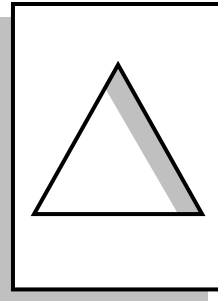


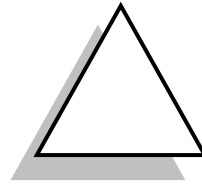
Triangle Algebra

NAME _____

On the last page of this worksheet, carefully cut along the dotted lines of the triangle. Keep the rest of the page intact. When you are done cutting, you should have two pieces that look like this:



Shape Sorter



Triangle

Start with the triangle placed in the shape sorter so that it completely fills the hole. Place an N at the top front of the triangle to indicate the “Do Nothing” move.

Starting with the N at the top front, the triangle can be rotated or reflected in several different ways so that it once again completely fills the hole in the shape sorter. Identify all of the different moves that can occur, and label the top front vertex after each move to indicate what move was performed.

1. List all of the possible moves below. What symbol did you place on the top front of the triangle to indicate each move?

2. Start with the triangle in the shape sorter so that the N is at the top front. Perform any two moves in succession. Indicate the results below.

3. Perform every possible combination of first moves followed by second moves. Create a chart that shows the result of every possible combination.

4. Does any symmetry exist in the completed chart?

5. Is the operation commutative? How do you know?

6. Is the operation associative? How do you know?

7. Determine any identity elements that exist.

8. Determine any inverse for each move.

