|  |
| --- |
| **NC.4.NBT.5****Multiplication Strategies**  |
| **Domain** | Numbers and Operations in Base Ten |
| **Cluster** | Generalize place value understanding for multi-digit whole numbers. |
| **Standard(s)** | **NC.4.NBT.5** Multiply a whole number of up to three digits by a one-digit whole number, and multiply up to two two-digit numbers with place value understanding using area models, partial products, and the properties of operations. Use models to make connections and develop the algorithm. |
| **Materials** | pencil, activity sheet |
| **Task** | **Multiplication Strategies**In the cafeteria, each row seats 22 students. There are 12 rows. How many students can be seated?Part 1: Solve this problem using an area model. Part 2: Solve this problem using partial products. Part 3: Solve this problem using the standard algorithm.Part 4: Describe the connections you see between the area model you made in Part 1 and the way you solved the problem using the standard algorithm in Part 3. This standard calls for students to understand and use a variety of strategies for multiplying multi-digit numbers. *Possible strategies:*Traditional Algorithm: 22 x 12 44 +220 264Area array model:

|  |  |
| --- | --- |
|  **20 x 10 = 200** |  **20 x 2 = 40** |
|  **2 x 10 = 20** |  **2 x 2 = 4** |

Partial Products:20 x 10 = 200 22 x 2 = 44 20 x 2 = 40 22 x 10 = 2202 x 10 = 20 220 + 44 = 2642 x 2 = 4200 + 40 + 20 + 2 = 264 |

|  |
| --- |
| **Rubric** |
| **Level I****Not Yet** | **Level II****Progressing** | **Level III****Meets Expectation** |
| Students are unable to use a strategy to solve the multiplication problem. ORStudent may be able to use the algorithm to find an answer but cannot explain why it works. | Student answers 2-3 parts of the problem completely and correctly. | Student answers all 4 parts of the problem completely and correctly. |

|  |
| --- |
| **Standards for Mathematical Practice** |
| **1. Makes sense and perseveres in solving problems.** |
| **2. Reasons abstractly and quantitatively.** |
| 3. Constructs viable arguments and critiques the reasoning of others. |
| **4. Models with mathematics.** |
| 5. Uses appropriate tools strategically. |
| 6**.** Attends to precision. |
| 7. Looks for and makes use of structure. |
| 8. Looks for and expresses regularity in repeated reasoning. |

**Multiplication Strategies**

In the cafeteria, each row seats 22 students. There are 12 rows. How many students can be seated?

Part 1: Solve this problem using an area model.

Part 2: Solve this problem using partial products.

Part 3: Solve this problem using the standard algorithm.

Part 4: Describe the connections you see between the area model you made in Part 1 and the way you solved the problem using the standard algorithm in Part 3.

**Scoring Examples**

**Not Yet:** This student was unable to solve the problem using correctly using any strategy.







**Progressing:**  The student solved the problem correctly using two different strategies and could make connections between strategies, but was unable to solve using the algorithm.







**Meets Expectation:** The student was able to correctly solve the problem three different ways and explain how the strategies were related.





