Social, Emotional, and Academic Development (SEAD) Lesson Plan for Mathematics

GRADE LEVEL/COURSE AND MATH STANDARD(S)

Grade 3

3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.

INTRODUCTION

This task was adapted from Graham Fletcher's 3-Act Tasks, is intended as a review for Eureka/Engage NY Grade 3, Module 1, and utilizes the lesson planning template from Stride 3: *A Pathway to Equitable Math Instruction: Creating Conditions to Thrive* (pages 13–14).

The lesson is intended to:

- Support development of mathematical identity by fostering a positive learning environment where students see themselves as mathematicians.
- Provide opportunities for discourse by utilizing a variety of strategies.
- Value different contributions from students by asking students with different questions/representations to share in teams and whole class.

SEAD THEME

X	**Identity**
X	**Discourse**
	Agency
	Belonging

SMP(S) TO SUPPORT THE SEAD THEME

X	**SMP 1: Make sense of problems and persevere in solving them.**
	SMP 2: Reason abstractly and quantitatively.
	SMP 3: Construct viable arguments and critique the reasoning of others.
	SMP 4: Model with mathematics.
	SMP 5: Use appropriate tools strategically.
X	**SMP 6: Attend to precision.**
	SMP 7: Look for and make use of structure.
	SMP 8: Look for and express regularity in repeated reasoning.

LESSON OBJECTIVE/GOAL

Objective of lesson:

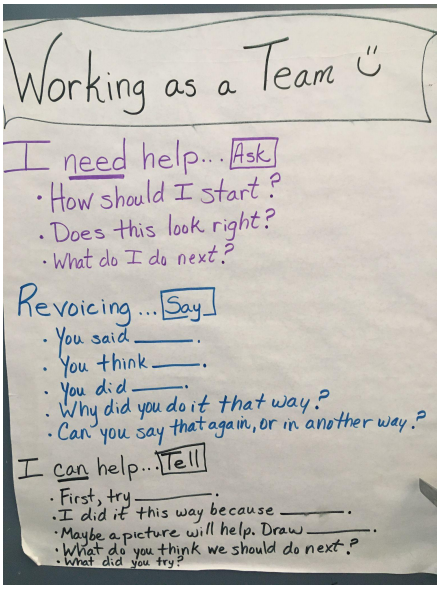
- I can explain my multiplication and division representations and engage in discussions about representations shared from other students.
- I can persevere in solving a problem.

STEPS

1. Teacher presents student objective and SMP of focus using SMP math posters.

2. Teacher launches the problem using "The Seesaw" task.
    - Teacher says, "I found something interesting that reminded me of our class. We're going to work on it in class today. We will be watching a video, thinking about the problem the girl is trying to solve, and then solving it. We are going to make a plan, change it if necessary, and see the plan through. We will practice being precise, or exact, when showing our models and explaining ourselves. Our goal today is to persevere and be precise." (Show posters as reminders of SMP 1 & 6.)
    - Introduce Polly Sy, a Filipino mathematician who was precise in her mathematics work. Emphasize that mathematicians are precise when calculating solutions to problems, and that the students will focus on precision as well in this lesson since they are mathematicians too.

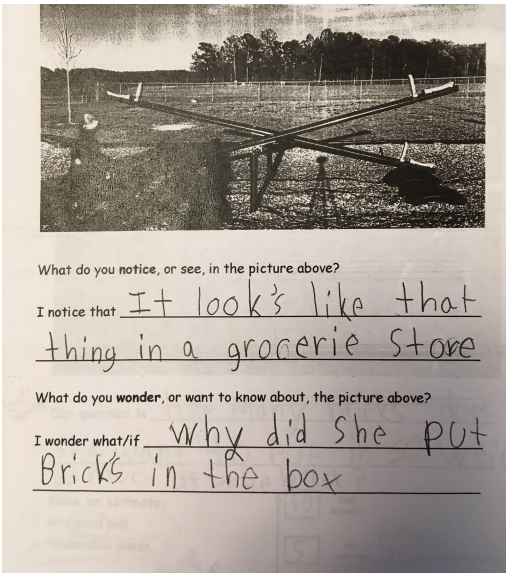
3. Remind students about teamwork expectations from our previously generated poster:

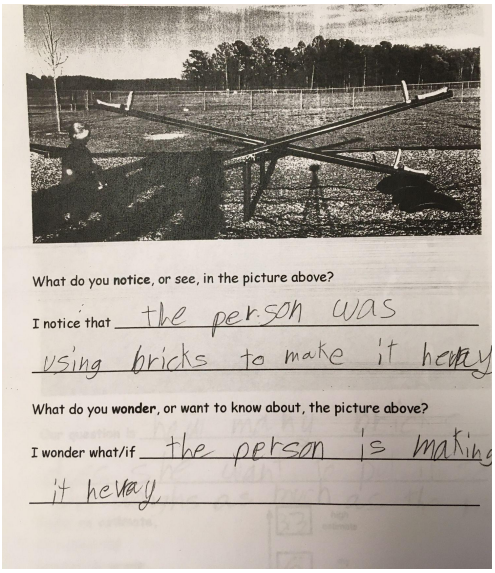


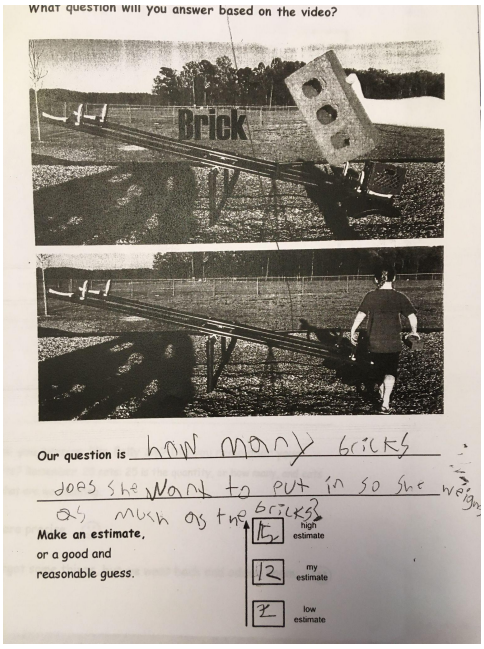
4. Teacher begins 3-Act Task.

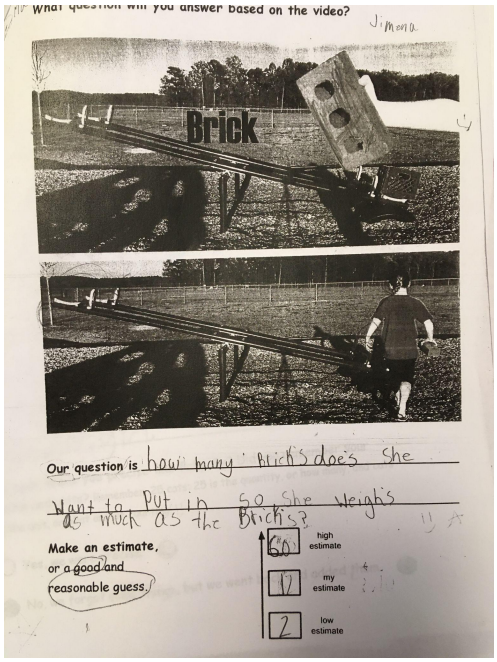
a. Act 1: Introduce problem/show video.
   - Show video, ask students to notice/wonder, and have students share their observations/questions with a partner.
   - Provide student recording sheet to record notice/wonder statements.
   - Facilitate a process to decide together which main question will be answered by the whole class, and ask for estimates to answers for that question. Students record the estimates.

Student Work Samples:



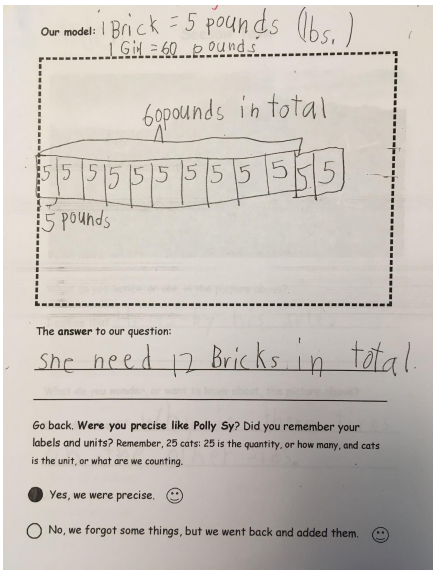


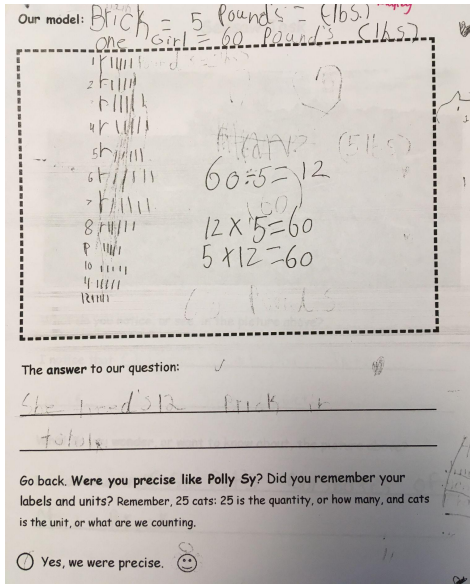


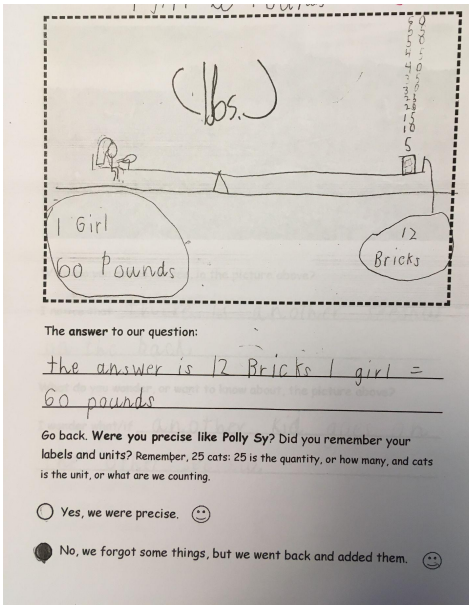


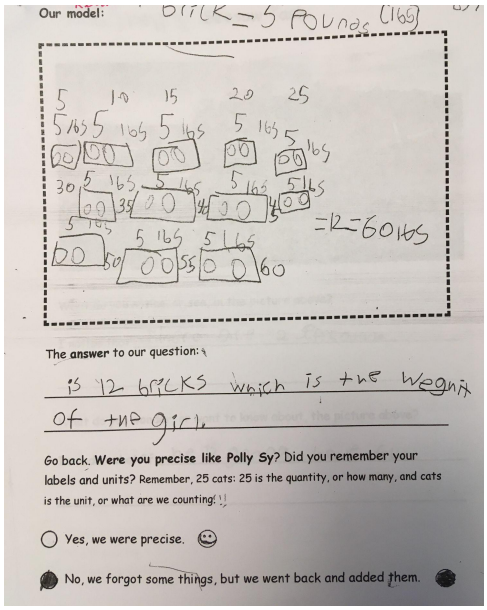
b. Act 2: Small groups work together to solve.
   - Pose the following question for discussion in small groups: "What information do you need to answer our *main* question?"
   - Say to the whole class: "Think about which model might be useful in answering this question. Turn and tell your team."
   - Give small groups time to solve the main question. Use bounce cards as a resource to help students, particularly ELLs, participate in the discourse.
   - Circulate and ask probing questions: *"What are you doing? Why are you doing that? What would happen if . . .? How do you know?"*
   - Before Act 3, have students share via Musical Shares.*

Student Work Samples:



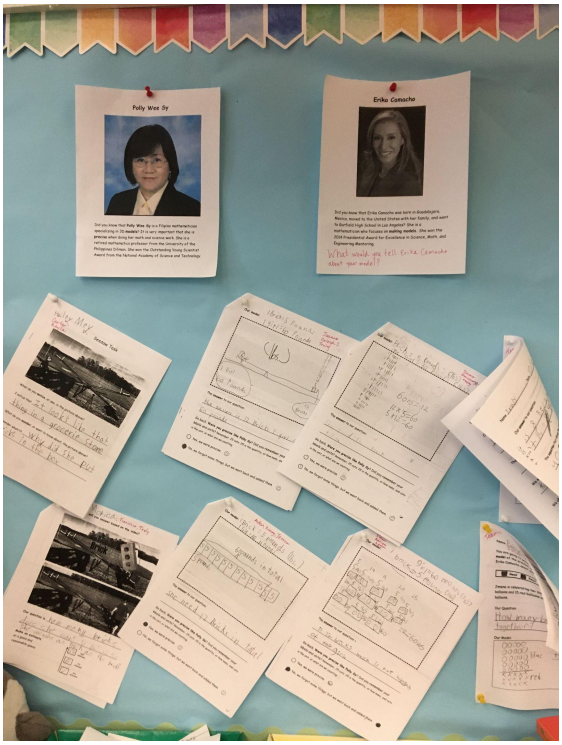






c. Act 3: Whole class sharing of solutions.
    - Have students share their answers to the main question.
    - Show the final video and validate the students' solutions/answers.
    - Revisit estimates and determine the closest estimate.
    - Compare techniques by inviting students to share solution methods; determine which is most efficient, but value all models.

5. Closing
    - Include a photo and description of Polly Sy, who represents the diversity of our classroom. Ask students, "How would you explain the precision in your work to Polly?"
    - Include each group's work on a bulletin board. Write the names of each group member on the work.



SUMMARY/REFLECTION OF LESSON

This was the first time I attempted to teach my students using a 3-Act Task. I was anxious, but I told them that since we were trying something new, we would go slowly, that I might make some mistakes, and that I was really excited for us to use what we had practiced in math to solve the problem in the video. This was our end-of-unit task for Eureka Module 1 (multiplication concept). My students loved this lesson, and I discovered, quite by accident, that it was a good precursor to our Eureka Math Module 2 lessons using balance scales. This process took about 1.5 hours (through a recess break, thankfully), but I would do it again.

I intentionally grouped students with a range in abilities (three per group) which worked well. I have kept a running list of these groupings from previous math activities to vary student interactions. I was surprised and pleased that each group solved the problem successfully even though different models were used, many of which were taught in previous lessons. It was great to compare/contrast the thinking of each group during group share-outs at the end of the lesson.

The document I created to support ELLs not only supported all students, but it also allowed me to go step-by-step, which helped keep me on track given that this was the first time I had tried a 3-Act Task. Each student received the worksheets so that everyone was engaged and accountable for the work. After the activity, I made a copy of one document per group and then hung each group's work on the bulletin board. All students took home their original packet, and their homework was to describe the activity to an adult and explain the model the group had chosen. I will definitely create worksheets/packets for future 3-Act Tasks. (See bulletin board photo).

I was concerned that students would ask questions that didn't address the most important question to the task: "How many bricks are needed to balance the seesaw so that the girl can use it?" Although there were several questions that didn't quite fit, like, "Does she have a friend she could play with?" or "How much does each brick weigh?" I acknowledged the validity of each question and redirected students to a question we could answer using our math knowledge. For example, I said, "We can't answer, 'Does she have a friend she can play with?,' but I'm wondering that, too." I also said, "I was wondering how much the brick weighs, too, but once we know that, I haven't used my math knowledge, and I still have a big question about the video." At least one student came up with the desired question, so as we discussed all of the questions, I asked things like, "Can we answer that question?" or "If we had more information, could we answer that question?" Having a different question for students to solve (or choose between to solve) would have been okay, but the final video would not have shown the "answer" to all of the questions. The Georgia Department of Education document I found was very helpful in understanding the process (especially pages 3–9).

Since we all had the same question, students initially shared their groups' work and results via Musical Shares.* Although they love this strategy, it lends itself more to giving information than engaging in discourse. But Musical Shares was a great way for students to move around the room and share their work in a fun, limited stakes way. I use this strategy often.

* Musical Shares: Teacher plays music, students move/dance around the room (safely), and when the music stops, students share their information with the closest person. Students stay with the partner until the music resumes. I play KidzBop on Pandora because it has popular songs with any inappropriate language removed. Musical Shares is an active, low-affective-filter way for students to share, but it doesn't have much value for discussion as students generally just tell their information without much talking or comparing. The kids love it, and it provides a bit of a mental break because of the music, so it does have value overall.