the paint on the road is respected. With the drivers and the respect of that line, cooperation is in full effect working together to maintain the safety of the road. The last fundamental of student-centered teaching is autonomy. By allowing students to self-govern creates a sense of belonging and responsibility. They feel like they have a purpose in the class, not just as a student who should just get in and out without causing a disturbance but to take responsibility for their role and identity in the classroom. Students who have a role, either as the class helper or door opener or classroom phone answerer, have a greater sense of belonging the self-governing environment. The teacher does not give up their role as the foundation, but are present and active in maintaining classroom discipline. ¹⁴

Appendix 1

Solve real-world and mathematical problems involving area, surface area, and volume.

CCSS.MATH.CONTENT.7.G.A.1

Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

CCSS.MATH.CONTENT.7.G.A.2

Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

CCSS.MATH.CONTENT.7.G.A.3

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Appendix 2

Unit Planner

Day 1: Pre-assessment	Day 2: Introductions to drawing scale models	Day 3: Continuation of drawing scale models	Day 4: Activity 1	Day 5: Activity 1
Day 6: Introduction of Triangles	Day 7: Introduction of measures angles	Day 8: Integration of drawing triangles and calculating angles	Day 9: Activity 2	Day 10: Activity 2
Day 11: Integration of drawings geometric figures and calculating angles	Day 12: Integration of drawings geometric figures and calculating angles	Day 13: Activity 3	Day 14: Activity 3	Day 15: Gallery walk where students display work
Day 16: Circles	Day 17: Finding Area of Circles	Day 18: Irregular Geometric Shapes	Day 19: Finding Area of Irregular Geometric Shapes	Day 20: Post-assessment

Catalog of items to use for lessons:

https://drive.google.com/drive/folders/0B0Kg2Bxsu_1OUWV2SGIPTGd5T0U?usp=sharing

Name: _____ Date: _____ Block: _____

Pre-Assessment

(general questions about prior knowledge)

What does scalene triangle mean?	What does obtuse triangle mean?
What is an acute angle?	What makes a complementary pair of angles?
How do you find the area of a triangle?	What does a scale drawing mean?
How do you find the area of a rectangle?	How do you find the area of a square?
What does it mean when a figure is geometric?	What tools can you use to create geometric shapes?

Name: _____ Date: _____ Block: _____

Post-Assessment

Which of the following sets of side lengths below can make triangles?

GSE.7.G.2

- 1.) 2, 3, 4 2.) 2, 2, 5 3.) 2, 5, 5 4.) 2, 2, 2 5.) 9, 1, 1
yes or no yes or no yes or no yes or no yes or no

6.) WRITE A RULE:

Which of the following sets of angles CAN make triangles and which CANNOT make triangles?

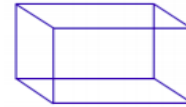
GSE.7.G.2

- 7.) 20°, 40°, 30° 8.) 15°, 35°, 130° 9.) 20°, 100°, 60° 10.) 20°, 100°, 50°
can or cannot can or cannot can or cannot can or cannot

11.) WRITE A RULE:

12.) What shape is the new face when a rectangular prism...

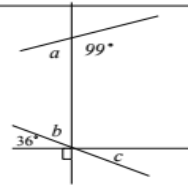
- ...is cut parallel to the base?
- ...is cut perpendicular to the base?
- ...is cut diagonally from top left to bottom right?
- ...has 1 corner cut off?



GSE.7.G.3

13.) Find the measure of:

- Angle *a* _____
 Angle *b* _____
 Angle *c* _____



GSE.7.G.5

How many different triangles can you make with...

GSE.7.G.2

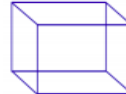
- 14.) ...angles of 40°, 40°, 80°?
 15.) ...angles of 80°, 77°, 23°?
 16.) ...side lengths of 12, 3, 7?
 17.) ...side lengths of 44, 20, 35?

ANSWER CHOICES

ONE, it's a unique triangle.
MORE THAN ONE triangle can be made.
NONE, a triangle cannot be made.

For number 18 & 19: The sides of a cube are 8 cm.

- 18.) Find the volume of the cube.
 19.) Find the surface area of the cube.

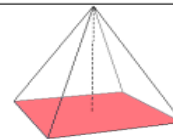


GSE.7.G.3

GSE.7.G.3

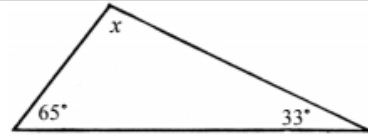
20.) Look at the pyramid. What shape would the new face be if the pyramid was

- ... cut parallel to the base?
- ... cut through the tip and perpendicular to the base?
- ... cut diagonally, not through the tip?



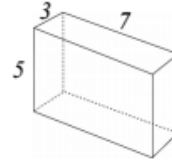
GSE.7.G.3

27.) Find the missing measure of the angle x .



GSE.7.G.5

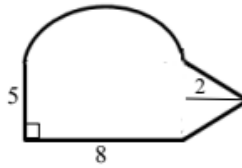
28) Find surface area of the rectangular prism.



GSE.7.G.6

29.) Find the volume of the rectangular prism.

30.) Find the area of the irregular shape.



GSE.7.G.6

31.) What shape is the new face when a cylinder...

...is cut parallel to the base?


...is cut perpendicular to the base?

...is cut diagonally from top left to bottom right?



GSE.7.G.3

Scale Model Art Project

<p>Common Core Standard:</p>	<p><u>CCSS.MATH.CONTENT.7.G.A.1</u> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> <p><u>CCSS.MATH.CONTENT.7.NS.A.2</u> Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p>
<p>Unit:</p>	<p>Geometry and Number Sense</p>
<p>Previously learned skills:</p>	<p>Dividing mixed fractions and whole numbers Identifying geometric shapes</p>
<p>Skills to be learned:</p>	<p>Computing lengths and are for scale modeling Reproducing scale drawings</p>
<p>Time Duration for lesson</p>	<p>3-4 Days for lesson and activity</p>
<p>Resources Needed</p>	<p>Marker, colored pencils, paper, chromebook for researching sizes of objects</p>
<p>Inspiration</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">Kahlo, Frida. <i>What the Water Gave Me</i>. 1938. Collection of Daniel Filipacchi, Paris.</p>

Name: _____ Date: _____ Block: _____

Scale Model Art Project

(Activity 1, 2 days to work in class)

Directions: Frida Kahlo scaled down many everyday objects and incorporated them into her paintings. Your task is to scale down 4 objects to fit into a 8.5x11 piece of paper. Use the template below for a draft. The rubric for your project is on the back of this paper. Show your work on a separate sheet of paper then staple to draft.

*Objects must be scaled down by at least half of their original size. *

Scale Model 1 Draft: Original Dimensions Ratio: New Dimensions:	Scale Model 2 Draft: Original Dimensions Ratio: New Dimensions:
Scale Model 3 Draft: Original Dimensions Ratio: New Dimensions:	Scale Model 4 Draft : Original Dimensions Ratio: New Dimensions:

Rubrics



IB Grade	8-7	6-5	4-3	2-1	0
Scale Models	All 4 of your scale drawings are correct.	3 out of 4 of your scale drawings are correct	2 out of 4 of your scale drawings are correct	1 out of 4 of your scale drawing is correct	All 4 of your scale models are incorrect
Work Process	You have show ALL of your work for calculating the scale of your drawing	You have shown MOST of your work for calculating the scale of your drawings	You have shown HALF of the work for calculating the scale of your drawings	You have shown LESS THAN HALF of the work for calculating the scale of your drawings	You have shown ZERO work for calculating the scale of the your drawings
Color/ Presentation	Your work is colorful and neat.	Your work is colorful but a little messy.	Your work is not colorful and messy.	Your work is not colorful and very messy.	You work is non-existent.

IB Grade: _____/24

Academic Grade: _____

Points	IB Grade	CMS Conversion Grade
24	8	95-100
23-21	7	90-94
20-18	6	85-89
11-9	5	70-74
8-6	4	65-69
5-3	3	60-64
2-1	2	50
0	0	0

Angular Geometry in Portraiture

Common Core Standard:	<p><u>CCSS.MATH.CONTENT.7.G.A.2</u> Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p>
Unit:	Geometry
Previously learned skills:	Finding the area of right triangles
Skills to be learned:	Constructing obtuse, acute, and right triangles.
Time Duration for lesson	2-3 days fro lesson and activity
Resources Needed	Paper, Markers, colored pencils, ruler, protractor
Inspiration:	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>1.Picasso, Pablo. <i>Weeping Woman</i>. 1937. Tate Gallery, London. 2.Picasso, Pablo. <i>Self Portrait</i>. 1907. Narodni Gallery, Prague.</p>

Name: _____ Date: _____ Block: _____

Angular Geometry in Faces

(**Activity 2**, 2 days to work in class)

Directions: Pablo Picasso used many geometric features in his art work. During his "African", "Cubism" and "The War in Spain" periods, Picasso drew many distorted faces. These faces featured sharp angular characteristics. Layered triangles can make more circular features. Your goal is to create a self portrait that incorporates obtuse, acute, and right triangles. Using your photo, create triangles and piece together your face! Your triangles will be measured for area and the angles will also be listed. Create your draft on an 8.5x11 sheet of paper.

Feature	Type of Triangle and Angle Measurements	Area of Triangle
Hair	Type: A1: A2: A3:	
Eyes	Type: A1: A2: A3:	
Nose	Type: A1: A2: A3:	
Mouth	Type: A1: A2: A3:	
Ears	Type: A1: A2: A3:	


Rubrics

IB Grade	8-7	6-5	4-3	2-1	0
Measure of Angles	All 5 of your features are correct.	4 of your features are correct.	3 of your features are correct.	1-2 of your features are correct.	All 5 of your features are incorrect
Identification of Triangles	You correctly identified 5 of your triangles	You correctly identified 4 of your triangles	You correctly identified 3 of your triangles	You correctly identified 1-2 of your triangles	You correctly identified 0 of your triangles
Calculation of Area	All 5 of your feature's area are correct	4 of your feature's area are correct	3 of your feature's area are correct	1-2 of your feature's area are correct	0 of your feature's area are correct
Work Process	You have show ALL of your work for calculating the area of your triangles.	You have shown MOST of your work for calculating the area of your triangles.	You have shown HALF of the work for calculating the area of your triangles.	You have shown LESS THAN HALF of the work for calculating the area of your triangles.	You have shown ZERO work for calculating the area of your triangles.
Color/ Presentation	Your work is colorful and neat.	Your work is colorful but a little messy.	Your work is not colorful and messy.	Your work is not colorful and very messy.	Your work is non-existent.

IB Grade: _____/24 Academic Grade: _____

Points	IB Grade	CMS Conversion Grade
40	8	95-100
39-35	7	90-94
34-30	6	85-89
29-25	5	80-84
24-20	4	65-69
19-15	3	60-64
14-9	2	50
8-0	0	0

Sharp Line Collage

<p>Common Core Standard:</p>	<p><u>CCSS.MATH.CONTENT.7.G.A.2</u> Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p>
<p>Unit:</p>	<p>Geometry</p>
<p>Previously learned skills:</p>	<p>Finding the area of right triangles</p>
<p>Skills to be learned:</p>	<p>Constructing obtuse, acute, and right triangles.</p>
<p>Time Duration for lesson</p>	<p>2-3 days fro lesson and activity</p>
<p>Resources Needed</p>	<p>Paper, Markers, colored pencils, ruler, protractor</p>
<p>Inspiration</p>	<div style="text-align: center;">  </div> <p>Picasso, Pablo . <i>Still Life with Ears of Wheat (Nature morte aux épis)</i>. 1943. The Kreeger Museum, Washington D.C.</p>

Name: _____ Date: _____ Block: _____

Sharp Line Collage

(Activity 3, 3 days to work in class)

Directions: Using your knowledge of geometric triangles, you will create a collage using only triangles. Your materials will include an 8.5x11 sheet of paper, a ruler, and your choice of colorful implements. Applying the rules of obtuse, acute, and, right triangles you will need to include 7 of each type of triangle. Create your collage on the back of this sheet.

	8	7-6	5-4	3-2	1-0
Triangle design	Correctly drew 7 of each triangle	Correctly drew 5-6 of each triangle	Correctly drew 3-4 of each triangle	Correctly drew 1-2 of each triangle	Correctly drew 0 of each triangle
Sharpness of lines	All of your triangles had sharp lines	Most of your triangles has sharp lines	Half of your triangles had sharp lines	Less than half of your triangles had sharp lines	There were no sharp lines
Color/ Presentation	You collage was very colorful	Your collage was mostly colorful	Your collage had	Your collage had little colorful	Your collage had no color

IB Grade: _____/24 Academic Grade: _____

Points	IB Grade	CMS Conversion Grade
24	8	95-100
23-21	7	90-94
20-18	6	85-89
11-9	5	70-74
8-6	4	65-69
5-3	3	60-64
2-1	2	50
0	0	0

Teacher Resources

Online:

“Mommy Maestra” an online resource for latina homeschooling.

“BrainPop Educators” and online resource for educators.

Print:

“Teaching Tolerance” a monthly magazine for educators for engaging students in worldly conversations.

Book:

“Exploring the Math and Art Connection: Teaching and Learning Between the Lines” by Irene Mae Naested

Student Resources

Books:

“Just Behave, Pablo Picasso” by Jonah Winter

“Picasso and the Girl with a Ponytail” by Laurence Anholt

“Frida Kahlo: the Artist who Painted Herself” by Margaret Frith

“Who was Frida Kahlo” by Sarah Fibiny

Annotated Bibliography

1. "Piedmont Open Middle in Charlotte, North Carolina." Piedmont Ib. Middle in Charlotte, NC | StartClass. 2016. Accessed November 21, 2017. <http://public-schools.startclass.com/l/66873/Piedmont-Open-Middle>.

-This source gives demographic information on students. It also gives background information as the the school itself.

2. Bio.com. Accessed November 27, 2017. <http://www.biography.com/people/pablo-picasso-9440021>.

-This source tells of the early life of Pablo Picasso. Born in Spain, Pablo spent most of his adult life in Paris.

3. Brown, Jonathan. *Picasso and the Spanish Tradition*. New Haven: Yale University Press, 1996.

-Commissioned to paint a mural for the worlds fair in Paris, Pablo changes his tune after the bombing of Guernica. Pablo speaks of the destruction of the village.

4. Picasso, Pablo. *Three Musicians*. 1921. Museum of Modern Art, New York, NY.

-This source is for the image of the painting Three Musicians by Pablo Picasso.

5. Chasteen, John Charles. *Born in Blood and Fire: A Concise History of Latin America*. New York: Norton, 2001.

-This source is instrumental in many places within the curriculum unit. Information from the Mexican Revolution to the Spanish Civil War can be found in this book. Information on artists as well are included in this book.

6. 'Picasso Speaks,' *The Arts*, New York, May 1923, pp. 315-26; reprinted in Alfred Barr: *Picasso*, New York 1946, pp. 270-1.

-This is an except from a quote Picasso gave to "The Arts" journal.

7. Frida Kahlo Biography." *Frida Kahlo Biography*. Accessed November 27, 2017. <http://www.frida-kahlo-foundation.org/biography.html>.

-This source gives information on Frida's upbringing in Mexico. She had 5 sisters. Two were half siblings who grew up in a convent.

8. "Frida Kahlo Biography, Art, and Analysis of Works." *The Art Story*. Accessed November 27, 2017. <http://www.theartstory.org/artist-kahlo-frida.htm>.

-Frida and Diego had a very complex love story. Her art reflected the complex relationship she had with herself as well.

9. "Diego Rivera." *Bio.com*. Accessed November 22, 2017. <http://www.biography.com/people/diego-rivera-9459446>.

-This source speaks of information about Diego Rivera's allegiance to the communist party. He was active in the Mexican Communist Party.

10. "Frida Kahlo - The Complete Works." Frida Kahlo - The Complete Works. Accessed November 22, 2017. <http://www.frida-kahlo-foundation.org/>.

-This source has the images for photos and artworks of Frida Kahlo.

11. Knight, Alan. "The Mexican Revolution." The Mexican Revolution | History Today. Accessed November 22, 2017. <http://www.historytoday.com/alan-knight/mexican-revolution>.

-This source is about the Mexican Revolution that started in 1910. It gives information on the tensions between the two parties in Mexico and how it affected the people of Mexico.

12. Diego Rivera Biography." Diego Rivera Biography. Accessed November 22, 2017. <http://www.diego-rivera-foundation.org/biography.html>.

- This source has information on the early life of Diego Rivera and his upbringing in Mexico. It also has information about his life with Frida Kahlo.

13. PBS. 2005. Accessed November 22, 2017.

<http://www.pbs.org/weta/fridakahlo/life/people.html>.

-This article spoke of Frida Kahlo's accident as a young woman and how it left her unable to carry a child. She painted about this subject frequently.

14. Cohn-Vargas, Becki. "Identity Safe Classrooms and Schools." *Teaching Tolerance*, April 20, 2015.

-This is an article that identifies the characteristics for identity in a safe classroom.