

# Arts Integrated Lesson Plan



**ART FORM:**  
Theatre



**SUBJECT AREA:**  
Mathematics

Lesson Title: <b>Solving linear equations</b>	Grade: 8
Contributor, School: Susan Land, Pocomoke Middle School	Time Frame: One 45-60 minute class session

## State Curriculum Content Standards, Indicators, Objectives

<p><b>Fine Arts Content Standard(s)</b></p> <p>1.0 Perceiving and Responding: Aesthetic Education Students will demonstrate the ability to perceive, interpret, perform, and respond to the development of a variety of dramatic forms over time and the aesthetic qualities they reflect.</p> <p>3.0 Creative Expression and Production: Students will demonstrate the ability to apply theatrical knowledge, principals and practices to collaborative theatre presentations.</p>	<p><b>Mathematics Student Standard(s)</b></p> <p>1.0 Knowledge of Algebra, Patterns, and Functions Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.</p>
<p><b>Fine Arts Content Indicator(s)</b></p> <p>1.1 Describe and interpret characteristics of dramatic forms.</p> <p>3.1 Apply a variety of dramatic structures to theatrical presentations.</p>	<p><b>Mathematics Student Indicator(s)</b></p> <p>1 B.2 Expressions, Equations, and Inequalities Identify, write, solve, and apply equations and inequalities.</p>
<p><b>Fine Arts Content Objective(s)</b></p> <p>1.1.c Use selected forms, themes, conflicts and action to create improvised and scripted dramatic works.</p> <p>3.1.a Use dramatic narrative conventions to write and perform monologues, scenes, and plays that are based on personal experiences, real or improvised situations, or historical events.</p>	<p><b>Mathematics Student Objective(s)</b></p> <p>1.B.2.b Solve for the unknown in a linear equation.</p>

### Objective(s) (Connecting the content areas)

The students will demonstrate understanding of the process of solving a linear equation by personifying the variable  $x$  and creating a short narrative about it in monologue form. The monologue will tell the steps of solving the problem in the form of a melodrama, farce, comedy, or tragedy. Students will perform the monologue.

<p><b>Key Arts Vocabulary</b></p> <p><i>melodrama, farce, comedy, tragedy, monologue</i></p>	<p><b>Key Mathematics Vocabulary</b></p> <p><i>equation, variable, linear, solution, inverse operation</i></p>
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## Prior Knowledge Students Need for This Lesson

### Arts

The students must have a general understanding of the types of dramatic structures and have experience with basic acting tools and skills.

### Mathematics

The students must have familiarity with mathematical tools to solve linear equations with both equalities and inequalities.

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## Materials and Resources

### Materials and Resources for the Class

- *Perceive, Know, Care About* graphic organizer
- Actors Tools and Skills poster: Imagination, Mind, Voice, and Body
- Praise, Question, Polish (PQP) handouts

### Materials and Resources for the Teacher

- Artwork to introduce the Artful Thinking routine *Perceive, Know, Care About* (<http://www.pz.harvard.edu/tc/routines.cfm>)  
Such as: *The Fire Diver*, 1934, by John Curry
- Examples of melodrama, farce, comedy, tragedy, and monologue
- Sets of equation cards with different linear equations problems
- Sets of drama cards including *melodrama*, *farce*, *comedy*, or *tragedy*

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## Lesson Development/Procedures (including motivation, modeling, guided practice, and independent practice)

- The teacher models and introduces the *Perceive, Know, Care About* thinking routine with a famous painting (painting should have both animate and inanimate objects to role play) to acclimate the students to the procedure. The students experience putting themselves in the role of an object and feeling, thinking, and perceiving as it might if it were a person.
- The teacher guides the students to do the same procedure with an equation written on the board. The teacher asks: "If you were  $x$ , what would you perceive (i.e., feel, see, notice)? What would you know about? What would you care about?"
- The teacher models creating a story to tell the steps of a simple mathematical process (e.g., adding or subtracting). The teacher changes the story to make it melodramatic, tragic, or comic. The teacher asks the students to identify what was different.
- The teacher discusses the basic characteristics of melodrama, farce, comedy, and tragedy and asks students to think of examples they have seen on television or in movies.
- The students are divided into pairs. They are given an equation card and a drama card. The teacher discusses what a monologue is and provides examples.
- The students work cooperatively to decide on a storyline in the style of the drama card they have received. The story will tell the steps of solving the equation through the eyes of the unknown variable. They create a monologue for the unknown variable to tell the story, practice it, and perform it.
- The students evaluate peer performances using the Praise, Question, Polish (PQP) format.

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## Closure/Summary

The students complete an Exit Ticket to tell which drama form (i.e., melodrama, farce, comedy, or tragedy) made the process of solving an equation more understandable or interesting and to tell how performing or watching the drama helped them remember or understand the steps to solving equations.

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**Assessment (Description/Tools)**

The teacher uses an observation checklist to evaluate each performance:

- How accurately does the story present the elements of the problem?
- Is the solution correct?
- Does the story describe the correct steps in solving the equation?
- Does the student cooperate and manage time well?
- Does the student incorporate clear elements of the drama type that were assigned?
- Does the student create and deliver the monologue in character?
- Does the student project and speak loudly for everyone to be heard?

Students will also use PQP (Praise, Question, and Polish) to reflect on each scene and to provide feedback for improvement.

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**Lesson Extensions**

- The students create puppets to perform the stories.
- The students create scripts, scenery, props, or storyboards to accompany the drama.
- The students compare and contrast the dramas that were created for the same equation.