

# Abstract Art & Attributes: A Geometry Project Coded in Art Lab

Students use Art Lab on Code.org to draw an abstract work. Their artwork will also demonstrate an understanding of geometric attributes of two-dimensional figures.

<p><b>Grade:</b> 4th</p> <p><b>Subjects:</b> Computer science, art, &amp; math</p>	<p><b>Time/Duration:</b> One 60 minute lesson</p>	<p><b>Resources</b></p> <ul style="list-style-type: none"> <li><a href="#">Code.org Art Lab</a></li> <li><a href="#">Geekie Teachie TpT store</a></li> <li><a href="#">Henriksen, Mishra, and Mehta's NEW framework</a></li> </ul>	<p><b>Materials</b></p> <p>Computers, code.org accounts, math journals with geometry reference materials</p>
--	---	--	--

## Connection to Standards, Learning Goals, & Success Criteria

<p><b>COMPUTER SCIENCE/ TECHNOLOGY</b></p> <p><b>Standards</b> <i>CSTA 1B-AP-10:</i> Create programs that include sequences, events, loops, and conditionals.</p> <p><b>Learning Goal &amp; Success Criteria</b> Today we will create a program in Art Lab to draw using sequences, events, loops, and or/conditionals. I'll know I'm successful when:</p> <ul style="list-style-type: none"> <li>I can write a program that draws in Art Lab using the block code</li> <li>I can choose sequences, events, loops, and/or conditionals to produces different outcomes</li> </ul>	<p><b>MATHEMATICS</b></p> <p><b>Standards</b> <i>CCSS 4.G.A.2:</i> Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p><b>Learning Goal &amp; Success Criteria</b> Today I am classifying two-dimensional figures according to the presence of given attributes. I'll know I'm successful when:</p> <ul style="list-style-type: none"> <li>I can define, draw, and explain right, acute, and obtuse angles and parallel and perpendicular lines</li> <li>I can determine if a figure has a given attribute</li> </ul>	<p><b>VISUAL ART</b></p> <p><b>Standards</b> <i>National Art Standards VA:Cr2.1.4a:</i> Explore and invent art-making techniques and approaches</p> <p><b>Learning Goal &amp; Success Criteria</b> Today I am exploring code as an art-making approach. I'll know I'm successful when:</p> <ul style="list-style-type: none"> <li>I can write code that draws shapes when run</li> <li>I can create an abstract final product based on my ideas</li> </ul>
--	---	--

# Project

*INSTRUCTIONAL NOTE: This project should be assigned after students have learned to define, draw, and explain the geometric attributes listed below. It would be ideal to be assigned before students learn to classify shapes according to attributes to provide authentic exposure to the concept, but could be assigned after as a summative project.*

Students choose an attribute from the list below. In Code.org's Art Lab, students write code to create a piece of abstract art. The requirement is that every shape used in the artwork must have the chosen attribute. For example, all shapes must have at least one set of perpendicular lines or all shapes must have at least one acute angle.

## **Geometric attributes (students choose one):**

*NOTE: Slides to teach/show these terms can be found [here](#), created by Geekie Teachie and sold on Teachers Pay Teachers.*

- Right angle: A square corner (90 degrees) formed by two lines, line segments, or rays
- Acute angle: An angle measuring greater than 0 but less than 90 degrees (smaller than a square corner)
- Obtuse angle: An angle measuring greater than 90 but less than 180 degrees (larger than a square corner)
- Parallel lines: Lines, line segments, or rays that are always the same distance apart and will never intersect
- Perpendicular lines: Lines, line segments, or rays that intersect to form a right angle (90 degrees)

## **Accommodations/suggestions for differentiation:**

- For students who are struggling with visualizing in Code.org, have them draw or cut/glue shapes on paper first to make a rough draft. When finished, students can then write code to have their drawing created on screen.
- For EL, dyslexic students, struggling readers, or students needing vocabulary support: Provide definitions and visual examples of geometric attributes and oral admin as needed.

# Rubric

An example student project using all acute angles can be found [here](#).

Teacher evaluation using a single-point rubric:

Areas that need work	Project criteria	Evidence how standard was met	Areas that are advanced
	Creates an abstract piece of artwork		
	Offers a variety of shapes, patterns, colors, etc		
	Code is written accurately and runs properly		
	All shapes contain the chosen attribute <i>Chosen attribute:</i> _____		

Teacher evaluation using a NEW rubric:

	1 - Does not meet expectations	2 - Meets expectations	3 - Exceeds expectations
<b>Novel</b>	One or few shapes, colors, patterns, etc used, lacks interest, may replicate an object or piece of art that has been seen before	Offers a variety of shapes, colors, patterns, etc, some elements are unique and exciting, attempts display an abstract idea	Offers many shapes, colors, patterns, etc in a unique and exciting way, stands out from the class, abstract work is not based on something that has been seen before
<b>Effective</b>	Some shapes do not have the attribute chosen, code written in a confusing way or with errors	Shapes contain chosen attribute, code does not contain errors and effectively creates artwork	All shapes have chosen attribute, code is written in an effective manner using sequences, loops, etc in a way that enhances the program
<b>Whole</b>	Appears to have not put thought into design experience for viewers, little to no appeal or sensory interest	Visual design is polished and thought out to appeal to viewers, work is complete with average production value	Visual design uses shapes, colors, patterns, etc in an aesthetic, appealing way that is thought-provoking and meaningful to viewers, may include multiple points of sensory interest (music, written description, etc)