



Brown Math Enrichment - Geometry and Art

Unit Focus
Throughout this unit, students will be exploring and analyzing how math and art work together. From creating balanced Calder mobiles to incorporating inspirational artwork when building their own platonic solid, students will see the significance between the mathematical connection to famous art.

STAGE 1: DESIRED RESULTS – KEY UNDERSTANDINGS

ESTABLISHED GOALS	TRANSFER	
<p>Common Core Standards <i>Mathematics: 6</i> 2000322 <i>Mathematical Practices</i></p> <ul style="list-style-type: none"> • CCSS.MATH.MP.7 Look for and make use of structure. <p>920486 <i>Geometry</i> 920487 <i>Solve real-world and mathematical problems involving area, surface area, and volume.</i></p> <ul style="list-style-type: none"> • CCSS.MATH.CONTENT.6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. • CCSS.MATH.CONTENT.6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. <p>Student Growth and Development 21st Century Capacities Matrix <i>Critical Thinking</i></p> <ul style="list-style-type: none"> • Analyzing: Students will be able to examine information/data/evidence to make inferences and identify possible underlying assumptions, patterns, and relationships. <p><i>Creative Thinking</i></p> <ul style="list-style-type: none"> • Design: Students will be able to engage in an appropriate process to refine their product. 	<p>T1 apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem.</p> <p>T2 draw conclusions about graphs, shapes, equations, or objects.</p> <p>T3 represent and interpret patterns in numbers, data and objects.</p>	
	MEANING	
	UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>U1 Mathematicians apply transformations and/or use symmetry to analyze mathematical situations and solve problems.</p> <p>U2 Mathematicians analyze characteristics and properties of geometric shapes to develop mathematical arguments about geometric relationships.</p> <p>U3 Mathematicians formulate questions that can be analyzed with data to evaluate inferences, make predictions and/or communicate an answer.</p> <p>U4 Mathematicians use geometric models, and spatial sense to interpret and make sense of the physical environment.</p> <p>U5 Mathematicians can describe patterns, relations, and/or functions to access strategies to solve problems.</p>	<p>Q1 How do math and art come together?</p> <p>Q2 What do you see?</p>	

STAGE 1: DESIRED RESULTS – KEY UNDERSTANDINGS

	ACQUISITION OF KNOWLEDGE AND SKILL	
	KNOWLEDGE	SKILLS
	<p>K1 Vocabulary: Platonic Solid, icosahedron, dodecahedron, transformations, slide, reflection, rotation, tessellations, fulcrum, vertex, face</p> <p>K2 Concept of area and/or formulas of different types of polygons</p> <p>K3 Concept of the word Net and how to find it</p>	<p>S1 Student will be able to find area of an irregular shape.</p> <p>S2 Students will be able to calculating distances and weights to balance a seesaw.</p> <p>S3 Students will be able to perform 2 or more transformations (especially rotations and reflections) to create a tessellation.</p> <p>S4 Students will be able to use 2D templates to create a 3D platonic solid.</p>