

Relationships • Diversity • Self Portraits •  
Form • Structure • Proportion • Measurement



Discover How the Art of Portraiture Is  
Really All About Math!

## Self-Portrait Drawing

Invite a few art historians into your classroom! Derive inspiration from classical portrait paintings, Diego Velazquez's *La Infanta Margarita* or Raphael's *Portrait of Baldassare Castiglione*, as you explore the idea of self-portraiture with your students. A closer look at these works will reveal mathematical relationships and proper proportions that will inform your students as they render themselves.

### Essential Question: How have artists consistently used mathematics since the Renaissance?

#### Process

- Begin this lesson by introducing notable Renaissance masters, Raphael and Velazquez, emphasizing their use of measurement and proportion in painting portraits.
- Have students lightly draw a large oval or egg shape on their paper.
- Demonstrate with your hands how the eyes are located about halfway down the face.
- Next, have the students begin drawing the eyes with just a circle, placed in the center of an almond or football shape. Identify the iris and pupil at this time. Students must also sketch in the eyebrows at this time.
- Have the students use the length of the eyes to generate the distance for the bottom of the nose, and tell the students that the center of the nose is a "U" shape surrounded by two nostrils on either side. You can describe this shape as an isosceles triangle. Identify the cast shadow that falls on the face beneath the protruding nose shape.
- Use your "measuring fingers" once again to demonstrate the mouth is located slightly below the nose (one finger width) and ears are located between the top of the eyebrows and bottom of the nose.
- Have the students lightly sketch in the hair, neck, and shoulders last.
- Now that the students have drawn their portraits based on mathematical proportions, have them refer back to the proportions that were identified in the master prints.
- Next, demonstrate how to layer colors on the face using oil pastels/chalk pastels and stay inside the lines to ensure good craftsmanship.
- Students will complete this endeavor by writing an essay on the back of the portraits describing their personalities and hobbies.
- Celebrate your self-portraits by conducting peer evaluations and presentations utilizing critical analysis techniques.

#### Introduction of iPads

- Teacher leads discussion on how to use internet for research. What sites are valuable?
- Teacher divides class into small groups and assigns roles for each group member
- Using an iPad, students research Velasquez and Raphael
- Using Powerpoint, student create a presentation on both artists with examples of their portrait painting
- Teacher has each group research 3 famous portrait paintings—Mona Lisa (Da Vinci), Girl with a Pearl Earring (Vermeer) and Self Portrait (Van Gogh). Each group makes observations about proportion and shapes.
- Groups present their findings and information to their peers

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#### Materials

- pencils and erasers
- crayons
- 9x12 sheets of drawing paper
- oil or chalk pastels
- charges iPads

#### Vocabulary

##### Self-Portrait

A portrait of oneself done by oneself

##### Shape

The outline of a specific form or figure

##### Color

The quality an object or substance with respect to light reflected by the object

##### Size

The spatial dimensions, proportions, magnitude, or bulk of anything

##### Proportion

The size of one object compared to another

##### Iris

The contractile, circular diaphragm forming the colored portion of the eye and containing a circular opening, the pupil, in its center

##### Pupil

The expanding and contracting opening in the iris of the eye, through which light passes to the retina

##### Cast shadow

A shadow that falls from an object onto a second surface

##### Isosceles triangle

A triangle having two equal sides

#### Classroom Tips

- utilize a white board to demonstrate your own self-portrait to students
- distribute materials (paper, crayons, and pencils, etc) to students before lesson begins
- research best websites on artists and portrait paintings to guide students

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### Assessment

- Students have correctly estimated facial features' placement by measuring with their hands.
- Students' solutions correctly utilize references to the alphabet and other visual clues.
- Students employ good craftsmanship by coloring within their drawn lines.
- Students orally identify basic geometric shapes.

## Common Core Georgia Performance Standards

### ENGLISH LANGUAGE ARTS

#### GRADE 3

**ELACC3W2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**ELACC3L6:** Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific vocabulary, including words and phrases that signal spatial and temporal relationships (e.g., After dinner that night we went looking for tit).

#### GRADE 4

**ELACC4W2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**ELACC4L6:** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and words and phrases basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).

#### GRADE 5

**ELACC5W2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

**ELACC5L6:** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).

### MATHEMATICS

#### GRADE 3

**MCC3.NF.1:** Understand a fraction  $\frac{1}{b}$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $\frac{a}{b}$  as the quantity formed by  $a$  parts of size  $\frac{1}{b}$ .

**MCC3.G.2:** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as  $\frac{1}{4}$  of the area of the shape.

#### GRADE 4

**MCC4.G.2:** 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.

**MCC4.G.3:** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded

### Notes/Reflections:

Idea Contributed by Darby Jones

2014 - 2015 © ArtsNOW  
100 Edgewood Ave, Suite 100  
Atlanta, GA 30303  
Phone: 404.688.2480  
Fax: 404.688.2424  
[www.artsnowlearning.org](http://www.artsnowlearning.org)