Chandra Martz  
ELED 4760

**Grade/age Level:** 4th Grade

**Subject:** Mathematics

**Utah Core Course Objective:** Demonstrate that multiplication and division are inverse operations (e.g., 3x4=12; thus, 12÷4=3 and 12÷3=4).

**Content Objective:** Students will demonstrate their understanding that multiplication and division are inverse operations with 90% accuracy.

**Language objective:**
- In their tables of 4-5, students will compare multiplication and division and discuss and review how they are inverse operations of each other. (Listening, Speaking)
- Students will play a game and write down examples of multiplication and division inverse operation problems and read them to their group with 90% accuracy. (Reading, Writing)
- Students will individually solve 10 inverse operation problems given on the board e.g. 3X4=12 answer. 12÷3=4 or 12÷4=3 (Reading, Writing)

**Instructional features**

**Materials:** Decks of cards 3 per deck, Inverse operations worksheet 3 per worksheet, PowerPoint to show instructions of game.

**Activities and Procedures**
- Students will brainstorm individually for 30 seconds about what inverse operations are and how it is relevant to multiplication and division.
- Students will discuss what they brainstormed with their table what “inverse operations” means and how it is relevant to multiplication and division.
  - Each student will have their responsibility (Recorder, Reporter, Time Keeper, Team Leader)
- The reporter will report back to the class about what his group discussed.
- Students will get into groups of 3 and play game.
  - Player 3 will come and pick up the cards and paper.
  - Players 1 and 2 will pick a card and put it on their forehead face out without looking at the card
  - Player 3 will multiply the two card together e.g. 3 and 10 = 30.
• Player 1 and 2 will have to figure out what card they have based on the answer and their challenger’s card.
  o Player 3 is multiplying, while player 1 and 2 are doing the inverse of dividing.
• Students will make a graphic organizer by writing down the multiplication problems in one column and their inverse (division problems) in the other column.
• After 5 times, Player 3 is now player 2, player 2 is now 1, and player 1 is now 3. They keep trading like this until time is up.
  ▪ After game is over, students will look over their paper making sure that the multiplication and division problems are inverses of each other.
  o Player 2 will put the cards away and bring them to me.
  o Player 1 will put the papers in the math bin.
▪ Students will individually solve the 10 problems on the board about inverses of multiplication and division.
▪ As a class, we will go over the answers and clarify any questions.

Adaptations for ELL students at each state of language acquisition
(“Language Acquisition Stages”)

| Stages 1 and 2 Pre-Production/Early Production | • Have word wall for vocabulary
| • Speak at a comprehensible rate, enunciating words
| • Use gestures and model
| • Give extra instructions in simpler terms if necessary |
| Stage 3 Speech Emergent | • Same as above |
| Stages 4 and 5 Intermediate/Fluent | • Same as above |

Specific ELL instructional strategies utilized: (provide justification why these strategies are appropriate)
• Metacognitive Strategy: Student will use organizational planning. They will think about what they want to discuss with their group and then put it in an order.
• Cognitive Strategy: Students will use graphic organizers to put multiplication and division in groups by inverses.
• Social/Affective Strategies: Students will work together during the game to complete graphic organizers. They will be able to communicate by asking and answering questions each other might have. As a class we will also work together to clarify.
• Harrell/Jordan
  o #2 Visual Scaffolding—Providing language support through visual images
- A PowerPoint will be shown so the students understand how to play the game.
  - #14 Manipulative Strategies- Using Objects to connect concept
    - The students will play the card game so they can manipulate the cards to come up with inverse operations.

**Grouping**

- Individually:
  - Students will brainstorm what inverse operations are.
    - This will give the students a chance to think for themselves and put their thoughts together without being rushed.
  - Students will solve the 10 problems written on the board.
    - This allows students to think for themselves to see what they know.

- Homogenous grouping:
  - Students will get into groups of three to play the game.
    - This lets students of the same ability level play so they are not getting frustrated.

- Heterogeneous grouping:
  - Students will get into their tables to discuss what they came up with during their individual brainstorming exercise.
    - This gives the students an opportunity to feed off of each other and work together even though they are different ability levels.

**Assessment:**

- Formative:
  - Teacher will walk around and observe students demonstrating themselves using manipulatives (the cards).
  - Teacher will also look at Inverse operations sheet to see if the group is filling it in correctly.

- Summative:
  - The students will solve the problems on the board.
    - They will then go over answers as a class
    - Students will correct any wrong answers in red pencil so teacher can see if they understand the concepts.

<table>
<thead>
<tr>
<th>Stages 1 and 2 Pre-Production/Early Production</th>
<th>5</th>
<th>3</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student participates in all activities, speaking to his group in Spanish and throwing in English when possible. Student also completes</td>
<td>Student participates in most activities, speaking in Spanish and throwing in English as much as possible. Completes math</td>
<td>Student participates very little, speaking only in Spanish. Does not complete math problems or does with less than 75%</td>
<td></td>
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<tr>
<td>Stage</td>
<td>Activities</td>
<td>Problems with 90% accuracy</td>
<td>Problems with 75% accuracy</td>
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<tr>
<td>Stage 3</td>
<td>Student participates in all activities, Speaking English in short fluent sentences. Student also completes math problems with 90% accuracy</td>
<td>Student participates in most activities, Speaking in English in 1 or 2 word sentences. Completes math problems with 75% accuracy</td>
<td>Student participates very little. Does not complete math problems or does with less than 75% accuracy</td>
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<tr>
<td>Stages 4 and 5</td>
<td>Student participates in all activities, Speaking in English in full complete longer sentences. Student also completes math problems with 90% accuracy</td>
<td>Student participates in most activities, Speaking in short fluent sentences. Completes math problems with 75% accuracy</td>
<td>Student participates very little. Does not complete math problems or does with less than 75% accuracy</td>
</tr>
</tbody>
</table>
INVERSE OPERATIONS:

MULTIPLICATION  DIVISION