Multiplicative Comparisons Instruction Using Bar Models

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Lesson Objectives

CCSS 4.O.A.1: Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplicative equations.

Behavioral objective: Students are courteous and considerate when working with others.

Lesson Procedures

Activating Prior Knowledge: students think-pair-share what they remember about additive comparisons.

Example of additive comparison:

"If I have $20, and Ms. Murphy has $16, how many more dollars do I have than Ms. Murphy?" The students should be able to answer with $4.
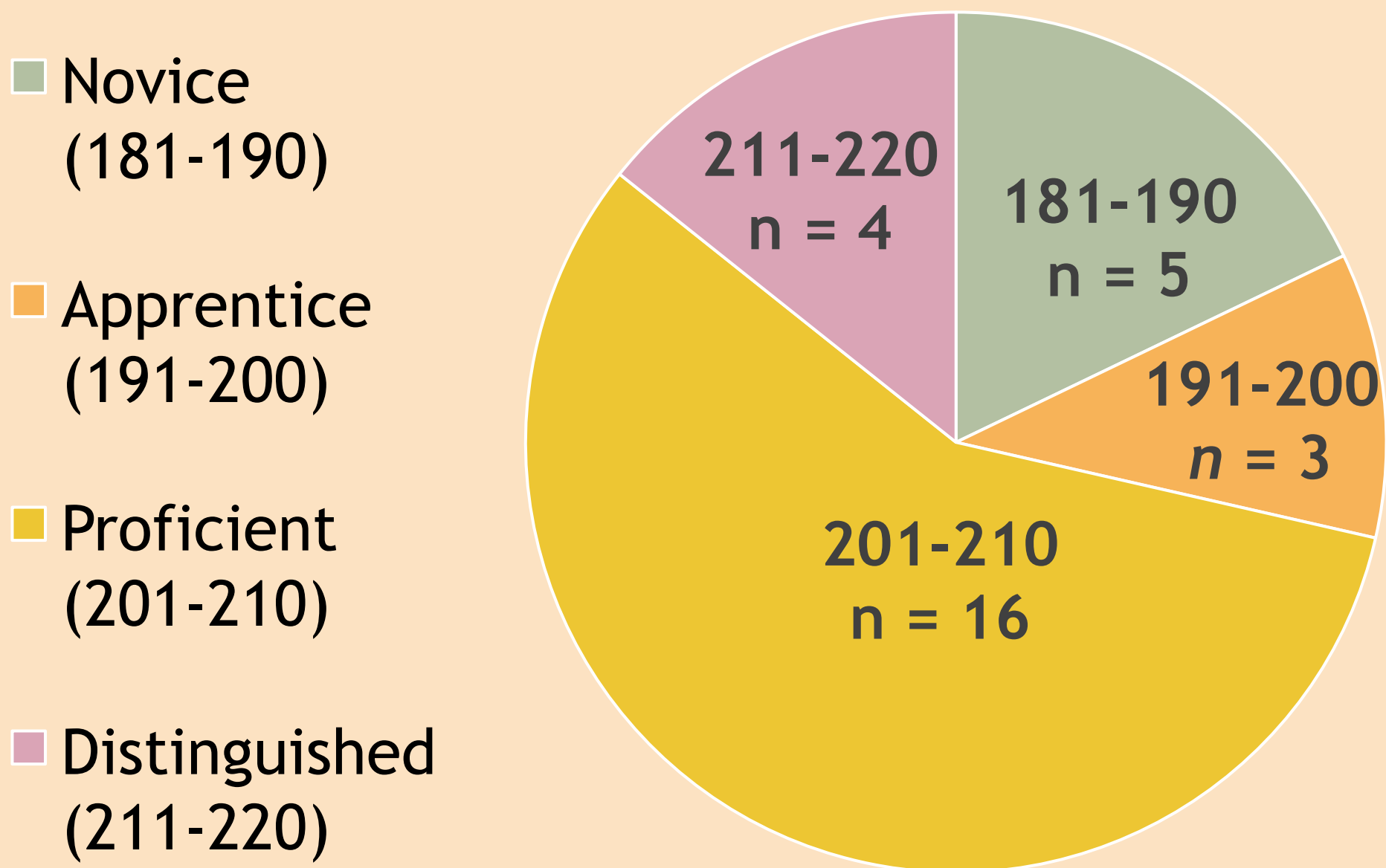
Introducing Multiplicative Comparisons:

We are comparing two amounts by finding how many times larger one is than the other.

Eliciting real life examples: "When would we need to know how many times larger something is compared to something else?"
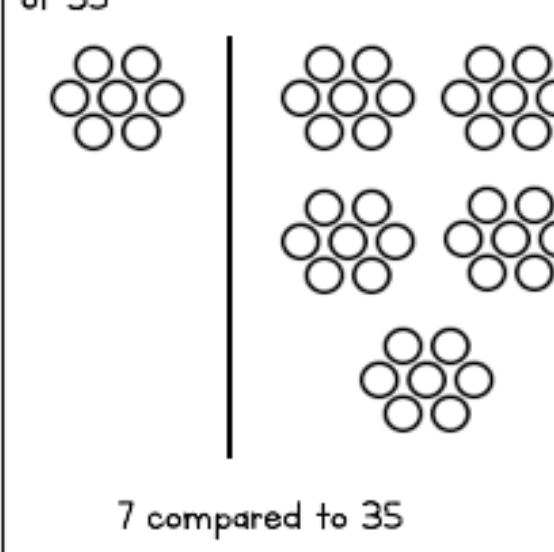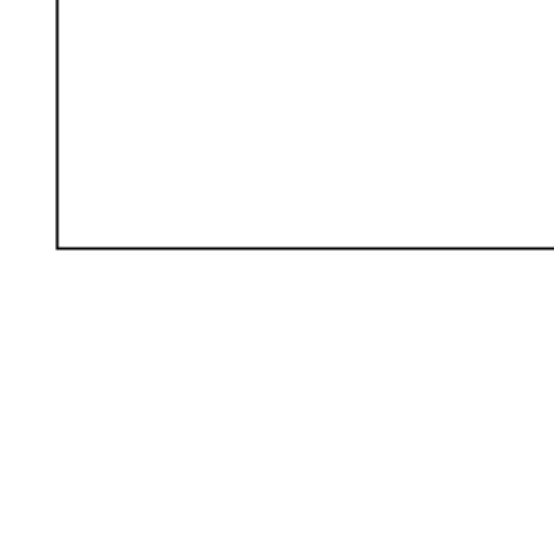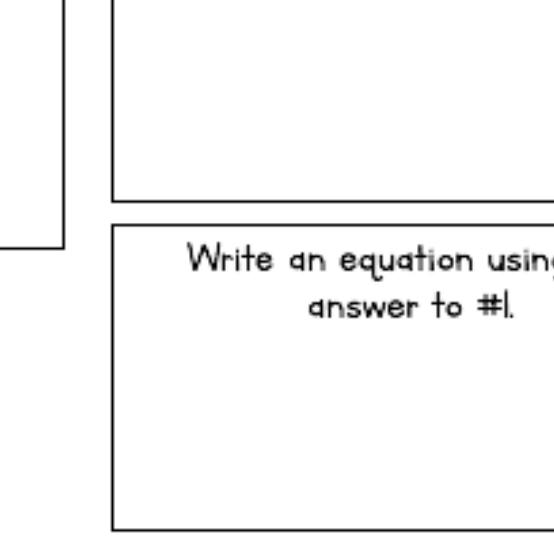
Examples include: size, height, weight, distance, etc. "For example, we could say that I ran five miles, and Trenton ran two times as far as I did."
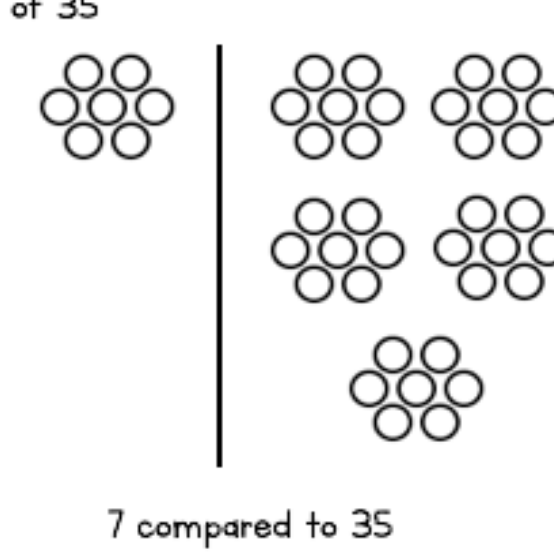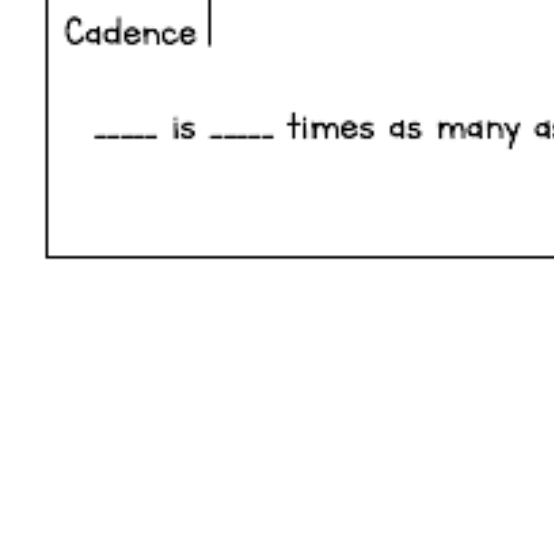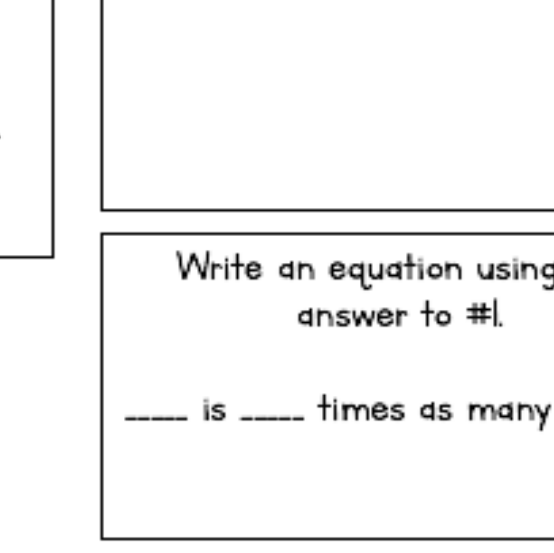
Gradual Release of Responsibility: Teacher modeled and provided guided practice with whole class, then they worked in pairs, and finally each student completed individual work. During student work time, teacher used a rating scale to track students' progress on the behavioral objective.
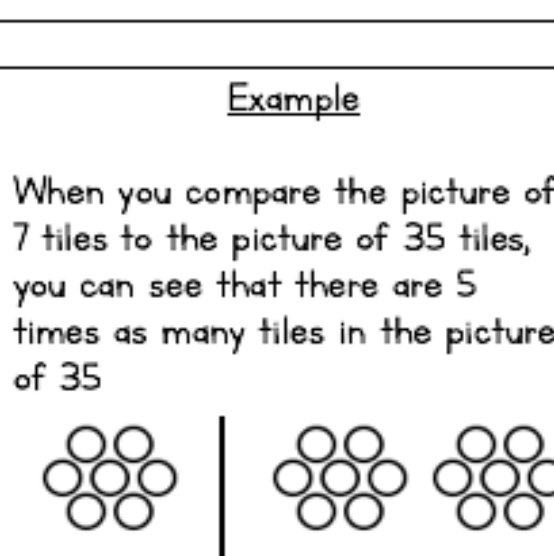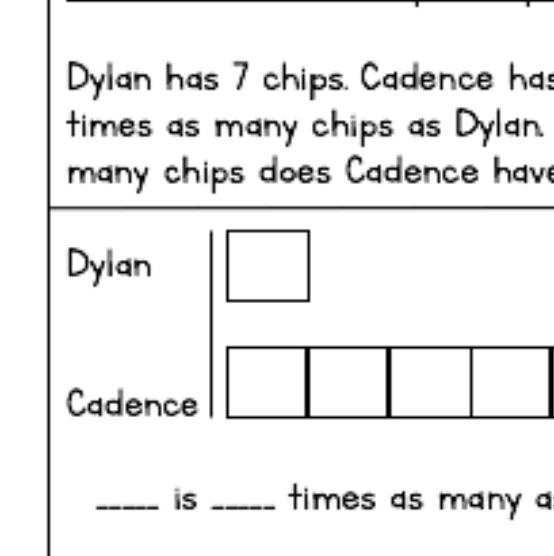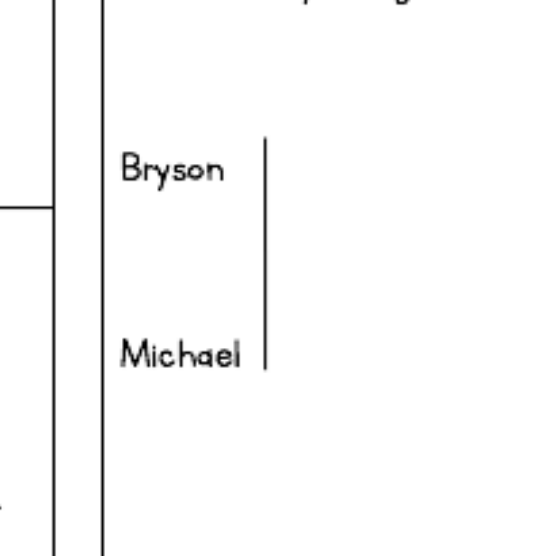
Students by Measure of Academic Progress (MAP) Scores

- Novice (181-190)
- Apprentice (191-200)
- Proficient (201-210)
- Distinguished (211-220)

- 211-220 n = 4
- 181-190 n = 5
- 191-200 n = 3
- 201-210 n = 16

Trifold Guided Notes with Differentiated Support

FRONT — Low Support — BACK

FRONT — Moderate Support — BACK

FRONT — High Support — BACK

Differentiation

Due to the heterogeneous nature of the class, differentiated guided notes were created to meet the needs of students needing low, moderate, and high levels of support.
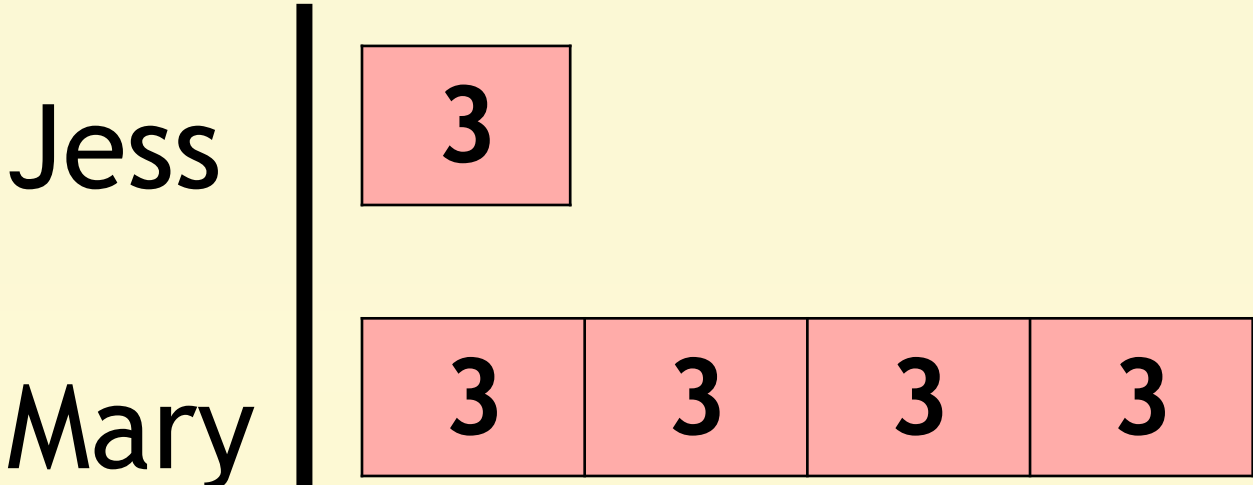
Identifying Key Information

Jess is 3 years old. Mary is four times as old as Jess. How old is Mary?

_____ is _____ times as many as _____

OR   _____ = _____ x _____

Bar Model

Jess | 3

Mary | 3 | 3 | 3 | 3

Writing an Equation

Mary is 12 years old

12 is 4 times as many as 3

12 = 4 x 3

Results

Three of the 28 students chose to not use a bar model to represent the multiplicative comparisons as they could look at the two amounts and mentally multiply. However, 2 of these 3 students also failed to master writing a correct equation to represent the multiplicative comparison and instead wrote additive comparison equations (i.e., 10 = 7 x 3 instead of 21 = 7 x 3).

To correct this, I would re-teach the bar model using simpler numbers and gradually make the numbers more complex so they see how important bar models are to comparing and finding the product.