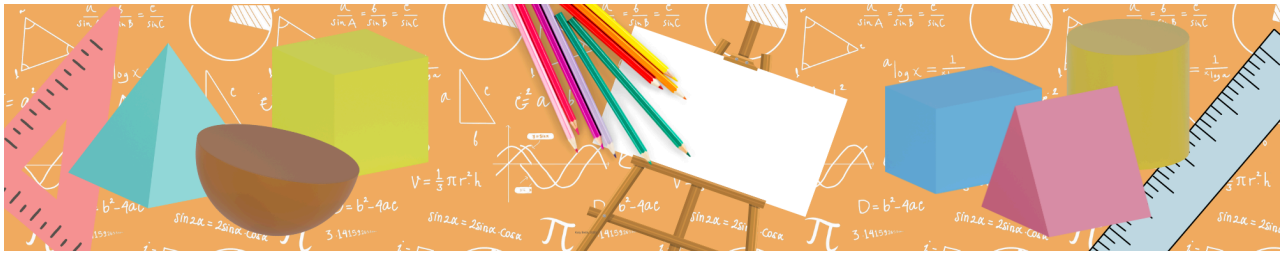
artsNOW
Integrated learning solutions

STILL LIVES WITH GEOMETRIC FORMS
Grade Band: 6-8
Content Focus: Visual Arts & Math



LEARNING DESCRIPTION

In this lesson, students will apply their knowledge of how to solve for volume and surface area of geometric 3D shapes/forms such as pyramids, cubes and cones to create a still life artwork.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can I find the volume of right rectangular prisms, cones, spheres, and pyramids? How can I find the surface area of right rectangular prisms, cones, spheres, and pyramids? How can I create a still life drawing using various 3D shapes/forms?	I can find the volume of right rectangular prisms, cones, spheres, and pyramids. I can find the surface area of right rectangular prisms, cones, spheres, and pyramids. I can create a still life drawing using various 3D shapes/forms.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
Grade 6 6.GSR.5: Solve relevant problems involving area, surface area, and volume. 6.GSR.5.1 Explore area as a measurable attribute of triangles, quadrilaterals, and other polygons conceptually by composing or decomposing into rectangles, triangles, and other shapes. Find the area of these geometric figures to solve problems. 6.GSR.5.2 Given the net of three-dimensional figures with rectangular and triangular faces, determine the surface area of these figures. 6.GSR.5.3 Calculate the volume of right rectangular prisms with fractional edge lengths by applying the formula, V = (area of base) x (height). **Grade 7** 7.GSR.5: Solve practical problems involving angle measurement, circles, area of circles, surface area of prisms and cylinders, and volume of cylinders and prisms composed of cubes and right prisms. 7.GSR.5.8 Explore volume as a measurable attribute of cylinders and right prisms. Find the volume of these geometric figures using concrete problems. **Grade 8** 8.GSR.8.4 Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve relevant problems.	**Grade 6** VA6.CR.1 Visualize and generate ideas for creating works of art. VA6.CR.2 Choose from a range of materials and/or methods of traditional and contemporary artistic practices to plan and create works of art. VA6.CR.3 Engage in an array of processes, media, techniques, and/or technology through experimentation, practice, and persistence. VA6.CR.4 Incorporate formal and informal components to create works of art. **Grade 7** VA7.CR.1 Visualize and generate ideas for creating works of art. VA7.CR.2 Choose from a range of materials and/or methods of traditional and contemporary artistic practices to plan and create works of art. VA7.CR.3 Engage in an array of processes, media, techniques, and/or technology through experimentation, practice, and persistence. VA7.CR.4 Incorporate formal and informal components to create works of art. **Grade 8** VA8.CR.1 Visualize and generate ideas for creating works of art. VA8.CR.2 Choose from a range of materials and/or methods of traditional and contemporary artistic practices to plan and create works of art. VA8.CR.3 Engage in an array of processes, media, techniques, and/or technology through experimentation, practice, and persistence. VA8.CR.4 Incorporate formal and informal components to create works of art.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards

Grade 6: 6.GM.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. 6.GM.2 Use visual models (e.g., model by packing) to discover that the formulas for the volume of a right rectangular prism ($V = lwh$, $V = Bh$) are the same for whole or fractional edge lengths. Apply these formulas to solve real-world and mathematical problems. **Grade 7** 7.GM.6 Apply the concepts of two- and three-dimensional figures to real-world and mathematical situations. a. Understand that the concept of area is applied to two-dimensional figures such as triangles, quadrilaterals, and polygons. b. Understand that the concepts of volume and surface area are applied to three-dimensional figures such as cubes, right rectangular prisms, and right triangular prisms. c. Decompose cubes, right rectangular prisms, and right triangular prisms into rectangles and triangles to derive the formulas for volume and surface area. d. Use the formulas for area, volume, and surface area appropriately. **Grade 8** 8.GM.9 Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres and the surface area of cylinders.	**Artistic Processes: Creating-** I can make artwork using a variety of materials, techniques, and processes. Anchor Standard 1: I can use the elements and principles of art to create artwork. Anchor Standard 2: I can use different materials, techniques, and processes to make art. **Artistic Processes: Responding-** I can evaluate and communicate about the meaning in my artwork and the artwork of others. Anchor Standard 5: I can interpret (read) and evaluate the meaning of an artwork. **Artistic Processes: Connecting-** I can relate artistic ideas and work with personal meaning and external context. Anchor Standard 7: I can relate visual arts ideas to other arts disciplines, content areas, and careers.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• Three-dimensional shapes/forms - Objects that have height, width, and length	• Form - A three-dimensional object; can be geometric or organic • Value - The lightness or darkness of something; used to create the illusion of

• Two-dimensional shape - An object with height and width • Volume - The space within a three-dimensional shape/form • Surface area - The area of the surface of a two- or three-dimensional object	form on a two-dimensional surface • Composition - How an artist puts the elements of art together in an artwork • Subject - What an artwork is about

MATERIALS

- Mixed media paper
- Pencils
- Measurements for each student to calculate surface area and volume for three 3D shapes/forms
- Optional: Colored pencils or charcoal
- Acceleration: Rulers, scissors, tape

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Display *Natura Morta* by Giorgio Morandi. In groups, ask students to identify at least ten things that they recognize in the painting (colors, objects, shapes, etc.).
    - Facilitate a class discussion around students' responses.
- After students have shared what they recognize, ask them what three-dimensional shapes/forms they recognize. Tell students that some objects are composites of two or more 3D shapes/forms.
    - Students should identify objects like cylinders, half-spheres, right rectangular prisms, etc.
- Introduce students to the artist Giorgio Morandi.
    - Explain that Morandi was a still life artist who used many basic forms as the basis of his artwork.
    - Explain to students that a still life is an artwork in which the subject is an arrangement of non-moving/non-living objects.
    - Show students additional examples of Morandi's still lives.
- Ask students how Morandi creates the illusion of three dimensions on a two-dimensional surface.
    - Students should notice that some areas of the objects are darker than others to create the illusion that light is hitting a three-dimensional object. In art, this is called Value.

Work Session

- Tell students that they will be creating a still life drawing using geometric 3D shapes/forms. Students will be able to create their own composition consisting of three geometric 3D shapes/forms.
    - Composition in art is how the artist chooses to put the elements of art (such as Form and Value) together in his or her artwork.

  ***Teacher note:** Grade level will determine which geometric 3D shapes/forms students will use in their composition.*
- Students should randomly select three sets of measurements from a bag (example: Pyramid: h: 2 in., w: 1.5 in., l: 1.5 in.; Cube: h/w/l: 3 in.; Cylinder: radius: 1 in; h: 3 in.).
    - Explain to students that these three 3D shapes/forms will be the subject for their still life drawings.
    - Students can arrange them however they like in their composition.
    - Show them examples of Morandi's still lives again so that they can see how he used the space on his canvas and arranged his forms (some are in front of others, some side by side, etc.).
- Show students the Shape to Form handout. Allow students to practice creating the 3D shapes/forms they will need for their composition.
- Students should then solve for the volume and surface area of their three 3D shapes/forms.
    - Next, students should draw their three forms on their artwork. Remind students to use the space on their paper and draw BIG!
    - Remind students to consider the actual dimensions of the forms and how that will impact the proportions in their art.
        - For example, if they have a pyramid that is 2 in. high and a cube that is 3 in. high, the cube should be represented as taller than the pyramid in the artwork.
- Finally, remind students to add value like Morandi to create the illusion of three dimensions on a flat surface.
    - Show students the handout Forms with Value as a guide. Students can use regular pencil, colored pencil, or charcoal for their artwork.

Closing/Reflection

- On a separate paper, students should write their formulas with dimensions for surface area and volume of their three forms and their solutions to the problems. Students should attach this to their artwork so that it is visible.
- Students should then engage in a gallery walk of each other's work. Students should reflect on the following questions:
    - How did the artist create his/her composition using the three 3D shapes/forms?
    - How did the artist use the space on his or her paper?
    - How did the artist use value to create the illusion of form?
    - How is the artist's work similar and different to your own? To Morandi's?

ASSESSMENTS

Formative

Teachers will assess students' understanding by observing whether students can identify the types of 3D shapes used in Morandi's artwork, calculate surface area and/or volume, draw 3D shapes/forms using the guide, and understand what a still life drawing/painting is.

Summative

CHECKLIST

- Students can calculate surface area and volume of their three geometric 3D shapes/forms.
- Students can create a still life drawing using various 3D shapes/forms.

DIFFERENTIATION

Acceleration:

- Assign students the task of creating the three 3D shapes/forms to scale using pencil, paper, rulers, and tape. Once students have created their 3D shapes/forms, have them place them on white paper and move them into various arrangements. Students can then try drawing new compositions using their new arrangement of 3D shapes/forms as a subject.

Remediation:

- Assign students one type of 3D shape/form to work with using three different sets of measurements so that students are practicing using the same calculations and formula three times.
- Allow students to work in pairs to solve equations. Each student will then make their own still life.

ADDITIONAL RESOURCES

- *Natura Morta* by Giorgio Morandi
- Examples of Morandi's still lives
- Shape to Form handout
- Forms with Value handout

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*

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