VIDEO NOTES: ***4th Grade Math Lesson on Place Value and Division***

Video Links: **4th Grade Math Lesson on Place Value and Division**
Common Core State Standard: Number and Operations in Base Ten **(CCSS.4.NBT.B.6)**
Compass Component and Rating: Questioning and Using Discussion Techniques (3b), *Effective Proficient*
Engaging Students in Learning (3c), *Effective Proficient*
Lesson Objective: Use place value to divide a large number.

Common Core State Standard(s)
CCSS.Math.Content.4.NBT.B.6: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Compass Component 3b: Questioning and Using Discussion Techniques (Rating: *Effective Proficient*)		
Indicators	**Evidence**	**Common Core Connection**
Teacher uses open-ended questions, inviting students to think and/or have multiple possible answers.	• Students are expected to explain their responses, whether correct or not. Teacher says, *"Remember, you have to have a reason that you think the way you do"* (4:00). This encourages students to develop a sense of self-assessment, encouraging them to think about the processes they used and the answer that resulted. • Teacher asks questions such as, *"Can you explain why you think it's 140?"* and involves multiple students to get to the right answer (1:46). Allowing students to hear the explanations of others reinforces content and the concept within math of having multiple different methods to get to the same answer.	

The teacher calls on most students, even those who don't initially volunteer.	• Teacher calls on a variety of students to respond, allowing her to assess students' mastery levels and individual needs • All students are provided with an opportunity to share answers, first silently to themselves and then out loud. Allowing students to say their answers silently first, provides a few additional seconds of wait time, thus increasing the number of students who have an answer. It also allows students an opportunity to practice saying the answer before sharing with the class. This will increase the quality of final answers shared.	This lesson is a strong example of students deepening their conceptual understanding of division, not just the process. Students use a number strip and their prior knowledge of place value to solve a problem with a three-digit dividend and one-digit divisor. Students access what they know about the relationship between multiplication and division, as well as addition, to break down the problem into more manageable pieces (CCSS.Math.4.NBT.B.6).
Discussions enable students to talk to one another without ongoing mediation by the teacher.	• Students are asked to solve a problem with a partner and prepare an explanation for their answer. For example, the teacher says, "*Turn and talk in just a second about what you think it is and why you think it is that way…"* (1:22)This is an opportunity for students to practice constructing viable arguments, an important standard-aligned skill. • Students participate in a True/False activity. They are given time to discuss their answer with a classmate before sharing with the class. By sharing with a classmate first, students are given an opportunity to "test out" their response and discuss any discrepancies before taking a risk in front of the class.	Students incorporate various Math Practices, including Make Sense of Problems and Persevere in Solving Them, Reason Abstractly and Quantitatively, Construct Viable Arguments and Critique Reasoning of Others, and Look for and Make Use of Structure.
The teacher builds on using student responses to questions effectively.	• Teacher requires students to build on and respond to each other's responses. For example, student Jason says, *"…and then it's another 80 divided by two because two plus two equals four."* Teacher responds*, "Okay, Romy, what are you thinking? You're agreeing."* Romy says*, "I think it was true because two plus two is four. So then it will be the same thing."* Teacher responds*, "Okay. Akiah, what are you thinking?"* (4:54). Student understanding of content is deepened through the verification of their answers, as well as hearing the processes used by classmates.	

Compass Component 3c: Engaging Students in Learning (Rating: *Effective Proficient*)		
Indicators	**Evidence**	**Common Core Connection**
Most students are intellectually engaged in the lesson.	• Students use hand signals to agree/disagree even when they are not individually called on. This allows the teacher to monitor engagement as well as assess student responses. • Students actively listen to other explanations. Some reflect on their own responses and revise their original explanations. For example, the teacher asks, *"What do you think, Jason, about what she said?"* Jason responds, *"I think she might be right so I'm starting to think it's false"* (5:55). Being able to safely change their answers after critical evaluation teaches students the value of collaboration, as well as perseverance.	
Learning tasks have multiple correct responses or approaches and/or demand higher-order thinking.	• Students break down and solve difficult problems, and must have a reason for their thinking. Not only does this require students to think at a high level, but they must be able to articulate how worked through the problem. Simultaneously, the teacher is provided with an opportunity to assess student thinking and understanding. • The lesson focuses on the concept of division, not just the procedural path to a solution. Students analyze a problem and determine what smaller problems are contained within.	Even though the problem posed to the class has only one correct answer, students arrive at the answer in multiple ways as heard in their explanations about the relationship between multiplication and division and their understanding of place value (CCSS.4.NBT.B.6)
The pacing of the lesson provides students the time needed to be intellectually engaged.	• The lesson has a clear beginning, middle, and end. • Teacher allows for appropriate amounts of time for students to accomplish each step in the division process. • Pacing allows students time to think on their own, discuss responses with partners, and contribute to the whole-class discussion.	

WHAT COULD THIS TEACHER DO TO IMPROVE?

What did the teacher do in this lesson?	*Highly Effective* Indicators	What could the teacher do to move to *Highly Effective*? (example actions)
In this lesson, the teacher is the facilitator of the discussion, and she provides the questions for students to answer.	Students initiate higher-order questions. (Questioning – 3b)	After a student explains how he/she broke down the problem to determine an answer, open up the discussion for classmates. For example, ask, "*Does anyone have any questions for Student X regarding his/her process for finding a solution?*" This allows the speaker to deepen his/her understanding of the content through explanation, as well as shift the cognitive work load to the students.
Students contribute different explanations to the solution of the problem.	Students extend the discussion, enriching it. (Questioning – 3b)	Connecting to the real world would help students understand the importance of breaking down complex division problems into more manageable pieces. Give students the opportunity to extend and enrich the discussion by asking them to relate the concept of division to their life experiences, or explain an example of when they have used a similar process outside of school.
At one point in the lesson, a student states: "You can't change the divisor. You can only change the dividend." The teacher does not provide feedback on this response or require other students to provide similar summative opportunities.	Students have an opportunity for reflection and closure on the lesson to consolidate their understanding. (Engaging – 3c)	Provide students with an opportunity to synthesize what they learned after listening to the explanations of classmates, either in pairs or using a written exit ticket. Allowing students to consolidate their understanding into a statement similar to the one given by the student volunteer provides closure to the lesson and student learning.