Lesson Plan B

Teacher: Mary Vansuch
Subject & Grade: 7th Grade Common Core Math
Lesson Date: March 6th, 2019

OBJECTIVE(S)/STANDARD(S) What will your students be able to do? Reference Common Core or your state's standards, as applicable.	CONNECTION TO ACHIEVEMENT GOAL(S) How does the objective connect to the goal(s) you have for your students this year?
7.NS.A.1 "Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram." (Common Core Standards Initiative, n.d.) Objective: Students will be able to apply their knowledge of adding and subtracting rational numbers in order to answer an open-ended mathematical question.	Students will be able to demonstrate 80% mastery by the end of the year. Additionally, number sense mastery is required to master almost all of the other standards in seventh grade.
PREREQUISITE SKILLS What will your students need to know to master the grade-level objective?	DIAGNOSTIC How will you assess students' mastery of these foundational skills?
Students must already know how to add and subtract rational numbers, as this lesson is focusing on practicing this skill in new situations.	According to diagnostic data, our class currently has 65% mastery of adding and subtracting rational numbers. Students in each class have been placed in a high or low group based on this diagnostic data.

ASSESSMENT

How will you know whether your students have made progress toward the objective? How and when will you assess mastery?

Students will complete an exit ticket in their teacher-led writing station. This exit ticket requires they apply their knowledge of adding and subtracting rational numbers to a difficult word problem I will be assessing both their mastery of adding and subtracting rational numbers and their ability to construct an open-ended response.

KEY POINTS

Key points are student-facing statements that include important content students need to know to be successful in the lesson. What three to five key points will you emphasize?

- Open-ended responses must accurately address all parts of the question in complete sentences.
- I can check if I have adequately responded to an open-ended response question by checking my answer with the rubric.
- I can fluently add rational numbers by adding the two numbers if they are the same sign and subtracting the two numbers if they are different signs. I keep the sign of the largest number.
- I can fluently subtract rational numbers by adding the opposite.

OPENING/HOOK (5 min.) How will you communicate *what* is about to happen? How will you communicate *how* it will happen? How will you communicate its *importance*? How will you communicate *connections* to previous lessons? How will you engage students and capture their interest?	MATERIALS
Students will spend three minutes marking up a word problem according to the CUBES strategy. This will be done silently and independently. Students will then split into two stations: Teacher-Guided Writing and Fluency Game for 25 minutes each.	Deliverable- Do Now
INTRODUCTION OF NEW MATERIAL- Station A, Teacher Guided Writing (7 min.) What key points will you emphasize and reiterate? How will you ensure that students actively take in information? Which potential misunderstandings will you anticipate? Why will students be engaged/interested?	MATERIALS
Students will first turn and talk about what it means persist through a word problem. We will discuss as a class how our persistence may be tested through impatience or frustration. The CUBES strategy is inspired by Scholastic magazine (Connell, 2017). The questions and integer card game are adapted from the Engage New York curriculum (Engage New York, n,.d.).	

GUIDED PRACTICE- Station A, Teacher Guided Writing (18 min.) How will you ensure that all students have multiple opportunities to practice? How will you scaffold practice exercises from easy to hard? Why will students be engaged/interested? How will you monitor and correct student performance? How will you clearly state and model behavioral expectations?	MATERIALS
We will analyze the problem from the Do Now through the criteria for success in open-ended responses. Then, students will practice using the criteria for success themselves on a new problem that requires them to apply their knowledge of adding and subtracting rational numbers. The "criteria for success" on the open-ended response closely mirrors the habits of mind: attending to precision, and communicating clearly (Cost and Kallick, 2009). This language is named and used throughout every writing station so that students are actively monitoring their habits of mind. Communicating clearly and striving for accuracy cannot happen, however, unless students are persisting through the difficult problem, so this habit of mind is still front and center in the lesson.	Deliverable- Teacher Guided, Exit Ticket
INDEPENDENT PRACTICE (25 min.) In what ways will students attempt to demonstrate independent mastery of the objective? Why will students be engaged/interested? How will you provide opportunities for extension? How will you clearly state and model behavioral expectations?	MATERIALS
Students will play the "I declare war" integer game in station B. This will be largely self-directed and require partners check each other's work. During the last 5 minutes at this station, students will reflect on how they quickly added, subtracted, and multiplied integers. While not the emphasis of this lesson, students are also required to build their metacognition skills and think about how they process their fluency problems quickly enough to play the game (Costa and Kallick, 2009).	Integer cards, "I declare war" capture sheet

CLOSING (5 min.) How will students summarize what they learned? How will students be asked to state the significance of what they learned? How will you provide all students with opportunities to demonstrate mastery of (or progress toward) the objective? Why will students be engaged/interested?	MATERIALS
We will discuss as a class what we learned about how to answer open-ended response questions. We will also discuss strategies for persisting through them.	N/A
DIFFERENTIATION How will you vary your approach to make information accessible to all students?	MATERIALS
Students will be divided into two rotation groups, A or B, based on their diagnostic data. I will provide more scaffolded questions for my low group as we are working through the open-ended response question together. For my high group, I will ask them to walk me through the solution and give few hints.	Deliverable

Please include copies of any handouts, student worksheets, or other resources.

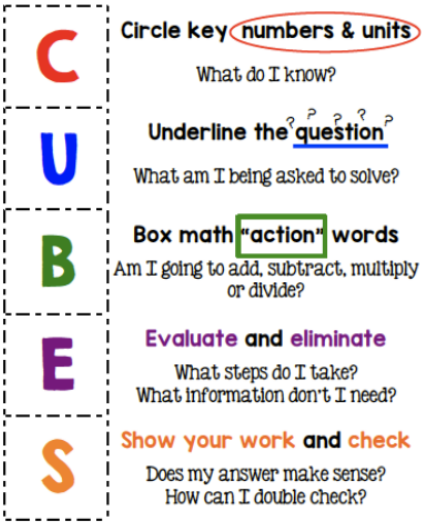
Name: _____ Group: A B C
Date: _____ Class: _____

Introduction to Writing in Math- Station A

Objective: I can identify and organize information using *CUBES* to help me answer an open-ended PARCC question in addition to criteria for success. **(7.NS.A.1)**

Do Now

Directions: Markup the question using the cubes strategy.



Philip claimed that the expression $-p+5+p$ is positive for any value of p. Determine whether Philip's statement is always true, sometimes true, or never true. Provide evidence to support your conclusion. Enter your answer and your explanation in the space provided.

Screenshot

***Turn and Talk:* If you were given this question to solve, how may it test your *persistence*? What strategies may help you persist?**

Criteria for a Success for an Outstanding OER		
Criteria	**Explanation**	**Kid Friendly Example**
Answers all Question Asked	Answers all parts of the question and restates the question.	The ……I know this because….
Models with Mathematics (S.MP.4)	Response shows math work to support your answer and includes a complete sentence explaining your reasoning	Step 1:……Step 2: ……Step 3:
Mathematical Terminology	Uses all relevant and appropriate math vocabulary correctly in context and explains his or her thinking	A proportional relationship is one that….
Accuracy	Response includes no computational errors	I have double checked my answer by completing the problem twice….
Reasonable Response	Justify your answer! Is it correct using estimation or reasonable justifications.	My answer makes sense because…..

Answers Complete Question on Task	The question is asking me to: My first sentence should be:
Models with Mathematics (S.MP.4)	
Mathematical Terminology	
Accuracy	
Reasonable Response	

7th Grade (Exit Ticket)

Criteria for a Success for an Outstanding OER	
Criteria	**Explanation**
Answers all Question A	Answers all parts of the question and restates the q
Models with Mathematics	Response shows math work to support your answer and incl explaining your reasoning
Mathematical Terminol	Uses all relevant and appropriate math vocabulary correctly i her thinking
Accuracy	Response includes no computational errors
Reasonable Respons	Justify your answer! Is it correct using estimation or reasc

Part A

Cary claimed that the expression $-5 + m$ is negative. Determine whether Cary's claim is always true, sometimes true, or never true. Provide evidence to support your conclusion.

Enter your answer and your explanation in the space provided.

How well did you *persist* through this task? What strategies helped you?

Name: _____ Date: _____

I Declare War Signed Integer Game Capture Sheet (Station B)

Directions: Record the sign of each hand and the result of each round. **You will change operations each round (note how addition repeats).** The largest (most positive) wins.

Round	Your Hand	Competitor #1's Hand	Result
Example	1+(-1)=0	(-5)+7 =2	Competitor Won
1: Addition			
2: Subtraction			
3: Multiplication			
4: Addition			
5: Addition			
6: Subtraction			
7: Multiplication			
8: Addition			
9: Addition			
10: Subtraction			
11: Multiplication			
12: Addition			
13: Addition			
14: Subtraction			
15: Multiplication			
16: Addition			
17: Addition			

18: Subtraction			
19: Multiplication			
20: Addition			
21:_____			
22:_____			
23:_____			
24:_____			
25:_____			
26:_____			
27:_____			
28:_____			
29:_____			
30:_____			
31:_____			
32:_____			

Reflection: What strategies help you add integers quickly? _____

_____

_____

What strategies help you subtract integers quickly? _____

_____

_____

What strategies help you multiply integers quickly? _____

_____

_____

Reflective Summary
[NOTE: Same as for Persistence Lesson B]

Both lessons focused on teaching students to persist through difficult, mathematical problems. Based on both past experiences with my students and the course readings, I knew it made the most sense to integrate the habits of mind with the course content. While some curriculums explicitly teach the habits of mind in full lessons, such as the Vermont curriculum (Johnson, Rutledge, and Poppe, 2005), the habits of mind are so integral to success in mathematics that explicit teaching for 60 minutes is unnecessary. Instead, I integrated the habits of mind organically into my lessons, as recommended by Witter (2010). I focused my opening and closing explicitly on one habit of mind, persistence, because this habit is essential to thoroughly doing the other habits of mind (Costa and Kallick, 2009). Students cannot strive for accuracy if they cannot persist through correcting their work. They communicate clearly if they cannot persist through thinking a problem through entirely.

Through my interactions with students, I focused on praising the process and looking for areas of improvement (Stewart, n.d.). For example, while students were completing their electoral college task, I always prefaced my probing questions by praising their mathematical thinking. The 7th grade stations are intentionally designed for students to persist through thinking about how the question ought to be answered and what their thought process is. Many habits of mind are integrated at once so that students can be consciously aware of what and how they are learning and processing (Costa and Kallick, 2009). This also means that students are thinking about challenging mathematical tasks that require deep mathematical thinking (Brahier, 2013), and the habits of mind

allow them to access those tasks because students are actively monitoring their persistence through them (Costa and Kallick, 2009).

Similar to the lesson that first introduced persistence, students were far more successful in persevering through a difficult task when they were pre-warned that they were going to persevere through it (Costa and Kallick, 2009). Students actively practiced this perseverance through mathematics, and their participation grades explicitly delineated that persistence and effort were valued in the classroom (Whitter, 2010). I consistently praised students' persistence through the challenging tasks (Steward, n.d.), which created a more positive environment when I pushed their mathematical thinking (Brahier, 2013). A greater proportion of students were more successful in articulating how they used persistence and what strategies were helpful for them than the last time I tried to explicitly teach persistence. Through more practice, the remaining 10% of my class that struggled to articulate how they can be persistent and how they practice persistence should be able to name how they use this habit of mind in class and in life. Students were successful with the content as well. Students were highly engaged in their differentiated stations, and about 80% of the students were able to successfully answer the challenging exit ticket to varying degrees of open-ended response quality. This was a very large proportion of the class since it was our first day in stations explicitly teaching the open-ended response criteria. Similarly, 85% of my sixth-grade class finished every portion of their challenging task, which is a higher proportion than usual. I will more explicitly name and model the additional habits of mind I was implicitly integrating into the curriculum now that students have demonstrated greater mastery with persistence (Costa and Kallick, 2009).

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