Facilitation Guide



10-15 Min Small Group

Digital Guide

ARTS EVERY DAY IN BALTIMORE CITY PUBLIC SCHOOLS

Explore Brain Science

EMBODIED COGNITION

Equation Scenes

ROUTINE OVERVIEW

Students use a word problem and a guided flow chart to identify key information, select the appropriate operation, and solve the problem. They then write and perform a short scene that brings the word problem to life, using movement and dialogue to demonstrate their mathematical understanding. The activity can be adapted to different operations and is especially useful for exploring the meaning of remainders in division problems.

Maryland Standards

MARYLAND STATE MATH STANDARDS

- **4.AT.A.4** - Solve multistep problems in context involving whole numbers and having whole number answers using the four operations including problems in which the remainder must be interpreted

MARYLAND ARTS STANDARDS

- **TH.AS1.I:3-5:1** - Propose and enact details to the plot and characters of a guided original drama/theatrical experience.
- **TH.AS1.E:3-5:1** - Synthesize ideas and collaborate with others to create interesting plot and characters for an original guided drama/theatrical experience

Not in MD? View National Standards in the Digital Guide

Getting Ready

REVEAL MATH: 4th Grade: 7-7

ARTS INTEGRATED LEARNING OBJECTIVE: Students will be able to interpret and solve word problems by identifying key information, selecting the appropriate operation, and using a short scripted scene to demonstrate their mathematical reasoning.

MATH SKILL: Solve a division problem with a remainder within 100. Interpreting the remainder within the context of the word problem.

ART SKILL: Build student confidence in acting and character development.

WHAT'S BEFORE: Fluently multiply and divide within 100 (Grade 3). Divide up to 4-digit dividends by 1-digit divisors to find quotients and remainders (Unit 7).

WHAT'S NEXT : Solve multi-step word problems involving division (Unit 7). Find whole number quotients of whole numbers with up to 4-digit dividends and 2-digit divisors (Grade 5).

MATH DOMAIN:

Algebraic Thinking	Represent and solve problems involving multiplication and division.	Solve multistep problems in context involving whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted.

MATERIALS

- Scripting flow chart
- Scripting flow chart (operations last)
- Pencil
- Whiteboard and marker

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Equation Scenes

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TEACH

Facilitation Steps

Before starting, make sure every student has an individual copy of the Equation Scenes flow chart/script.

- *NOTE: There are two versions of the flow chart:*
  - **Version 1)** If your students struggle to identify the operation, use this flow chart, as it has them generate verbs FIRST that serve as context clues.
  - **Version 2)** If your students can already identify the operation, start here. Students will identify verbs after they select the operation.

1. Read the word problem together and use the flow chart to identify the key information needed to solve it and create a scene.

- **Identify the character:** Who is the problem about? Choose an adjective to describe the character. The adjective does not need to come directly from the text; students can use their imaginations to develop their characters.
- **Identify what you are solving for:** What is the problem asking you to find? Be sure to identify the unit in your answer.
- **Generate action verbs:** Brainstorm three action words that students can physically act out. For example, a problem involving ingredients might inspire mix, whisk, or stir, while a division problem might inspire chop, cut, or break.
  - *NOTE: If students have already identified the operation, have them come up with the verbs after and use version 2 of the flowchart*
- **Identify the operation:** Circle the operation needed to solve the problem. Use the context of the word problem and, when applicable, the action verbs to help determine which operation to use. Remember that some problems require more than one operation.
- **Solve the problem:** Show your work in the space provided. If the problem has a remainder, consider what that remainder means in the context of the problem.

2. Develop a script using the flow chart

- Now that the students have solved the problem and filled in the flow chart, it's time to get it performance-ready.
- Students plug in each element from the flow chart into the color-coded script template.
  - *NOTE: This template is aligned with **The Writing Revolution** transition words.*
- Encourage students to edit and adjust the script template as needed for your particular problem. For instance, if your character would say "Hola amigos" instead of hi, don't let the script template stop you. If your equation has a remainder you'd like to address, make sure you add a line to acknowledge it.

3. Prepare to perform

- Students have solved a problem and written a script; now it's time to get ready to act. All students are expected to take a role and participate.
  - Role types:
    - Speaking roles (assign within the script)
    - Non-speaking roles (part of the scene that helps the story along without reading lines).



MATERIALS
GOOGLE FOLDER

TEACH

Facilitation Steps

- *NOTE: Teachers can assign roles, have students draw sticks from a cup, or let students sort out roles themselves, but be sure that every student has something to do.*

- Before your students perform, make sure they know what they're being evaluated on. It's not their acting abilities, but rather their ability to participate in the scene and use their body safely.
  - Share the performance assessment criteria below
- Some helpful hints for budding actors are to make sure your toes and nose never face away from the audience. Be loud and proud. If you can't hear their dialogue, you can't tell them what a great job they did.
- And finally, encourage them to be brave. They may be trying something new, and it may feel strange or embarrassing, but if they are brave, they will get through it and perhaps discover something they love.
- Give students time to practice in groups.

4. Perform

- Students perform their script.

Assessment & Reflection

Performative assessment - using a students performance to demonstrate knowledge

1. Could I see/hear the characters?
2. Did they use their bodies to act out the problem?
3. Did they solve the problem correctly?

Differentiation

This activity should be introduced in a whole group so students understand the process. It can later be adapted into small groups. As you do, make sure to differentiate your equations and make them easier or harder based on your group's ability. The examples in this lesson are division based, but acting out word problems is a strategy you can use for any of the four operations.

If students are particularly shy (especially if that shyness is rooted in a language barrier), they can always portray inanimate objects, or even more complete sentence starters.