Ms. Buscholz's Procedural Knowledge Lesson on Fluent Division Strategies

ESTABLISHING PURPOSE

1 **What are the key content standards I will focus on in this lesson?**

Indiana Academic Standards

3.C.5. Multiply and divide within 100 using strategies, such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$), or properties of operations.

3.AT.2. Solve real-world problems involving whole number division within 100 in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

3.AT.5. Determine the unknown whole number in a division equation relating three whole numbers.

Standards for Mathematical Practice:

- Reason abstractly and quantitatively.
- Look for and express regularity in repeated reasoning.

2 **What are the learning intentions (the goal and *why* of learning stated in student-friendly language) I will focus on in this lesson?**

- Content: I am learning to evaluate fluent and nonfluent division strategies based on the representation and the numbers.
- Language: I am learning how the language of division (partitioning, sharing, and the inverse of multiplication) can be used to explain why a strategy will always work.
- Social: I am learning to reflect on the decisions we make as learners and how they help us grow as individuals and a community of learners.

3 **When will I introduce and reinforce the learning intention(s) so that students understand it, see the relevance, connect it to previous learning, and can clearly communicate it themselves?**

- Think-pair-share about learning intentions and success criteria
- Progress share and self-reflection

SUCCESS CRITERIA

4 **What evidence shows that students have mastered the learning intention(s)? What criteria will I use?**

I can statements:

- I can use and evaluate efficient division strategies.
- I can use and evaluate efficient mathematical models to represent division strategies.

- I can explain why a division strategy will always work using division language (partitioning, sharing, and the inverse of multiplication).
- I can explain the inverse relationship between multiplication and division.

5 **How will I check students' understanding (assess learning) during instruction and make accommodations?**

Formative Assessment Strategies:

- Conference/observation notes
- Show Me assessment
- Student work
- Progress self-reflection

Differentiation Strategies:

- Must-do and may-do tasks
- Purposeful pairing of students by heritage language

INSTRUCTION

6 **What activities and tasks will move students forward in their learning?**

- Oral counting math talk
- Must-do task: evaluating fluency
- May-do tasks: the Product Game, Multiplication Bingo, Multiples on Number Charts, Mysterious Multiplying Jar Problem, and More Division Situations
- Quick images

7 **What resources (materials and sentence frames) are needed?**

- Anchor chart of division strategies
- Word wall word: fluency
- Mathematical toolboxes
- Math binders
- Cubes
- Number charts
- Graph paper
- Open number lines and whiteboard markers
- Colored pencils
- Calculators
- Progress reflections
- Show Me task variations

8 **How will I organize and facilitate the learning? What questions will I ask? How will I initiate closure?**

Instructional Strategies:

- Must-do and may-do tasks
- Conferences
- Think-pair-share
- Rough-draft talk
- Self-reflection

Scaffolding Questions:

- Where is 62 in your representation? Where is 9?
- What would be a story for 62 ÷ 9? How is this story represented in your work? What does the answer mean?
- How could I record numbers instead of drawing each object?

Extending Questions:

- Will this strategy always work? Why or why not?
- For what numbers would this strategy be inefficient?
- How does this representation show why the strategy works?

Self-Reflection and Self-Evaluation Questions:

- What did you work on?
- How did this help you work toward the learning intentions and demonstrate the success criteria?
- What does this mean you need to work on tomorrow?
- What is your thinking now about the meaning of division as the "inverse of multiplication"?