



UNIT: VOLUME OF RIGHT RECTANGULAR PRISMS

CEREAL SHOWDOWN (Lesson 5 of 5)

Grade Band: 5

Content Focus: Theatre and Math



LEARNING DESCRIPTION

Students will demonstrate an understanding of volume by writing and performing scripts where siblings argue about which cereal box to purchase based on volume.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can we use theater techniques to explore volume?	I can use theater techniques to explore volume.
How can writing and performing a script help us communicate volume?	I can write and perform a script to help communicate volume.



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GEORGIA STANDARDS

Curriculum Standards	Arts Standards
5.GSR.8: Examine properties of polygons and rectangular prisms, classify polygons by their properties, and discover volume of right rectangular prisms.	TA5.PR.1 Act by communicating and sustaining roles in formal and informal environments. TA5.CR.2 Develop scripts through theatrical techniques.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
5.MDA.3 Understand the concept of volume measurement. a. Recognize volume as an attribute of right rectangular prisms; b. Relate volume measurement to the operations of multiplication and addition by packing right rectangular prisms and then counting the layers of standard unit cubes; c. Determine the volume of right rectangular prisms using the formula derived from packing right rectangular prisms and counting the layers of standard unit cubes.	Anchor Standard 1: I can create scenes and write scripts using story elements and structure. Anchor Standard 3: I can act in improvised scenes and written scripts.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
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<ul style="list-style-type: none"> • <u>Volume</u> - The amount of space occupied by a three-dimensional object or shape • <u>Height</u> - The perpendicular distance from the base of a shape or object to its topmost point • <u>Length</u> - The distance from one end of an object to the other along its longest side • <u>Width</u> - The measurement of the shorter side of an object or shape when compared to its length; it is usually the horizontal dimension • <u>Three-dimensional figure</u> - A figure that has length, width, and height 	<ul style="list-style-type: none"> • <u>Script</u> - The written version of a play, movie, or other acted performance • <u>Dialogue</u> - A conversation between two or more persons • <u>Scene</u> - a single situation or unit of dialogue in a play • <u>Character</u> - An actor or actress in a specified role • <u>Voice</u> - Actors use their voice to be heard by the audience clearly. Actors must also apply vocal choices such as pitch, tempo, and volume to the character they are dramatizing. • <u>Gesture</u> - An expressive movement of the body or limbs • <u>Facial expression</u> - Using your face to show emotion • <u>Props</u> - Items that actors use in a performance to depict real-life objects; props can also be used to help students brainstorm for their writing or character study • <u>Voice</u> - Actors use their voice to be heard by the audience clearly. Actors must also apply vocal choices such as pitch, tempo, and volume to the character they are dramatizing.
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MATERIALS

- Various empty cereal boxes of different sizes (ask students to bring these in prior to the lesson)
- Measuring tools (ruler, tape measure, etc.)
- Paper and pencils for script writing
- Performance space

INSTRUCTIONAL DESIGN

Opening/Activating Strategy



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- Tell students that you will say several different emotion words. When they hear the word they should create a facial expression for that word. After a few examples, have students add in gestures and sounds with the facial expressions.

Work Session

- Tell students that they will work in pairs or small groups to write a short script where siblings argue about which cereal box to purchase based on volume.
- Briefly review the concept of volume with the class, emphasizing how it relates to the amount of space inside a 3D object.
- Each group will choose two cereal boxes to compare by measuring their dimensions and calculating their volume.
- Discuss what a script is with students. Make sure that students understand that scripts have dialogue that is written in first person. It is not like a story written in third person.
- Ask students to consider what type of voice their character would have and how their voice might change if they're trying to convince someone of something. Ask students to consider what gestures and facial expressions their character might use to communicate their point of view.
- Allow students time to work on their scripts. Encourage them to incorporate mathematical reasoning into their arguments. For example, they might discuss which box holds more cereal or which is a better value for the price.
- Have students peer-review each other's scripts, focusing on how well they incorporate mathematical reasoning and theatre elements. Students should provide feedback based on the clarity of their arguments and the effectiveness of their use of volume concepts.
- After writing their scripts, give students time to rehearse their performances. They should use the actual cereal boxes as props.
- Have each group perform their script for the class. After each performance, facilitate a brief discussion about the volume comparison made in the script. Ask the audience to weigh in on which cereal box they think would be the best choice based on the arguments presented.

Closing/Reflection

- Ask students to reflect on the activity.
 - Did writing and performing the script help them understand the concept of volume better?
 - How did they incorporate math into their arguments?
 - How did incorporating theatre elements, like gestures, voice, and facial expressions add to their performances?

ASSESSMENTS

Formative

- Observe students' ability to use facial expressions, voice, and gestures to communicate emotions.
- Conference with students as they calculate volume and write their scripts to check for understanding.
- After each performance, facilitate a class discussion where students can reflect on the mathematical concepts presented in the scripts.



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Cereal Showdown Rubric

Criteria	Excellent (4)	Good (3)	Fair (2)	Poor (1)
Script	- Script includes detailed and accurate volume calculations.	- Script includes mostly accurate volume calculations.	- Some volume calculations are inaccurate or unclear.	- Volume calculations are missing or completely inaccurate.
Mathematical Reasoning	- Script demonstrates deep understanding of volume concepts.	- Script demonstrates understanding of volume concepts.	- Script demonstrates limited understanding of volume concepts.	- Script does not demonstrate understanding of volume concepts.
Theater Elements	- Effective use of theater elements enhances mathematical concepts.	- Theater elements support mathematical concepts effectively.	- Some theater elements are used, but not effectively.	- Little to no use of theater elements.
Engagement	- Audience is highly engaged and respectful.	- Audience is engaged and respectful.	- Audience is somewhat engaged and respectful.	- Audience is disengaged and disrespectful.
Creativity	- Highly creative approach to integrating math and theater.	- Creative approach to integrating math and theater.	- Some creativity in integrating math and theater.	- Little to no creativity in integrating math and theater.
Collaboration	- Group works exceptionally well together, with each member contributing.	- Group works well together, with each member contributing.	- Group works adequately together, but with some issues.	- Group does not work well together.
Overall Presentation	- Performance is polished and well-rehearsed.	- Performance is well-prepared and rehearsed.	- Performance is somewhat prepared and rehearsed.	- Performance is not prepared or rehearsed.



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Reflection	- Reflection demonstrates deep insights and thoughtful analysis.	- Reflection provides insights and analysis.	- Reflection is somewhat reflective and analytical.	- Reflection lacks reflection and analysis.
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DIFFERENTIATION

Accelerated:

- Students can create a visual aid, such as a chart or graph, comparing the volumes of various cereal boxes.
- Students can write a reflection on how they could use volume calculations in real-life situations.

Remedial: Provide students with a pre-written script or sentence stems for writing a script so that students can focus on finding the volume. Students will still perform the pre-written script and should use their voices, facial expressions, and gestures as tools for communication.

ADDITIONAL RESOURCES

CREDITS

U.S. Department of Education- STEM + the Art of Integrated Learning
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