UNIT: FRACTION FUSION–WHERE ART AND NUMBERS COLLIDE
FRACTION SCULPTURES
Grade Band: 4
Content Focus: Visual Arts & Math

LEARNING DESCRIPTION

In this lesson, students will explore fractions through a hands-on, arts-integrated math activity inspired by the sculpture "Seven Magic Mountains". This hands-on activity encourages collaboration, creativity, and the application of mathematical concepts.

LEARNING TARGETS

Essential Questions	"I Can" Statements

We bring learning to life.

How can I describe the parts of a sculpture using fractions?	I can build a sculpture using colored materials and identify the fraction of each color used in my design.
How can I use fractions to design a sculpture?	I can add fractions with like-denominators.
How do we add and subtract fractions with like denominators?	I can work collaboratively with my group to design and build a balanced sculpture inspired by "Seven Magic Mountains".

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
4.NR.4.6 Add and subtract fractions and mixed numbers with like denominators using a variety of tools.	VA4.CR.1 Engage in the creative process to generate and visualize ideas by using subject matter and symbols to communicate meaning. VA4.CR.2 Create works of art based on selected themes. VA4.CR.4 Understand and apply media, techniques, processes, and concepts of three-dimensional art.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
4.NSF.3 Develop an understanding of addition and subtraction of fractions (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100) based on unit fractions. a. Compose and decompose a fraction in more than one way, recording each composition and decomposition as an addition or subtraction equation; b. Add and subtract mixed numbers with like denominators; c. Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	**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.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
● <u>Fraction</u> - A number that represents a part of a whole ● <u>Numerator</u> - The number above the line that indicates how many parts of a whole are being counted ● <u>Denominator</u> - The number below the line that indicates the total number of equal parts in the whole ● <u>Addition</u> - Combining two or more numbers to find a total or sum ● <u>Equation</u> - A mathematical sentence that has two equal sides separated by an equal sign ● <u>Equivalent</u> – Have equal value ● <u>Like denominator</u> – A denominator that is found in two or more fractions ● <u>Unlike denominators</u> – Denominators in two or more fractions that are different from each other	● <u>Sculpture</u> - A three-dimensional work of art that can be made from a variety of materials, such as wood, clay, metal, or stone. ● <u>Form</u> - An object that is three-dimensional and encloses volume (cubes, spheres, and cylinders are examples of various forms) ● <u>Color</u> - An element of art with three properties: 1) Hue: the name of the color, e.g. red, yellow, etc., 2) Intensity: the purity and strength of the color (brightness or dullness), 3) Value: the lightness or darkness of the color (shades and tints) ● <u>Pattern</u> - Repetition of specific visual elements such as a unit of shape or form

MATERIALS

- Colored corn packing peanuts (https://www.amazon.com/dp/B0BV1LMNSR?ref=ppx_yo2ov_dt_b_fed_asin_title&th=1)
- Small plastic containers
- Sponges cut into squares to fit the containers

INSTRUCTIONAL DESIGN

Opening/Activating Strategy
● Introduction to "Seven Magic Mountains": Show images of Ugo Rondinone's sculpture "Seven Magic Mountains" to students. Have students go through the See, Think, Wonder Artful Thinking Routine.   ○ Instruct students to look at the artwork for a moment. Then ask students:

- - - ■ *What do you **see**?*
    - ■ *What do you **think** about what you see?*
    - ■ *What do you **wonder** about?*
  - Show the following video to students: [The Making of Seven Magic Mountains](#).
  - Discuss the process of creating a sculpture. Ask students: How does Rondinone use color and form?
    - Discuss how each sculpture can be seen as a "whole," made up of smaller parts (colors). Ask students how this is like fractions.
  - Review adding fractions with like-denominators.
  - Tell students that they will be using fractions to design and create their own sculptures inspired by "Seven Magic Mountains".

Work Session

- Divide students into small groups. Each group will receive colored corn packing peanuts and a damp sponge.
- Students will first design their sculpture. Tell students that they will sketch out a design for their sculpture inspired by "7 magic Mountains" and label the colors that they will use.
  - Students must use at least four colors of packing peanuts.
  - Students then need to check how many peanuts of each color they need by writing an addition equation, such as: 5/20 yellow peanuts + 7/20 green peanuts + 4/20 blue peanuts + 4/20 orange peanuts = 20/20 peanuts.
- Students will then build their sculpture based on their design by pressing each peanut onto the damp sponge and then adhering it to another peanut.

Identifying Fractions:
- After completing their sculptures, groups will count the total number of peanuts used in their design.
- They will then count how many peanuts of each color were used and express this as a fraction of the total sculpture (e.g., if there are twenty peanuts and four are blue, then 4/20 or 1/5 of the sculpture is blue).

Adding Fractions:
- Students will then write a word problem to explain how to recreate their sculpture.
  - The word problem should express an addition problem to show how they created their sculpture. For example, if the students used 20 packing peanuts, they would include the following equation in their word problem: 5/20 yellow peanuts + 7/20 green peanuts + 4/20 blue peanuts + 4/20 orange peanuts = 20/20 peanuts.

Closing/Reflection

- Discuss and reflect on the following with students:
  - Reflect on how the sculptures are similar or different in their color compositions.
  - Highlight how fractions are a way to describe these differences mathematically.
  - Discuss how each sculpture can be expressed in terms of a mathematical equation.

- Have students write a brief reflection on how they used fractions in their sculpture and what they learned about adding fractions.

ASSESSMENTS

Formative
- Observe student responses during See, Think, Wonder.   - Observe students during the creation of their sculptures and their discussions within groups about fractions.   - Use questioning to assess their understanding of fractions as parts of a whole and their ability to add fractions with like-denominators.
Summative
- Each group will record the total number of peanuts, the fraction of each color, and an addition word problem that expresses the composition of the sculpture.   - Sculpture reflection: Students' brief reflection on how they used fractions in their sculpture and what they learned about adding fractions

DIFFERENTIATION

Accelerated: Have students swap their word problems with another group. Each group should then try to follow the word problem to recreate the sculpture. Then, the groups should compare the finished products.

Remedial: Allow students to express their sculpture in terms of an addition equation without requiring them to write it in the context of a word problem.

ADDITIONAL RESOURCES

- https://sevenmagicmountains.com/

CREDITS

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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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