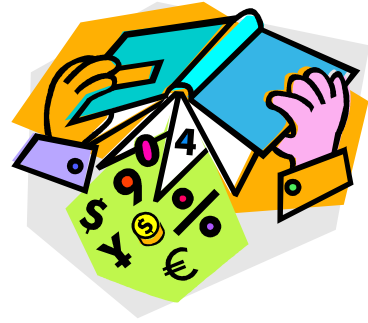


NCLB Math Institute Summer 2011



Faculty Name: *Miranda Benson*

School: *Em Boyd Elementary School*

Greenville, MS

Grade Level: 5th

1. Teaching Objective - (Mississippi Math Curriculum Frameworks, 5th grade, 3c)

Describe the characteristics, including the relationship of the pre-image and the image of each type of transformation (rotations [turns], reflections [flips], and translations [slides]) of two-dimensional figures.

2. Instructional Activities:

- Using pattern blocks on the overhead projector, the teacher will remind the students of the following transformations:
 - The teacher will explain that *translations* occur when a figure slides to a new location. The teacher will illustrate a translation on the overhead with a pattern block. Afterwards, she will have the students slide their book to a neighbor at the table.
 - Next, the teacher will explain *rotation*. Pointing to the hands on the clock, the teacher will explain the clock is rotating clockwise. The students will be instructed to hold up their index finger and model the clockwise and counterclockwise directions on a clock. The teacher will rotate a pattern block on the overhead.
 - Finally, the teacher will explain *reflection*. The teacher will have two students stand and place a large sheet of construction paper between them (so their faces are not visible to each other). The teacher will direct them to follow these directions: touch your nose with your right index finger, stick out your tongue, close your left eye, bite your bottom lip, etc. The teacher will ask the students which transformation the students are demonstrating (reflection). Using a pattern

block, the teacher will reflect a pattern over a coffee stirrer using it as a line of reflection.

- The teacher will hand out a copy of “Motion Commotion” (*Navigating through Geometry in Grades 3-5*, page 122) and a coffee stirrer to every student. Have them cut out small figures from the activity sheet and play a game of “Simon Says” directing them to translate, reflect, and rotate their figure across their desk.
- After two additional examples, pair them up and to make a “Motion Commotions” strip using reflection, translation, and rotation. First demonstrate how to cut along the top strips so it has flaps covering the bottom half where they will draw images that follow the directions written on the top of the flap. The students will use the shapes cut out earlier and trace it in the first square that will start their transformations. Next have the students transform the figure into the next box using either a reflection, translation, or a rotation. After they draw the figure, close the flap on top of it down, and explain what they did to their figure to get to their first box. Refer to a list of transformation descriptions on the board the students can write on the outside of the flaps:
 - Rotate 90° clockwise
 - Translate to the right one space
 - Reflect over a vertical line to the right
 - Reflect downward over a horizontal line
 - Translate downward to the bottom of the space
- The students will continue with this until they get to the end of their strips. Have them exchange strips with their partners and predict the hidden images on their partner’s strip. Have them record their predictions on the “solution strip” found on the activity sheet.

3. Materials and Resources:

- *Navigating Through Algebra, Navigating Through Geometry, Navigating with Data Analysis* (National Council of Teachers of Mathematics, 2001)
- Overhead projector
- pattern block
- a book
- a clock
- Paper
- Scissors
- Pencil
- Photocopies of “Motion Commotion” activity strip
- Geometric shapes from activity strip

4. Assessment:

The teacher will analyze the students completed work to verify that the figures they drew match the descriptions on the flaps.

