



artsNOW

Integrated learning solutions

“YOU ADDITIVE INVERSED ME!”

Grade Band: 6-8

Content Focus: Theatre & Math



LEARNING DESCRIPTION

Bring a simple but sometimes baffling math concept to life through pantomime and improvisation! In this lesson, students will explore the concepts of absolute value and additive inverses by developing, enacting, and then writing out scenes featuring everyday actions that convey the dynamic at the heart of the math.

LEARNING TARGETS

Essential Questions	“I Can” Statements
What is an additive inverse?	I can identify the additive inverse of a number.
How can we use drama to bring math concepts to life?	I can act in an improvised scene based on a math concept. I can write out the scene I improvised.



We bring learning to life.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 6: 6.NR.3: Solve a variety of problems involving whole numbers and their opposites; model rational numbers on a number line to describe problems presented in relevant, mathematical situations. 6.NR.3.1 Identify and compare integers and explain the meaning of zero based on multiple authentic situations. 6.NR.3.5 Explain the absolute value of a rational number as its distance from zero on the number line; interpret absolute value as distance for a positive or negative quantity in a relevant situation.</p>	<p>Grade 6: TA6.CR.1 Organize, design, and refine theatrical work. TA6.PR.1 Act by communicating and sustaining roles in formal and informal environments.</p>

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 6: 6.NS.5 Understand that the positive and negative representations of a number are opposites in direction and value. Use integers to represent quantities in real-world situations and explain the meaning of zero in each situation.</p>	<p>Anchor Standard 1: I can create scenes and write scripts using story elements and structure.</p>

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none"> • <u>Positive number</u> – A number to the right of zero on a number line • <u>Negative number</u> – A number to the left of zero on a number line • <u>Absolute value</u> – The distance from a number to zero on a number line • <u>Additive inverse</u> – The opposite of a number; the number that, when added to a given number, results in the sum of zero 	<ul style="list-style-type: none"> • <u>Improvisation</u> – Acting without a script • <u>Pantomime</u> – Pretending to hold, touch, or do something one is not holding, touching or using • <u>Dialogue</u> – Conversation between characters • <u>Scene</u> – The dialogue and action between characters in one place for one continuous period of time



We bring learning to life.

MATERIALS

- Paper and pencils, or devices, for writing

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Model for students a basic mirror activity: Have a student volunteer come to the front; have the student become a mirror; slowly do simple movements (waving, shrugging, tilting head, smiling, frowning, tapping knees, etc.) facing the “mirror” for the student volunteer to copy.
 - Move slowly so that the volunteer can follow.
 - Trade roles; have the student initiate the movement, and follow the student’s movement.
 - *Note: in mirroring, one partner’s right arm is mirrored by the other’s left arm.*

Work Session

- Discuss absolute value and additive Inverse.
 - Explain that a number and its additive inverse add up to 0, and that a number and its additive inverse have the same absolute value.
 - Confirm comprehension by posing numbers and asking students to reply with each number’s additive inverse (e.g., $7/-7$, $-5\frac{1}{2} / 5\frac{1}{2}$, $269 / -269$, $-12.6 / 12.6$, etc.).
- Introduce improvisation – ‘acting without a script’ or ‘making it up as you go’.
 - Explain that in improvisation, actors go along with other actors’ ideas, listen and respond as in a real conversation, and add details and build conflict between the characters to keep the scene interesting.
 - Define a scene as continuous action in a single place.
- Model an improvised scene with a student, or have two students model an improvised scene, of two characters who know each other (parent/child, siblings, friends), with a specific conflict (child wants permission to go somewhere, parent says “No”; or parent wants child to clean their room, but child is resisting; or child wants sibling to stay out of their room; or child wants friend to play basketball; etc.).
 - Reflect on how the scene was improvised, and how the actors improvised effectively to create an interesting scene.
- Brainstorm verbs that convey opposite/reversible, measurable actions (not simple binaries of on/off, in/out, etc.) such as push/pull, buy/sell, earn/spend, stretch/contract, wrap/unwrap, produce/consume, build/dismantle, inflate/deflate, etc.
- Discuss additive inverse and how it can be represented in opposite actions conveyed in the verb pairs.
 - If needed, provide examples of additive inverse relationships in real world situations from the Georgia standard: “temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge”.
- Explain that students will work with a partner to improvise scenes that convey additive inverse relationships in everyday situations.
 - Students should use dialogue and pantomime in their scenes.



We bring learning to life.

- Define pantomime, and explain that students will pantomime any actions in their scenes.
- Model an improvised scene with a student, or guide two students in modeling an improvised scene, in which an action and its opposite are the center of the conflict. Develop the conflict to the point where one character says. “You additive inversed me!”
 - Examples could include:
 - A child earns X minutes of screen time for doing chores, but the parent discovers a rule or object that was broken and takes away the time.
 - A friend is winning a one-on-one basketball game by 13 points, but the opponent has a 13-point run to tie the game.
 - A grandmother baked 17 cookies, but the child ate 17 cookies.
 - *Any actions in the scene should be pantomimed.*
 - Have student pairs improvise their scenes simultaneously.
- Have students write their improvised scenario as a scene, detailing what the characters said.
 - Each student should write their own. They should try to remember what they can from the improvised scene but also feel free to revise and reinvent what was said as they write it down.
 - Have students draw a diagram or chart or number line that shows the additive inverse in a mathematical representation.

Closing/Reflection

- Ask students to define and give real-world examples of additive inverses.
- Discuss improvisation and pantomime and how they were used in the scenes.

ASSESSMENTS

Formative

Teachers will assess students by observing students’ discussions around additive inverse relationships between two quantities, and observing their focus and collaboration in improvising their scene, specifically in terms of both engaging in dialogue with their partners and expressing actions through pantomime.

Summative

CHECKLIST

- Students can identify the additive inverse of a number.
- Students can act in an improvised scene that demonstrates understanding of additive inverse number relationships using dialogue and pantomime.
- Students can express understanding of additive inverse through a written scene.

DIFFERENTIATION

Acceleration:

- Have students be more specific within their scenes, including specific measurements and equations to express the concept of additive inverses in their scenes.



We bring learning to life.

Remediation:

- Model several scenes before having students do them with partners.
- Have student partners improvise the same scenario that was used in the modeling.
- Develop an idea together and have all partners improvise that scenario simultaneously.

ADDITIONAL RESOURCES

- [MuchoMath: Additive Inverse and Absolute Value](#)

**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.*

Ideas contributed by: Barry Stewart Mann

Revised and copyright: May 2024 @ ArtsNOW



We bring learning to life.