UNIT: CREATIVE CALCULATIONS–MULTIPLICATION AND DIVISION
MULTIPLICATION SCULPTURES
Grade Band: 4
Content Focus: Visual Arts & Math

LEARNING DESCRIPTION

In this lesson, students will explore multiplication through a hands-on, art-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
How can I use multiplication to find the total cost of my art project? How do choices in design impact the final outcome of an artwork?	I can design and build a sculpture inspired by "Seven Magic Mountains". I can use multiplication to find the cost of my sculpture based on the number of colored peanuts used.

	I can add the costs of each color to find the total cost of my sculpture.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
4.NR.2.3 Solve relevant problems involving multiplication of a number with up to four digits by a 1-digit whole number or involving multiplication of two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 4.NR.2.5 Solve multi-step problems using addition, subtraction, multiplication, and division involving whole numbers. Use mental computation and estimation strategies to justify the reasonableness of solutions.	VA4.CR.2Create works of art based on selected themes. VA4.CR.4Understand and apply media, techniques, processes, and concepts of three-dimensional art. VA4.CN.3 Develop life skills through the study and production of art (e.g. collaboration, creativity, critical thinking, communication).

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
4.NSBT.5 Multiply up to a four-digit number by a one-digit number and multiply a two-digit number by a two-digit number using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using rectangular arrays, area models and/or equations. 4.NSBT.6 Divide up to a four-digit dividend by a one-digit divisor using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	**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. **Anchor Standard 7:** I can relate visual arts ideas to other arts disciplines, content areas, and careers.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• Multiplication - Repeated addition of numbers of the same size	• Sculpture - A three-dimensional work of art that can be made from a variety of materials, such as wood, clay, metal, or stone.

• Factors - The integers that divide that number without leaving a remainder • Product - The result of multiplying two or more numbers together • Equation - A mathematical sentence that has two equal sides separated by an equal sign • Cost - The amount of money required to purchase, produce, or maintain something	• Form - An object that is three-dimensional and encloses volume (cubes, spheres, and cylinders are examples of various forms) • Color - 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) • Pattern - 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
- Multiplication recording sheets (one per group)
- Video: The Making of Seven Magic Mountains
- One three-digit number for each group

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

Introduction to "Seven Magic Mountains":

- Show images of Ugo Rondinone's sculpture "Seven Magic Mountains". Lead students through the See, Think, Wonder Artful Thinking Routine.
    - Tell 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?

Work Session

- Divide students into small groups. Each group will receive colored corn packing peanuts and a damp sponge.
- Assign a three-digit number to each color of packing peanuts.
- Ask students to sketch out their ideas for a sculpture using at least four colors of packing peanuts inspired by " 7 Magic Mountains".
- Students will build their design according to their sketch by pressing each peanut onto the damp sponge and then adhering it to another peanut.

Calculating cost:

- After completing their sculptures, groups will use the assigned costs to determine the total price of their sculpture.
- For each color used, students will multiply the number of peanuts by the cost of that color. For example, if 20 red peanuts are used and red costs $125, they will calculate 20 × 125.
- They will record these calculations on their multiplication recording sheets. After finding the total for each color, groups will add up the amounts to determine the overall cost of their sculpture.

Closing/Reflection

- Have groups share their sculptures and their total costs with the class.
- Reflect on how different choices in the design (such as the use of more expensive colors) affected the overall cost.
- Discuss how multiplication and addition are used together to solve real-world problems.

ASSESSMENTS

Formative

- Observe students as they design their sculptures, keeping track of how they calculate costs and solve multiplication problems.
- Use questioning to assess their understanding of multiplication and addition in the context of real-world scenarios.

Summative

- Each group will record the number of each color used, the multiplication problem for each, and the sum of all costs.
- Students will write a brief reflection on their design process, how they calculated the cost, and what strategies they used to solve the multiplication problems.

DIFFERENTIATION

Accelerated:

- Challenge students to calculate the cost of their sculpture if each peanut's price increased by 10%.
- Incorporate a comparison activity where students analyze which group's sculpture was the most and least expensive and why.

Remedial:

- Limit the number of peanuts and/or colors students can use to keep the multiplication numbers manageable.
- Set the prices for the packing peanuts at a number that is manageable for students.

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.*