Name _____ Date _____

# Binary Operations - Guided Lesson Explanation

## Explanation#1

Step 1a) We look for a symmetric value in the diagonal line of the table.

In this case we have the values: B-B-A-A. The table is symmetric with respect to the diagonal line. Yes, it is commutative.

|  | A | B | C | D |
|---|---|---|---|---|
| A | B | A | D | C |
| B | A | B | C | D |
| C | D | C | A | B |
| D | C | D | B | A |

Step 2b) The identity element is B because this is the element where all of the values in its row or column are the same as the row or column headings.

Step 3c) The inverse of A is A; the inverse of B is B; inverse of C is D and inverse of D is C.

## Explanation#2

Step 1) The diagonal line of the table shows no symmetry at all. No, it is commutative.

Step 2)

The identity element is  . An identity element is a single value that will always return the starting value.

Step 3) “For each element having an inverse, name the element and its inverse.”

The inverse of  is  ; the inverse of  is  ; inverse of 

is  and inverse of  is  .

Name _____ Date _____

**Explanation # 3**

Step 1a) The diagonal shows: s-e-s-e which is a nice symmetry.Yes, it is commutative.

Step 2b)"Name the identity element, or explain why none exists."

The identity element is e because this is the element where all of the values in its row or column are the same as the row or column headings.

Step 3c)

Inverse of: K is y; e is e; y is K and s is s.