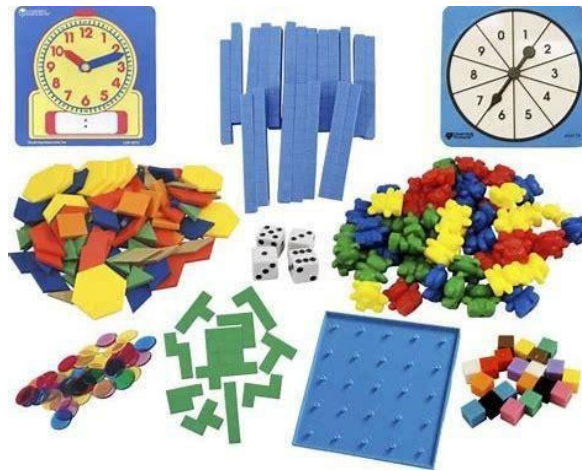




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# Mississippi Mathematics Manipulatives Manual Featured Activity



## “Shapes on the Plane”

### 5.G.2

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As we continue our efforts to develop high-quality instructional materials (HQIM) and resources, the Mississippi Department of Education (MDE), through the Academic Education Office, would like to showcase instructional practices and activities that foster conceptual understanding through the use of manipulatives in the mathematics classroom.

The **Mississippi Mathematics Manipulatives Manual** features activities meant to serve as short, hands-on procedures that may be implemented before, during, or after a lesson to support the teaching and learning process of the Mississippi College- and Career-Readiness Standards (MCCRS) for Mathematics. Alignment with the MCCRS Scaffolding Document has been included for additional support. Teachers may contact staff at the MDE if they would like to borrow manipulatives for classroom use.

Teachers may modify these activities to meet the needs of the students they serve and their instructional delivery model (virtual, in-person, or hybrid).

Special Thanks:  
Rebecca A. Victor, MS,  
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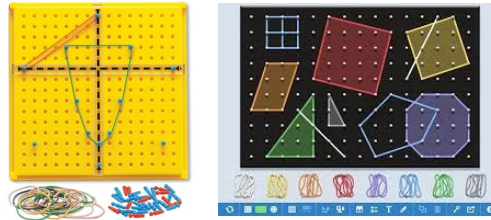
# Shapes on the Plane

## MANIPULATIVE(S):

- Geoboard or Pegboard
- Colored Pegs for Pegboard
- Rubber bands

## Alternative Manipulatives:

- [Geoboard](#)- The Math Learning Center



## GRADE LEVEL OR COURSE

### TITLE:

CCR Mathematics Grade 5

### DOMAIN AND CLUSTER HEADING:

Geometry (G):

Graph points on the coordinate plane to solve real-world and mathematical problems

## STANDARD(S):

**5.G.2:** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

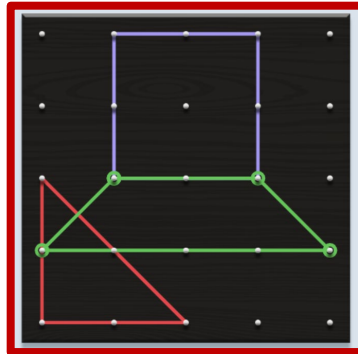
## PREREQUISITE SKILLS:

- Know coordinate planes are created when two perpendicular lines cross and a mathematical grid is placed upon them.
- Know these perpendicular lines are labeled as the x-axis and the y-axis.
- Know points within a plane can be located using an ordered pair which consists of an x-coordinate and a y-coordinate.
- Know movement begins at the origin, follows the x-axis first, and the y-axis second.
- Know the definition of perimeter.

### ACTIVITY:

**Note: Activity Sheets Attached**

1. Distribute a pegboard, pegs, and rubber bands, or, as an alternative, a geoboard and rubber bands to each student. **Note:** For a virtual alternative, see the Resources section below.
2. Whole group, review with students the parts of a coordinate grid, the steps to plotting points, and how to name a given point, and how to find perimeter of a polygon.
3. Next, provide students with a list of two-dimensional shapes to choose from, i.e., triangle, square, rectangle, trapezoid, etc.
4. Ask the students to construct any three shapes on the pegboard/geoboard by using the pegs and rubber bands, choosing from the given list of shapes.



*Figure 1: Sample of completed pegboard/geoboard.*

5. Once all students have completed creating three shapes on their pegboard, ask students to exchange their boards with their partner.
6. Distribute the Activity Sheet to each student.
7. Have students to complete the Activity Sheet using their partners pegboard/geoboard.

### QUESTIONS TO CONSIDER:

- What is a vertex?
- What represents a vertex on a coordinate plane?
- How do you determine side length of a shape on a coordinate plane?
- What are the attributes of a square?
- What are the attributes of a rectangle?
- What are the differences between a rectangle and a square?
- What are the differences between a triangle and a quadrilateral?

## RESOURCES:

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- [Mississippi Mathematics Scaffolding Document](#) (Grade 5, Pages 60-61)
- [2016 MCCRS for Mathematics](#)
- [Geoboard](#)- The Math Learning Center

**Optional:** The University of Mississippi's Center for Mathematics and Science Education has an extensive inventory of math (and science and technology) tools and manipulatives that teachers may borrow for classroom use at no charge. Click the link below to access the inventory list and complete a check-out request.

- [CMSE Manipulatives](#)

## BEYOND THE ACTIVITY:

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- **Extension(s):** Students can create a picture of their own choice by placing and connecting pegs in a certain order. However, students are required to document their process by writing down the coordinate pairs that they plot and the order in which they were plotted. Then have another student to draw the picture using their directions to re-create the picture.
- **Misconception(s):** Students may struggle with understanding the importance of order. Be certain to identify and clarify the difference between points like (3,4) and (4,3); and points like (0,5) and (5,0).

# Activity Sheet

Grade:

Name:

Using your partner's peg board, fill in the table below and answer the question.

Identify the Shape	Coordinates of the Vertices
1.	
2.	
3.	

**Choose two shapes above. Calculate the perimeter of each shape. Which shape has the greatest perimeter? Show your work below.**

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