MISSISSIPPI
DEPARTMENT OF
EDUCATION

Ensuring a bright future for every child

Mississippi Mathematics Manipulatives Manual

Featured Activity

“3-D Super Shapes”

2.G.1

Spring 2021

Carey M. Wright, Ed.D.
STATE SUPERINTENDENT OF EDUCATION

Nathan Oakley, Ph.D.
CHIEF ACADEMIC OFFICER

Wendy Clemons
EXECUTIVE DIRECTOR
Office of Secondary Education, Dropout Prevention, & Professional Development

Marla Davis, Ph.D.
Academic Liaison
Office of Academic Education

Tommisha Johnson, Ed.S.
K-12 MATHEMATICS CONTENT DIRECTOR
Office of Secondary Education

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:
Lori Hamill
Pontotoc City School District

3-D Super Shapes



MANIPULATIVE(S):

- Large teacher-made tubes created from tightly rolled newspaper (or butcher paper)
    - *For smaller scale option, the teacher may also use wrapping paper tubes or paper towel tubes.*
- Masking Tape

GRADE LEVEL OR COURSE TITLE:

CCR Mathematics Grade 2

DOMAIN AND CLUSTER HEADING:

Geometry (G):

Reason with shapes and their attributes.

STANDARD(S):

2.G.1: Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. * Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

*Sizes are compared directly or visually, not compared by measuring.

PREREQUISITE SKILLS:

1. Know the names and faces of objects (e.g., rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles).
2. Know the names of three-dimensional shapes (e.g., cubes, right rectangular prisms, circular cones, circular cylinders)
3. Combine shapes to make new shapes.
4. Decompose shapes into other shapes.
5. Build and draw shapes.

ACTIVITY:

Note: Activity Sheets Attached

1. Divide students into small groups (4-6 per group).
2. Assign each group one of the following three-dimensional (3-D) shapes: a cube, a triangular pyramid, and a square pyramid.
3. Provide each group/team a copy of Activity Sheet 1. *(Attached)*
4. Then have students discuss and list the two-dimensional (2-D) shapes that are needed to create their group's three-dimensional (3-D) figure.
5. Each team will use the teacher-made tubes to create their two-dimensional (2-D) shapes first. Then students will use the masking tape to connect the sides of each 2-D shape. *For example, to create a cube, a group will need to*

create 6 squares. That means they will need 24 tubes! 4 Sides x 6 Squares = 24 Sides.

6. Once the teacher checks that all 2-D shapes are created, groups will work to connect their 2-D shapes to make a 3-D figure. “Sides” will be wrapped in tape to join them and they will become “edges.”
7. After all figures are completed, groups will complete their group activity sheet (Activity Sheet 1).
8. Once the teacher verifies students have completed their 3-D figures correctly, the groups will circulate around the room to complete their activity sheets (Activity Sheet 2) to analyze the attributes of the other groups' shapes.

QUESTIONS TO CONSIDER:

- What is the difference between a two-dimensional (2-D) figure and a three-dimensional (3-D) figure?
- What does each “tube” represent?

RESOURCES:

- Mississippi Mathematics Scaffolding Document (Grade 2, Page 25)
- 2016 MCCRS for Mathematics

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:

- **Accommodation(s):** This activity can be modified by using toothpicks and marshmallows or gumdrops.
- **Extension(s):** The activity can be used to have students practice perimeter by measuring the sides of each 2-D figure before joining them to create the 3-D shape/figure.

Activity Sheet 1
3-D Super Shapes

My team's 3-dimensional figure is a _______________________.

1. What 2-dimensional shapes make up your team's figure?
2. Draw each shape in the chart below.
3. How many shapes are there in your figure? Write the number in the table below.
4. How many sides are in your figure? Write the number in the table below.

Name of 2-D Shape	Draw the Shape	How Many?	Number of Sides?

4. Create the 2-D shape you listed in the table above using the tubes and tape provided. The number of sides indicates how many tubes you will need for **each** shape/figure.
5. Ask your teacher to check your shapes before continuing.
    a. Teacher check:
        i. ____ Good job! Go on to item #6.
        ii. ____ Uh oh! Let's took a second look at this. Let's do this together.
6. Connect your two-dimensional (2-D) shapes to build your team's three-dimensional (3-D) figure. Draw your figure below:

Activity Sheet 2
3-D Super Shapes

Now that you and your team have built your three-dimensional (3-D) shape, it is time to learn about other figures from your classmates. Complete the table below for the other **Super Shapes** in your classroom.

Name of 3-D Figure - ___________________________

Name of 2-D Shape	Draw the Shape	How many?	Number of Sides

Name of 3-D Figure - ______________________________

Name of 2-D Shape	Draw the Shape	How many?	Number of Sides